



**South Florida
Ecosystem
Restoration
Integrated Schedule
Development**



WRAC/Task Force Meeting

December 05, 2007

restoration
restoration

Topics

- Status of Integrated Delivery Schedule
 - Background
 - Methodology/Process used in Developing IDS
- 3 Themes of IDS
- Next Steps

Background

- Yellow Book
- Master Implementation Sequencing Plan (MISP)
- Acceler8 Projects
- GAO Report (May 2007)
- NAS Report to Congress
- Incremental Adaptive Restoration (IAR)

Integrated Schedule Guiding Principles

- Projects should be implemented in sequence that achieves goals at earliest possible time, consistent with funding
- As appropriate, physical dependencies should drive order of projects
- Sequencing should facilitate IAR approach
- As appropriate, use the Interim Goals to measure restoration progress
- Key points in implementation are defined by new system operating manuals

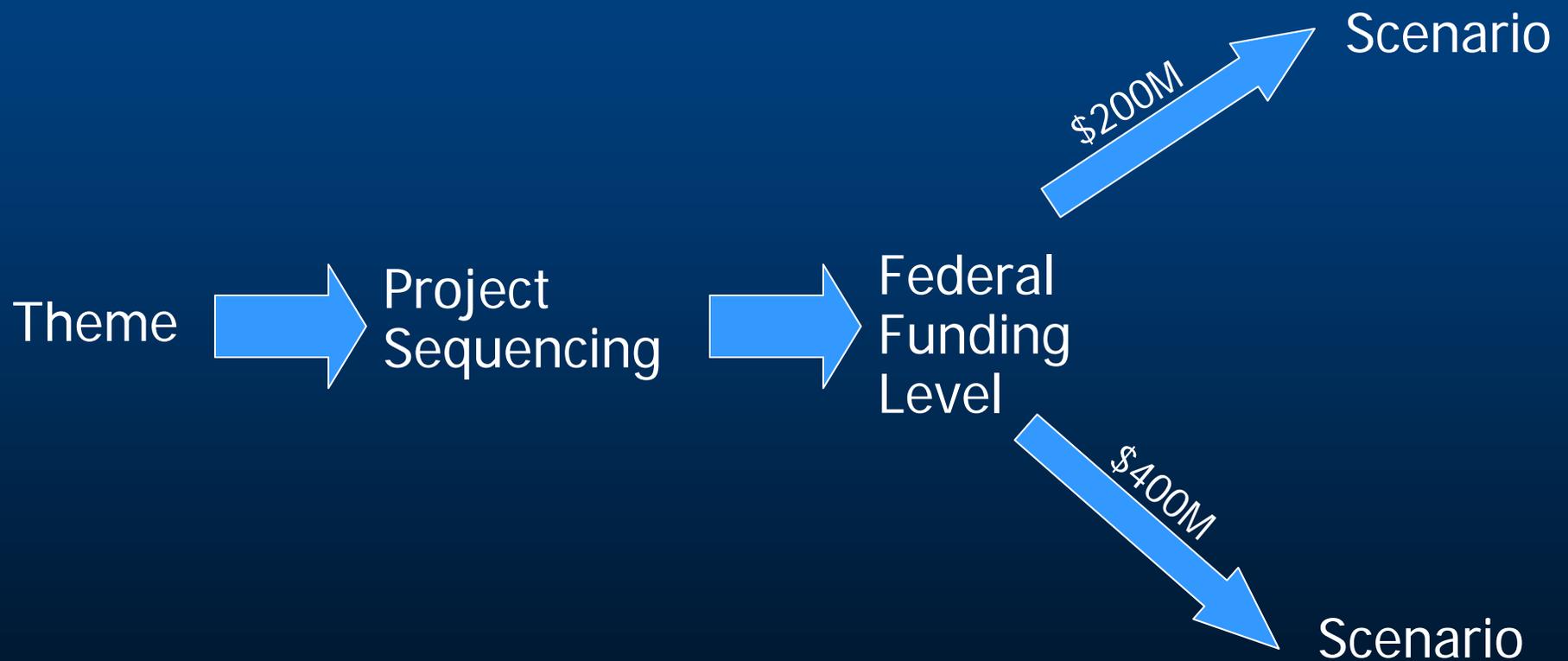
Since the Last Meeting...

