

## **SECTION 3**

### **FUTURE “WITHOUT PROJECT” CONDITION**

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### 3.0 FUTURE “WITHOUT PROJECT” CONDITION

The future “without project” condition describes the planning area’s future if there is no Federal action taken to solve the current problems. This condition is vitally important to the evaluation and comparison of alternative plans, and identifying impacts (both beneficial and adverse) attributable to proposed Federal actions. The without plan condition is the same as the “No Action” alternative that is required to be considered by the Federal regulations implementing the National Environmental Policy Act (NEPA).

#### 3.1 PHYSICAL LANDSCAPE: GEOLOGY, TOPOGRAPHY, AND SOILS

The lands within the project area would be disposed and developed consistent with surrounding land use patterns. The land use would change from drained pastures and nurseries into single family residential with supporting commercial areas. The geology would not change other than when new development occurs requiring excavation of stormwater borrow area/lakes necessary to provide flood protections. The topography would change due to grading of the development, which raises elevations of the homes and roads. The organic layer of the soils (i.e., the muck) would be removed for development to allow for appropriate compaction for floor pads and road sub-grades.

#### 3.2 CLIMATE

Historic rates of sea level rise at various locations in the United States with geographic significance to the study area are shown in *Table 3-1*. Normalized sea level projections for 2025, 2050, and 2100, compared with 1990 levels and are shown in *Table 3-2*. The normalized projection estimates represent the projected acceleration in sea level compared with historic trends due to the greenhouse contribution.

**TABLE 3-1: HISTORIC RATE OF SEA LEVEL RISE AT NOAA STATIONS IN FLORIDA**

Atlantic Coast			Gulf Coast		
NOAA station name	Rate of sea level rise (mm/yr)	Standard error	NOAA station name	Rate of sea level rise (mm/yr)	Standard error
Fernandina Beach	2.04	.12	Key West	2.27	.09
Mayport	2.43	.18	Naples	2.08	.43
Miami Beach	2.39	.22	Ft. Meyers	2.29	.45
-----	-----	-----	St. Petersburg	2.40	.18
-----	-----	-----	Cedar Key	1.87	.11

Source: Sea Level Variations for the United States 1854-1999, National Oceanic and Atmospheric Administration Technical Report NOS CO-OPS 36, National Ocean Service, Silver Spring, MD, Chris Zervas, 2001. Additional stations may be found at <http://co-ops.nos.noaa.gov/publications/techrpt36doc.pdf>.

**TABLE 3-2: NORMALIZED SEA LEVEL PROJECTIONS FOR 2025, 2050 AND 2100, COMPARED WITH 1990 LEVELS**

Cumulative Probability (percent)	Exceedence frequency (percent)	Year 2025 (cm)	Year 2050 (cm)	Year 2100 (cm)
10	90	-1	-1	1
NOTE: The normalized estimates represent the projected acceleration in sea level compared with historic trends due to the greenhouse contribution.				

To estimate sea level rise at a particular location, the historic sea level rise is added to the projected rise that would occur if current trends were to continue. For example, the historic rate of sea level at Miami Beach is 2.39 mm per year (*Table 3-1*). Under current trends, sea level will rise 14 cm between 1990 and 2050 (2.39 mm per year x 60 yr x 1/10 cm/mm). Adding this 14 cm to the normalized values in *Table 3-2*, the mean estimate for 2050 is 25 cm (14 cm computed using *Table 3-1*, +11 cm from *Table 3-2*), with a one percent chance of a 49 cm rise (14 cm computed using *Table 3-1*+ 35 cm from *Table 3-2* or 0.8 ft which reflects an expected future sea level tend of 0.013 ft/year during the 1990 to 2050 period.

Since the historic sea level trends in *Table 3-1*, include the local vertical land motion, there is no need to adjust the estimated sea level rise to include historic vertical land motion unless there is strong evidence that the historical rate in vertical land motion has increase or decreased.

*Table 3-3* shows the probability distribution for Miami Beach for years 2025, 2050, and 2100.

**TABLE 3-3: PROBABILITY DISTRIBUTION OF SEA LEVEL RISE FOR MIAMI BEACH FOR YEARS 2025, 2050, 2075, AND 2100**

Percent chance exceedance	2025		2050		2075		2100	
	cm	ft	cm	ft	cm	ft	cm	ft
90	7	0.2	13	0.4	20	0.7	27	0.9
80	9	0.3	17	0.6	26	0.9	36	1.2
70	11	0.4	20	0.7	30	1.0	42	1.4
60	12	0.4	22	0.7	34	1.1	46	1.5
50	13	0.4	24	0.8	37	1.2	51	1.7
40	14	0.5	27	0.9	41	1.4	56	1.8
30	16	0.5	29	1.0	44	1.5	62	2.0
20	17	0.6	32	1.1	49	1.6	70	2.3
10	20	0.7	37	1.2	57	1.9	81	2.7
5	22	0.7	41	1.4	63	2.1	92	3.0
1	27	0.9	49	1.6	77	2.5	118	3.9
Mean	13	0.4	25	0.8	38	1.3	53	1.7

### 3.3 HYDROLOGY

It is predicted that the management of water would include supplying additional urban areas as the population expands and development increases. With the future development occurring in the project area in the without project condition, the impervious acreage of the basin will increase resulting in a reduction of groundwater recharge area. Without the project there will be less water storage in the basin and therefore more stormwater will be discharged to the primary canal system.

It is anticipated that a sea level rise of approximately six inches will occur over the next 50 years. This will impact control levels for canals within the project area to maintain a stable saltwater interface. This may also require the implementation of forward pumping to maintain the existing level of flood protection in the future.

These factors would contribute to increasing ecological stressors within the WCA 3A and 3B.

### 3.4 WATER MANAGEMENT

The following projects will be constructed regardless of the outcome of this study. Therefore, they represent the future without project condition.

### 3.4.1 Western C-11 Basin Critical Project

The purpose of this critical project is to improve the quality and timing of stormwater discharges to the Everglades Protection Area (EPA) from the Western C-11 Basin located in south-central Broward County. The S-9 pump station currently pumps untreated urban and agricultural stormwater runoff from the Western C-11 Basin directly into WCA 3A. The project involves construction of an Obermeyer gated spillway on C-11 (S-381) to divide western seepage waters (i.e., natural water) from eastern runoff waters in C-11 (i.e., urban water) and construction of an additional pumping station adjacent to S-9 (S-9A) to pump clean seepage back into the EPA. Construction of S-9A and S-381 has been completed.

### 3.4.2 Long-Term Plan

The long-term Everglades water quality goal is for all discharges to the EPA to achieve and maintain water quality standards, including compliance with the phosphorus criterion established in Rule 62-302.540, Florida Administrative code (F.A.C.). In order to achieve this goal, in October 2003, the District began implementation of the *Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan)*.

Substantial progress toward reducing phosphorus levels discharged into the EPA has been made by the State of Florida and other stakeholders. Since inception and through the end of April 2006, the Everglades Agricultural Area's (EAA) Best Management Practices (BMPs) and the stormwater treatment areas (STAs) combined have removed over 2,500 metric tons of total phosphorous (TP) that otherwise would have entered the Everglades. Of this amount, approximately 293 metric tons of TP were removed during Water Year 2006, the monitoring period from May 1, 2005 through April 30, 2006. Additional source control measures have been implemented in urban and other tributary basins included in the Everglades Stormwater Program. However, additional measures are necessary to achieve the Everglades water quality goal. The *Long-Term Plan* contains activities to achieve that goal and allows the State of Florida and the District to fulfill their obligations under the State's Everglades Forever Act.

The *Long-Term Plan* was found by the Florida Legislature to be the best available phosphorus reduction strategy for the EPA. The 2003 Florida legislature amended the 1994 Everglades Forever Act to include implementation of the *Long-Term Plan* as the optimal strategy for achieving the TP criterion in the EPA. The *Long-Term Plan* includes numerous projects such as enhancements to the existing STAs, continued STA optimization research, and enhanced maintenance and monitoring of the STAs. The *Long-Term Plan* also includes enhanced source controls programs in the EAA and in urban basins that discharge to the EPA.

The *Long-Term Plan* was submitted to the Florida Department of Environmental Protection (FDEP) in December 2003 as part of the long-term permit application required by the Everglades Forever Act. The SFWMD continued implementation of the *Long-Term Plan* throughout 2004, 2005 and 2006. The South Florida Water Management District's (SFWMD) first request for a minor revision to the *Long-Term Plan* was approved by the FDEP on April 15, 2004. This minor revision involved integrating with the CERP by assisting with the funding of the surveying work of the Bolles and Cross Canal Improvements, a project that will improve the SFWMD's ability to balance flows and loads among the STAs, which will in turn provide water quality benefits to the EPA. In November 2004, the SFWMD submitted and received approval to a request to the FDEP for a major revision to the *Long-Term Plan* to include construction of approximately 18,000 acres of additional STAs in the EAA. The FDEP approved this request in December 2004. This *Long-Term Plan* revision is an example of adaptive implementation with the overall objective of achieving and maintaining water quality standards in the EPA. All revision requests and approvals are posted on the SFWMD website at: [https://my.sfwmd.gov/portal/page?\\_pageid=2294,4946718,2294\\_4946541:2294\\_4946389&\\_dad=portal&\\_schema=PORTAL](https://my.sfwmd.gov/portal/page?_pageid=2294,4946718,2294_4946541:2294_4946389&_dad=portal&_schema=PORTAL).

Starting in February 2004, annual public meetings for the *Long-Term Plan* were held to update the public on the status of the projects midway through the first year of implementation and to receive public input on proposed modifications to the *Long-Term Plan*.