- Developed revised “themes” for IDS based on discussions
- Coordinated themes with RECOVER ad-hoc team, SFWMD, FWS
- Updated program costs based on completed PIRs/PPDRs
- Developed initial “splash sheets” to 2020 for each theme and funding level (\$200M and \$400M per year)
- Foundation projects are included and remain a priority for funding

Selected Themes

- Restore Sheetflow to the Everglades and Southern Estuaries
- Focus on Lake Okeechobee and Northern Estuaries
- Focus on Optimizing Storage and Flexibility

Scenario Development



Sheetflow

- Restoration of a more natural overland movement of water to and through the Everglades to downstream estuaries such that the velocities, timing and distribution of the moving water more closely resembles conditions that existed in the pre-drainage environment

Restore Sheetflow to the Everglades

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Accelerated

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
 <p>Water Storage & Operations</p>	<p>C-51 Storage Component (CS)</p> <p>Everglades Agricultural Area (EAA) Storage #1 (A8) (CS)</p>	<p>Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS)</p>	<p>C-111 Spreader Canal Western Features (A8) (CS)</p> <p>Lake Okeechobee ASR Pilot (CS)</p>			
		<div style="background-color: black; color: white; padding: 5px;">System Operating Manual</div>			<div style="background-color: black; color: white; padding: 5px;">System Operating Manual</div>	
 <p>Historic Flow Patterns</p>	<p>Decomartmentalization (DECOMP) Physical Model (CS)</p>	<p>Biscayne Bay Coastal Wetlands – Tidal Wetlands Restoration (A8) (CS)</p> <p>Kissimmee River Restoration (CS)</p>	<p>Modified Water Deliveries Tamiami Trail (F)</p>		<p>C-111 Spreader Canal Eastern Features (CS)</p>	
 <p>Eastward Seepage Reduction</p>	<p>Modified Water Deliveries (MWD) 8.5 SMA (F)</p>	<p>C-111 South Dade (CS)</p>	<p>MWD Conveyance & Seepage (F)</p> <p>L-31 N Seepage Pilot (CS)</p>			<p>Broward County Water Preserve Area (WPA) (CS)</p>
 <p>Water Quality Improvements</p>	<p>Seminole Big Cypress Reservation Plan (E&SF) (CS)</p>		<p>EAA STA Expansions (NF)</p>			
 <p>Retain, Improve, Expand Habitats</p>		<p>Picayune Strand (A8) (CS)</p>	<p>Picayune Strand (CS)</p>			

Cumulative Benefits By Period

■ : foundation projects

\$200 M

Restore Sheetflow to the Everglades

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Accelerated

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
 <p>Water Storage & Operations</p>	<p>C-51 Storage Component (CS)</p> <p>Lake Okeechobee ASR Pilot (CS)</p> <p>Everglades Agricultural Area (EAA) Storage #1 (A8) (CS)</p>	<p>Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS)</p>	<p>C-111 Spreader Canal Western Features (A8) (CS)</p>		<p>Lake Okeechobee Watershed (LOW) Storage Component (CS)</p>	
		System Operating Manual			System Operating Manual	
 <p>Historic Flow Patterns</p>	<p>Decomartmentalization (DECOMP) Physical Model (CS)</p>	<p>Biscayne Bay Coastal Wetlands – Tidal Wetlands Restoration (A8) (CS)</p> <p>Kissimmee River Restoration (CS)</p>	<p>Modified Water Deliveries Tamiami Trail (F)</p>	<p>DECOMP #1 Miami/North New River Canals (CS)</p> <p>C-111 Spreader Canal Eastern Features (CS)</p>	<p>Biscayne Bay Coastal Wetlands – Freshwater Wetland Restoration (CS)</p>	
 <p>Eastward Seepage Reduction</p>	<p>Modified Water Deliveries (MWD) 8.5 SMA (F)</p> <p>L-31 N Seepage Pilot (CS)</p>	<p>C-111 South Dade (CS)</p>	<p>MWD Conveyance & Seepage (F)</p> <p>Broward County Water Preserve Area (WPA) (CS)</p>			<p>ENP Seepage (CS)</p>
 <p>Water Quality Improvements</p>	<p>Seminole Big Cypress Reservation Plan (E&SF) (CS)</p>		<p>EAA STA Expansions (NF)</p>			
 <p>Retain, Improve, Expand Habitats</p>		<p>Picayune Strand (A8) (CS)</p> <p>Picayune Strand (CS)</p>				