#### **3.4.2.1 Everglades Construction Project (ECP)**

The ECP consists of six large wetland treatment facilities deemed STAs containing approximately 44,000 acres of land previously used for agricultural purposes. These areas are designed to treat EAA runoff prior to discharge into the EPA. STA-2 discharges into WCA 2 via the L-6 borrow canal and STA 3/4 discharges into WCA 3A via the L-5 borrow canal.

The ECP was designed to treat EAA runoff to meet an interim phosphorus concentration target of 50 parts per billion (ppb) in discharges to the EPA. The *Long Term Plan* described above will make further water quality improvements in the ECP.

#### **3.4.3 Modified Water Deliveries to Everglades National Park**

The authorized plan of improvements consists of structural modifications and additions to the existing C&SF Project required to enable water deliveries for the restoration of more natural hydrologic conditions in Everglades National

Park (ENP). These improvements include: (1) Structures S-349A, S-349B and S-349C in the Levee 67A (L-67A) borrow canal to prevent overdrainage of the northern portion of WCA 3A; (2) Structures S-345A, S-354B and S-354C through the L-67A to enable the discharge of water from WCA 3A to WCA 3B; (3) Structures S-355A and S-355B in the L-29 to enable the release of water from WCA 3B to ENP; (4) modifications to existing S-334; and (5) raising US 41 (Tamiami Trail). Together, these improvements will enable the re-establishment of the historic Shark River Slough flow-way from WCA 3A through WCA 3B to ENP.

In order to prevent this redistribution of water from adversely impacting existing development, several mitigation features are included in the plan. One Miccosukee Indian camp (Tigertail camp) will be raised above the anticipated flood stages. The East Everglades residential area, also known as the 8.5 Square Mile Area (8.5 SMA), will be provided with perimeter levees and a seepage collector canal. New pump station S-357 will remove water from the seepage collector canal to prevent increased water levels inside the 8.5 SMA after project implementation (i.e. flood mitigation). Another new pump station, S-356, was constructed adjacent to existing S-334 near the intersection of Tamiami Trail (US 41) and the L-31N borrow canal. It will remove additional seepage from ENP into the L-31N borrow canal and thereby prevent increased flood damages east of L-31N or in the downstream C-111 Basin. Existing roads and borrow canals within the ENP expansion area that would act as hydrologic barriers will be degraded to natural ground. Additionally, garbage will be removed from the roads along the proposed levee/canal alignment around the residential area.

### **3.5 WATER RESOURCES**

Local water supply utilities and individual users obtain water from two primary sources: 1) by withdrawal from a surface water body such as a canal, lake, river, or wetland; or 2) by withdrawal from a groundwater well. Virtually all of the Lower East Coast (LEC) public water supply is from groundwater except for the City of West Palm Beach. Throughout much of the LEC planning area, a regional system of canals provides a means to move water from one location to another. Water is transported generally from north to south, from Lake Okeechobee through water control structures to the EAA canals and into the STAs. Water flows from the STAs to the WCAs. From the WCA, water is discharged via canals to ENP and coastal basins. Water in coastal canals provides recharge to surficial aquifers, thus supplementing groundwater supplies and helping replenish water in lakes, rivers, and wetlands

### 3.5.1 Water Supply

Future water demands for urban and agricultural areas that utilize the C&SF Project were projected for the study area. For a comprehensive discussion of projected water demands that are assumed to be in place in the future without project condition refer to Section 4.8 of the *Central and Southern Florida Project Comprehensive Review Study, Final Integrated Feasibility Report and Programmatic Environmental Impact Statement*, dated April 1999.

In summary, the LEC urban area was subdivided into four service areas: North Palm Beach, Service Area 1, Service Area 2, and Service Area 3. The BCWPA Project is contained in Service Areas 2 and 3. Service Area 2 includes central and southern Broward County and a small portion of northern Miami-Dade County. Service Area 3 is made up of the remainder of northern, central, and southern Miami-Dade County and Monroe County. For urban areas of the LEC, a water demand forecasting software (IWR-MAIN) was used to make projections. Underlying population and economic growth assumptions used a combination of the University of Florida (UF) Bureau of Economic and Business Research (BEBR) (short-term) and Bureau of Economic Analysis, U.S. Department of Commerce (long-term) growth projections. For Service Area 3, public water demands have been increased to reflect Miami-Dade County's estimation of its future population growth as influenced by recent immigration legislation and other factors. For Service Area 2, public water demands that were used are those contained in the *Final Report Municipal and Industrial Water Use Forecast Lake Okeechobee Regulation Schedule Study* (USACE, 1996). These included the UF Economic and Business Research unrestricted demand set, which reflected UF BEBR population projections. All projected service area demands were reduced by 11 percent to account for the expected implementation of the SFWMD's mandatory water conservation program (e.g., implementation of ultra-low flow fixtures and lawn sprinkler restrictions in residential and commercial land use). Future irrigation demands in the LEC Service Area were based on projected land use and average annual permitted allocation.