Cumulative Benefits By Period

■ : foundation projects

\$400 M

RESTORE SHEETFLOW – PROJECTS TO BE DETERMINED

Water Storage & Operations		<ul style="list-style-type: none"> • C-43 ASR (CS) • Caloosahatchee Back Pumping (CS) • Central Lake Belt Storage (CS) • EAA Storage #2 (CS) 	<ul style="list-style-type: none"> • Lake Belt In-ground Tech Pilot (CS) • North Lake Belt Storage (CS) • Palm Beach County (PBC) Ag Reserve (CS) 	<ul style="list-style-type: none"> • Lake Okeechobee ASR (CS) • Lake Okeechobee Watershed (CS) • Lake Okeechobee ASR (CS) • Palm Beach County (PBC) Ag Reserve ASR
Historic Flow Patterns		<ul style="list-style-type: none"> • Big Cypress L-28 (CS) • Florida Keys Tidal Restoration (CS) • Flows to Eastern WCA (CS) • Loxahatchee National Wildlife Structure (CS) 	<ul style="list-style-type: none"> • WCA 2B Flows to ENP (CS) • DECOMP #1 North New River/Miami Canals • DECOMP Conveyance & Sheetflow – NE Shark River Slough 	<ul style="list-style-type: none"> • DECOMP Conveyance & Sheetflow – West Shark River Slough • Biscayne Bay Coastal Wetland – Freshwater Wetland Restoration (CS)
Water Quality		<ul style="list-style-type: none"> • South Miami Dade – Reuse (CS) • Wastewater Reuse Tech Pilot (CS) • West Miami-Dade Reuse (CS) 		
E. Seepage Reduction		<ul style="list-style-type: none"> • ENP Seepage (CS) 		
Water Storage & Operations		<ul style="list-style-type: none"> • C-43 ASR (CS) • Caloosahatchee Back Pumping (CS) • Central Lake Belt Storage (CS) • EAA Storage #2 (CS) 	<ul style="list-style-type: none"> • Lake Belt In-ground Tech Pilot (CS) • Lake Okeechobee ASR (CS) • North Lake Belt Storage (CS) • Palm Beach County (PBC) Ag Reserve (CS) 	<ul style="list-style-type: none"> • Lake Okeechobee ASR (CS) • Palm Beach County (PBC) Ag Reserve ASR
Historic Flow Patterns		<ul style="list-style-type: none"> • Big Cypress L-28 (CS) • Florida Keys Tidal Restoration (CS) • Flows to Eastern WCA (CS) • Loxahatchee National Wildlife Structure (CS) 	<ul style="list-style-type: none"> • WCA 2B Flows to ENP (CS) • DECOMP Conveyance & Sheetflow – NE Shark River Slough • DECOMP Conveyance & Sheetflow – West Shark River Slough 	
Water Quality		<ul style="list-style-type: none"> • South Miami Dade – Reuse (CS) • Wastewater Reuse Tech Pilot (CS) • West Miami-Dade Reuse (CS) 		
E. Seepage Reduction		<ul style="list-style-type: none"> • Broward County WPA (CS) 		

Not Assigned to A Theme

Strazulla

Acme Basin B

Lakes Park

C-4 Structure

Flows to NW & Central WCA3A

Henderson Creek

Melaleuca Eradication

WPA Conveyance

Not Assigned to A Theme

Strazulla

Acme Basin B

Lakes Park

C-4 Structure

Flows to NW & Central WCA3A

Henderson Creek

Melaleuca Eradication

WPA Conveyance

PHOTO

PHOTO

Northern Estuaries and Lake Okeechobee

- Improvements to the quality, timing and quantities of run-off within tributary watersheds and the water released from Lake Okeechobee and its upstream tributaries in order to improve Lake Okeechobee and Northern Estuaries