In Service Area 2, municipal and industrial water demands in the future without project condition are projected to increase from 299.2 million gallons per day (MGD) in 2000 to 450.5 MGD in 2050, a 50.6 percent increase. For Service Area 3, municipal and industrial water demands in the future without project condition are projected to increase from 373.2 MGD in 2000 to 502.3 MGD in 2050, a 34.6 percent increase.

### 3.5.2 Flood Damage Reduction

The C&SF Project was conceived and authorized to provide regional flood damage reduction for south Florida. Throughout the C&SF project area there are varying levels of flood damage reduction. This is primarily due to variations

in the original design goals and other changes. Many areas that were expected to remain agricultural were developed, which changed the level of flood damage reduction offered by the project. However, the existing investment in flood damage reduction infrastructure was never intended to totally eliminate flooding in developed areas, and flooding does occur periodically.

Flood damage reduction needs have increased since the original flood project was constructed and will likely continue to increase in the future. As agricultural and urban development continues, the volume, duration, and frequency of floodwaters may increase and the actual level of flood damage reduction may decline in some areas within the future without project condition. There are opportunities to further reduce the extent of damages from flooding through operational and structural changes in the C&SF Project and local drainage systems. These opportunities exist within the BCWPA project area through implementation of the project.

### **3.6 WATER QUALITY**

Water quality throughout south Florida has deteriorated over the past 50 years since construction started on the C&SF Project. Many wetlands that acted as natural filters and retention areas either can no longer serve these purposes or have been lost to drainage or development. Urban and agricultural development and expansion of drainage systems result in the rapid discharge of runoff containing pollutants into south Florida's water bodies. As a result, many water bodies throughout south Florida presently do not meet water quality standards. Untreated urban and agricultural stormwater that does not meet water quality standards is sometimes sent to the natural areas. Excessive nutrients entering the Everglades have led to an overabundance of cattails, a visible sign of unfavorable water quality conditions and a potential decline in ecological productivity.

Future water quality conditions are expected to be better than the existing conditions in south Florida. To improve water quality, it is expected that State, tribal, regional, and local programs will be implemented to varying degrees throughout the study area during the next 50 years. Ongoing restoration projects in the Kissimmee River watershed are expected to beneficially affect water quality. Current efforts to reduce inputs of excessive nutrients into the Everglades through the ECP should substantially slow the spread of cattails and other plants with high nutrient tolerances and result in a slow recovery of natural vegetation patterns in some nutrient-stressed parts of the system. Proposed modifications to the Lake Okeechobee regulation schedule and water quality improvement projects should improve water quality conditions in those water bodies. Nonetheless, the future without plan condition, while resulting in water quality improvements over existing conditions within the project area,

would not result in sustainable south Florida ecosystems. Excess nutrients would likely continue as the population in adjacent urban areas increases and as urban development replaces the few remaining open spaces. Water from the natural system would continue to seep out causing further negative impacts.

Within the BCWPA project area, the C-11 West Basin is served by the S-9 pump station that pumps from the C-11 West Canal to the WCA 3A. The C-11 and C-9 Basins are maintained at a lower water level than WCA 3 because of flood protection instituted with the C&SF Project. The north-south oriented levee borrow canals and other secondary drainage canals collect groundwater seepage in the basin and direct the water to the C-11 West Canal. The seepage is then returned.

The target established by the FDEP for the S-9 pump station, which pumps seepage and stormwater from the C-11 West Basin to WCA 3A, is 10 ppb TP. Based on sampling data, the average annual concentration of TP being pumped through the S-9 pump station is 18 ppb. There are several ongoing efforts that are intended to achieve the required levels.

The Western C-11 Water Quality Treatment Critical Project involves construction of an Obermeyer gated spillway on C-11 (S-381) to divide western seepage waters (i.e., natural system water low in TP) from eastern runoff waters in C-11 (i.e., urban water high in TP) and construction of an additional pump station adjacent to S-9 (S-9A) to pump low TP seepage back into the EPA. The S-9A pump station and S-381 structure have been constructed and are currently operating to return collected seepage to WCA 3A at the exclusion of urban waters to the east of S-381 when not under flood damage reduction operations.

In addition to the construction of the critical project, a BMP program is being established within the C-11 West Basin to reduce pollutant loads currently discharged in stormwater to the C-11 West Canal. This program includes implementation of nursery, equine, and turf and landscape BMPs within the basin that will reduce nutrient loadings. Also, drainage districts within the C-11 West Basin have or will implement capital improvement projects and operational changes to provide additional pre-treatment of stormwater runoff prior to discharge to the C-11 West Canal. The Broward Everglades Working Group was convened to develop a C-11 West Basin Pollution Reduction Action Plan to achieve reductions in phosphorous concentration in stormwater and landscape runoff from the basin and in support of Everglades restoration. The group includes representatives from local and state governmental agencies, municipalities, drainage/water control districts, and other affected parties in the C-11 West Basin. The efforts of this group are reflected in the "C-11 West Basin Pollution Reduction Action Plan" posted at [www.broward.org/waterresources](http://www.broward.org/waterresources).

Increased enforcement through the Regulatory branch of the SFWMD is underway within this basin to eliminate point source pollutant discharged to the C-11 West Basin. Increased monitoring of stormwater within the basin has and will continue to identify "hot spots" within the basin in order to focus enforcement efforts.

In summary, the four pronged approach 1) the Western C-11 Water Quality Treatment Improvement Critical Project, 2) the BMP program, 3) the monitoring program and 4) the Regulatory enforcement effort will help reduce excessive nutrient discharges to the EPA and will enhance the SFWMD's ability to meet the State's water quality standards.

### **3.7 VEGETATIVE COMMUNITIES**

#### **3.7.1 C-11 and C-9 Sub-Areas**

Much of the existing wetland systems within the C-9 and C-11 sub-areas have been altered and drained for other land uses, which has allowed the invasion of exotic species such as *Melaleuca*. Land uses within the areas are primarily agriculture, abandoned agriculture, rock mining, and minimally disturbed vacant lands. Because of rapidly increasing residential and commercial development pressure, it is likely that much of the area within the impoundment footprints would be at risk for development although existing wetland mitigation sites within the C-11 and C-9 sub-areas would remain. Development of the area would be subject to regulatory requirements including compensatory mitigation, on or off site, to offset wetland impacts. After clearing and grading, developed areas are likely to be landscaped with ornamental varieties of vegetation associated with residential and commercial development. Therefore, without the project, existing wetland mitigation sites along with potentially other compensation or landscaped areas within the project area would be preserved in a patchwork of small "islands" within a mosaic of urban and commercial development.

#### **3.7.2 WCA 3A/3B Seepage Management Sub-Area**

This area falls outside the Urban Development Boundary and is not expected to be developed. The area is primarily composed of mixed wetland communities, though dense stands of *Melaleuca* have invaded much of the northern section of the WCA 3A/3B Seepage Management Area (SMA). The future without project wetland function is not expected to change. Exotic vegetation will persist, but due to management, the existing areas of exotic encroachment are not expected to increase in spatial extent.

### 3.7.3 WCA 3 Sub-Area

Much of WCA 3 has been impacted by changes to the natural patterns of hydrology, fire, and nutrient supply. Some level of ecological improvement will occur within WCA 3 as a result of implementation of other projects outside the BCWPA Project. However, inflows of polluted water from the Western C-11 Basin are expected to continue to degrade the water quality within the zone of influence, and facilitate the shift from a sawgrass-dominated marsh community to cattail-dominated marsh community without the project. Loss of low-elevation tree islands will continue as a result of increased water depth and duration in the WCA.

## 3.8 FISH AND WILDLIFE RESOURCES

The residential and commercial development would eliminate the existing fish and wildlife habitat on the project site with the exception of the fish and wildlife habitat provided by the existing mitigation areas which would remain but likely be reduced due to pressure from surrounding development. Residential developments have some limited potential for habitat suitable for smaller mammals and birds. In addition, wetland areas created as compensatory mitigation associated with development would provide some fish and wildlife benefit. However, this could be in a different basin or county. The WCA 3A/3B SMA and WCA 3A and 3B would continue to provide some level of fish and wildlife resources recognizing that continued degradation of habitat under the "No Action" alternative would result in less use by fish and wildlife.

Some existing wetland mitigation sites within the project area would likely be protected, thus providing quality fish and wildlife habitat into the future. However, it is likely that a future without the project would result in an overall loss of fish and wildlife resources as a result of development, land conversion, and continued degradation of habitat quality in WCA 3 due to an overabundance of water in the wet season and too little water in the dry season.

The existing wetland mitigation sites within the study area would also likely provide limited habitat for wetland species such as the Federally and state listed wood stork and other state listed wading birds and would be available in the future without project scenario. Also, based on the ability of the Federally listed indigo snake to utilize a variety of altered and unaltered habitats, it can be assumed that the snake would continue to use habitat within the project area without the project. Other Federally and State listed species will continue to use natural areas within the study area, though the quality of these habitats are expected to decline without some intervention. Thus, without the environmental benefits of the BCWPA Project, direct loss of habitat, as well as degradation of existing habitat function will likely result in a continued decline in threatened, endangered, and state listed species within the next 50 years.

In the future without project condition, Essential Fish Habitat would continue to be adversely impacted through discharge of stormwater from the C-11 West Basin through the C-11 Canal to the Dania Cutoff Canal and the Atlantic Ocean and from the C-9 Basin through the C-9 (Snake Creek) Canal into North Biscayne Bay.

### 3.9 LAND USE

The nine county region, as well as the cities within the study area, are expected to continue to grow both in population and in the development that population demands. As depicted in *Table 3-4*, both Florida and the nine-county region are expected to grow at a rate exceeding the national expected growth rate. But the rate of growth in the nine-county region is expected to diminish in the future, as is the rate of growth of Florida. This is consistent with the concept of urban sprawl. As most highly demanded real estate is developed and an area becomes built-out, its ability or willingness to absorb additional population growth through more intense methods of development becomes limited. Counties that have traditionally grown at a rate exceeding the rate of growth of the state will slow, and the most intense future growth in population will occur in other counties.

Residential development and available lands zoned for residential construction account for 63 percent of the total developed areas and 61 percent of total vacant lands as indicated in *Table 3-4*. Commercial, industrial and municipal concerns account for 27 percent of existing development while 37 percent of available lands are zoned for this purpose. Lands utilized for agricultural, recreation or conservation purposes represent 11 percent of the total lands but only 4 percent of undeveloped lands have been set aside for these purposes.

Growth beyond available developable land will require changes in land use and possible rezoning of existing land. Within the study area there is land that could be developed but is not currently zoned for development. Future land use maps indicate that the City of Weston does not foresee rezoning areas now classified as agricultural or conservation. At this time, intensive development of land within the cities of the study area is possible but unlikely. Population intensive development in either Pembroke Pines or Southwest Ranches would result in destruction of the rural, agricultural lifestyle that these cities are trying to maintain. Likewise in the City of Weston, development of population intensive structures is unlikely due to the affluence of the city. The continued urban sprawl of the Miami area will pressure the citizens of the cities to rezone and develop available lands.

**TABLE 3-4: FUTURE LAND USE IN BROWARD COUNTY**

Land Use	Total Acres	Vacant Acres	Water Preserve	Developed Area
Conservation	3,423	-	1,151	2,272
Recreation, Open Space	10,948	137	56	10,755
Commercial Recreation	7,828	87	-	7,741
Agriculture	12,018	1,243	8,655	2,121
Sub-total	34,217	1,467	9,862	22,889
Rural Ranches	5,617	1,916	-	3,701
Rural Estate	1,437	520	-	918
Estate	17,548	6,982	-	10,566
Residential	135,824	13,093	1,302	121,428
Sub-total	160,426	22,511	1,302	136,613
Municipal	16,283	3,113	2	13,168
Commerical	22,177	4,647	17	17,513
Transportation	14,295	426	24	13,845
Utilities	2,045	155	319	2,123
Industrial	16,797	4,828	-	11,418
Sub-total	71,597	13,169	362	58,067
Total	266,240	37,147	11,526	217,569

Source: Broward County Office of Urban Planning and Redevelopment, "Accommodating Population Growth in Broward County 2000 to 2030." August 2003

### 3.10 RECREATIONAL RESOURCES

With continual development and growth in Broward County, recreational demands are anticipated to increase and the current level of recreational opportunities will be insufficient. In *Table 3-5*, the South Florida Region (Region 11), as defined by the Florida State Comprehensive Outdoor Recreation Plan (SCORP), displays the various supply and need for recreational resources in the project area. The table shows that bicycle riding mileage, freshwater fishing areas, hiking trails, and hunting areas have reached their current capacities and require additional units for each participant to achieve maximum utility.

**TABLE 3-5: SOUTH FLORIDA (REGION 11) ESTIMATED DEMAND AND NEED FOR OUTDOOR RECREATION RESOURCES AND FACILITIES, 2005 & 2010**

Recreational Activity	2005		2010	
	Demand (User Occasions)	Resource Needs (Units)	Demand (User Occasions)	Resource Needs (Units)
Archaeologic/ Historic Site	3,750,011	0 Sites	4,120,126	0 Sites
Bicycle Riding	22,432,994	1,470.77 Miles	24,089,784	1,607.60 Miles
Camping (RV/Trailer)	2,562,521	0 Sites	2,779,565	0 Sites
Camping (Tent)	1,043,150	201 Sites	1,136,981	317 Sites
Freshwater Beach Activities	1,564,085	1.38 Miles	1,654,262	1.59 Miles
Freshwater Boat Ramp Use	180,639	0 Lanes	201,078	0 Lanes
Freshwater Fishing	868,971	10,685.56 Feet	924,095	12,051.24 Feet
Hiking	1,524,454	351.87 Miles	1,672,767	413.11 Miles
Horseback Riding	2,036,790	0 Miles	2,189,849	0 Miles
Hunting	733,076	178,480.96 Acres	772,849	235,427.65 Acres
Nature Study	1,784,927	21.72 Miles	1,988,143	0 Miles
Picnicking	4,652,960	0 Tables	5,137,669	0 Tables
Saltwater Beach Activities	39,556,285	25.51 Miles	44,168,645	36.33 Miles
Saltwater Boat Ramp Use	1,496,558	0 Lanes	1,616,760	0 Lanes
Saltwater Fishing	2,379,441	0 Feet	2,639,736	0 Feet

*Source: Florida Department of Environmental Protection, 2000*

### 3.11 AESTHETICS

With an anticipated increase in urbanization, changes in the study area are expected to reflect population growth. Aesthetically, there will be more high rises and less open land.

### 3.12 SOCIO-ECONOMIC CONDITIONS

The future will see a continuation of above average population growth until saturation and, thereafter, a general decline in growth rates. Also to be expected is a shift of income and employment from Dade County to the surrounding counties of Broward and Palm Beach.

It is expected that the nine county region as well as the cities that define the study area will continue to grow both in population and in the development that population demands. As depicted in **Table 3-6** both Florida and the nine-county region are expected to grow at a rate exceeding the national growth rate. But the growth rate in the nine-county region is expected to diminish in the future, as is the rate of growth of the State of Florida. In Florida and within the nine-county region, year over year population growth percentages are expected to decline over a fifty-year period. While absolute populations of the counties will continue to increase, the rate at which individuals are added to those populations will not be as great as historic growth rates. This is to be expected and is consistent with the concept of urban sprawl. As the most demanded real estate is developed and an area becomes built out, its ability or willingness to absorb additional population growth through more intense methods of development becomes limited. Counties that have traditionally grown at a rate exceeding the rate of growth of the State will slow and it is to be expected that the most intense growth in population will occur in other counties.

**TABLE 3-6: COUNTY POPULATION ESTIMATES 2000-2030 (1,000)**

County	2000	2005	2010	2015	2020	2025	2030
US	275,306	287,716	299,862	312,268	324,927	337,815	351,070
Florida	15,983	17,760	19,398	21,000	22,589	24,105	25,494
Broward	1,623	1,767	1,929	2,088	2,245	2,395	2,532
Glades	11	11	12	13	14	14	15
Hendry	36	39	43	47	51	55	59
Lee	441	524	593	660	728	793	852
Martin	127	140	154	167	180	192	203
Miami-Dade	2,254	2,414	2,574	2,731	2,886	3,034	3,169
Monroe	80	81	82	82	83	83	84
Okeechobee	36	38	40	42	44	46	48
Palm Beach	1,131	1,268	1,402	1,535	1,666	1,792	1,909
Sub Total	5,738	6,282	6,829	7,364	7,896	8,405	8,871
Nine County							
Percentage of Florida							
Population	35.90%	35.37%	35.20%	35.07%	34.96%	34.87%	34.79%
Florida Year over							
Year Growth	11.12%	9.22%	8.26%	7.56%	6.71%	5.76%	
US Year over Year							
Growth	4.51%	4.22%	4.14%	4.05%	3.97%	3.92%	
Nine County Year							
over Year Growth	9.48%	8.70%	7.85%	7.22%	6.44%	5.54%	

Source: 2000 U.S. Census, University of Florida Bureau of Economic and Business Research, dated February 2002 (2005-2030 County Projections).

### 3.13 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

As growth and development spread, there is a greater likelihood for discovering additional HTRW.

### 3.14 CULTURAL RESOURCES

Both time and weather have an adverse effect on cultural resources; however, continued agriculture and construction created by urban sprawl, will expedite the alteration of the physical environment, hastening the adverse effects to historical properties. One of the three known sites in the project area is located within an established mitigation area; therefore, under the "No Action" alternative, the wetland area would be protected in perpetuity, thus the cultural site would likely remain as existing. The other two sites would be evaluated through the USACE's Regulatory procedures during conversion of the site to development which would require a regulatory permit. A prehistoric site in the WCA 3A/3B SMA is known to contain intact human remains. Under the "No Action" alternative, the WCA 3A/3B SMA would not likely be developed, thus the cultural site would likely remain as existing.

### 3.15 AIR QUALITY

In the future, due to increased populations and urbanization, air quality is expected to be degraded, while still complying with air quality standards.

### 3.16 NOISE

Noise is expected to increase due to increased populations, urbanization, and probable buildings being constructed in the area.

### 3.17 SUMMARY OF EXISTING VS. FUTURE WITHOUT CONDITIONS

*Table 3-7* illustrates the differences between the existing condition and the future without project condition in the study area.

**TABLE 3-7: EXISTING VS FUTURE WITHOUT CONDITIONS IN THE STUDY AREA**

<b>Resources</b>	<b>Existing Condition</b>	<b>Future Without Condition</b>
Physical Landscape: Geology, Topography & Soils	The soils within the BCWPA Project are mostly histosols. These soils are dominated by level, very poorly drained organic soils underlain by marl and/or limestone. Ecosystems are largely swamps and marshes.	Project lands would be disposed and developed consistent with surrounding land use patterns.
Climate	Seasonal rainfall patterns in south Florida resemble wet and dry season patterns of the humid tropics more than winter and summer patterns of temperate latitudes.	Hydrologic data used for both the existing and future without plan condition was based upon an 8-year period, 1988-1995, which is representative of what is expected to occur in the study area in the future.
Hydrology	C-9 and C-11 impoundment footprints contain areas of mitigation wetlands. Level of service of flood protection will be maintained. The WCA 3A/3B SMA is currently a wetland buffer for WCAs that contain wetlands with areas covered by Melaleuca.	Hydrology of the site will likely be altered to accommodate future urban development. Land elevations will be raised with fill material and will be associated with the construction of stormwater management facilities.

Resources	Existing Condition	Future Without Condition
Water Management	Structures are designed to protect adjacent coastal area against floods, store water in conservation areas west of levees, control water elevations in adjacent areas, prevent saltwater intrusion and over drainage, provide freshwater to the Biscayne Bay, and provide water for conservation and public consumption. <i>Flooding</i> . Areas become more flooded during heavy rainfall events due to antecedent conditions that cause saturation and high runoff from both developed and undeveloped areas.	The Western C-11 Basin Water Quality Treatment Project and ECP will be constructed regardless of BCWPA project. <i>Flooding</i> . Flood damage reduction needs have increased since the original flood project was constructed and will likely continue to increase in the future.
Water Resources	Rapid wet season flood release, along with the lack of retention in Lake Okeechobee, the reduced area of northern historical sawgrass plains, and loss of eastern peripheral wetlands and sloughs, have severely reduced storage within the system causing excessive dry season demands on the regional system.	The BCWPA Project is contained in LEC Service Areas 2 and 3. In Service Areas 2 and 3, municipal and industrial water demands are projected to increase 50.6% and 34.6%, respectively.
Water Quality	Water quality in the study area is significantly influenced by development, which contributes non-point and point sources of pollution to the system. Excessive nutrients, particularly TP, entering the Everglades have led to an overabundance of cattails, a visible sign of unfavorable water quality conditions and a potential decline in ecological productivity.	The future without plan condition, while resulting in water quality improvements due to implementation of BMPs over existing conditions in certain subregions of the area, would not result in sustainable south Florida ecosystems.

<b>Resources</b>	<b>Existing Condition</b>	<b>Future Without Condition</b>
Vegetative Communities	Short and long hydroperiod wetlands, agricultural and pasturelands, forested and non-forested uplands including tree islands, and developed areas. Approximately 59 percent of the study area is wetland.	Much of the wetland function and value to the existing vegetative communities except for the permitted mitigation areas would likely be converted to development consistent with surrounding areas.
Fish and Wildlife Resources	Aquatic fauna populations including fishes, invertebrates, amphibians and reptiles, and birds are currently diminished due to a reduction in the spatial extent of Everglades wetlands (estimated loss of 50 percent) and changes in the hydrology in remaining wetlands.	A future without project is likely to result in an overall loss of fish and wildlife resources within the next 50 years as a result of development and land conversion and continued habitat degradation in WCA 3.
Threatened & Endangered Species	Six Federally listed threatened or endangered wildlife species are known to exist or potentially exist within the study area: wood stork, snail kite, bald eagle, eastern indigo snake, Florida panther, and West Indian manatee. Additionally, the American alligator, which is listed as T/SA with the American crocodile, is present.	Increased loss of habitat options will likely result in a continued decline in T&E species populations within the next 50 years as a result of development and land conversion.
Land Use	Largely rural with moderate concentrations of residential and light commercial in the City of Weston and along the northern and eastern portions of Broward County.	Continued concentration of populations within Broward County but little expected change in land zoning resulting in more intensive land development.
Recreational Resources	Recreation opportunities abound in and near the study area, including water and nature activities, parks, and hunting areas.	With continual development and growth in Broward County, recreational demands are anticipated to increase and the current level of recreational opportunities will be insufficient.

<b>Resources</b>	<b>Existing Condition</b>	<b>Future Without Condition</b>
Aesthetics	Natural areas are composed of a variety of upland and wetland-based ecosystems, with agricultural and urban areas and the Intracoastal Waterway shoreline.	With an anticipated increase in urbanization, changes in the project area are expected to reflect population growth. Aesthetically, there will be more high rises and less open land.
Socio-Economic Conditions	Study area population growth rates exceed state and national averages. Concentrations of employment and income within Dade, Broward and Palm Beach Counties due to presence of large tourist and retirement based industries.	Continuation of above average population growth until saturation and thereafter a general decline in growth rates. A shift of income and employment from Dade county to surrounding counties of Broward and Palm Beach.
Hazardous, Toxic, and Radioactive Waste	The HTRW database review indicated that several landfills, CERCLA-listed priority sites are located within and in the vicinity of the study area.	As growth and development spread, there is a greater likelihood for discovering additional HTRW.
Cultural Resources	Significant historical properties are a non-renewable resource constantly under threat of destruction or degradation from urban development, agricultural, and other ground-disturbing land use.	The project area will probably be developed as an urban area, resulting in the destruction of any historical properties.
Air Quality	Existing air quality within south Florida is considered good, and the region attains all National Ambient Air Quality Standards.	In the future, due to increased populations and urbanization, air quality is expected to be degraded while still complying with air quality standards.
Noise	Within the major natural areas of south Florida, external sources of noise are limited and have low occurrence.	Noise impacts would most likely increase over what is presently associated with the study area.