Northern Estuaries and Lake Okeechobee

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Acceler8

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
Water Storage & Operations 	North Palm Beach County Flowway #1 (NF) C-51 Storage Component (CS) Indian River Lagoon (IRL) South C-44 (A8) (CS)	Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS) Lake Okeechobee ASR Pilot (CS)	Site 1 Impoundment (CS)		IRL South C-23/24 Reservoir (CS)	Lake Okeechobee Watershed (LOW) (CS)
		<div style="background-color: black; color: white; padding: 5px; width: fit-content; margin: 0 auto;">System Operating Manual</div>			<div style="background-color: black; color: white; padding: 5px; width: fit-content; margin: 0 auto;">System Operating Manual</div>	
Historic Flow Patterns 		Kissimmee River Restoration (CS)	Modified Water Deliveries Tamiami Trail (F)			
Eastward Seepage Reduction 	Modified Water Deliveries (MWD) 8.5 SMA (F)	C-111 South Dade (CS)	MWD Conveyance & Seepage (F)			
Water Quality Improvements 	Seminole Big Cypress Reservation Plan (E&SF) (CS)		IRL-S C-23/24 STA (A8) (CS) EAA STA Expansions (NF)			
Retain, Improve, Expand Habitats 						

Cumulative Benefits By Period ■ : foundation projects \$200 M



Northern Estuaries and Lake Okeechobee

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Acceler8

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
Water Storage & Operations 	North Palm Beach County Flowway #1 (NF) C-51 Storage Component (CS) Lake Okeechobee ASR Pilot (CS) Indian River Lagoon (IRL) South C-44 (A8) (CS)	Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS) Site 1 Impoundment (CS) IRL South C-23/24 Reservoir (CS)			Lake Okeechobee Watershed (LOW) (CS) IRL South C-25 Reservoir & STA (CS)	North Palm Beach County (NPBC) Storage Components (CS)
			System Operating Manual			System Operating Manual
Historic Flow Patterns 		Kissimmee River Restoration (CS)	Modified Water Deliveries Tamiami Trail (F)			
Eastward Seepage Reduction 	Modified Water Deliveries (MWD) 8.5 SMA (F)	C-111 South Dade (CS)	MWD Conveyance & Seepage (F)			
Water Quality Improvements 	Seminole Big Cypress Reservation Plan (E&SF) (CS) IRL-S C-23/24 STA (A8) (CS)		EAA STA Expansions (NF)			
Retain, Improve, Expand Habitats 						

Cumulative Benefits By Period ■ : foundation projects \$400 M

NORTHERN ESTUARIES AND LAKE OKEECHOBEE – PROJECTS TO BE DETERMINED

\$400M

Water Storage & Operations 	<ul style="list-style-type: none"> • C-43 ASR (CS) • Caloosahatchee Back Pumping (CS) • Hillsboro ASR (CS) • Lake O ASR (CS) • North Palm Beach County (NPBC) ASR (CS) 	<ul style="list-style-type: none"> • North Palm Beach County (NPBC) Storage Components (CS) • Palm Beach County (PBC) Ag Reserve (CS) • Palm Beach County (PBC) Ag Reserve ASR (CS) • IRL-S C-25 (CS)
---	---	---

Not Assigned to A Theme

Strazulla

Acme Basin B

Lakes Park

C-4 Structure

Historic Flow Patterns 	<ul style="list-style-type: none"> • Loxahatchee National Wildlife Refuge (CS) 	
---	---	--

Flows to NW & Central WCA3A

Henderson Creek

Melaleuca Eradication

WPA Conveyance

Water Storage & Operations 	<ul style="list-style-type: none"> • C-43 ASR (CS) • Caloosahatchee Back Pumping (CS) • Hillsboro ASR (CS) • Lake O ASR (CS) • North Palm Beach County (NPBC) ASR (CS) 	<ul style="list-style-type: none"> • Palm Beach County (PBC) Ag Reserve (CS) • Palm Beach County (PBC) Ag Reserve ASR (CS) • IRL-S C-25 (CS)
--	---	---

Not Assigned to A Theme

Strazulla

Acme Basin B

Lakes Park

C-4 Structure

Historic Flow Patterns 	<ul style="list-style-type: none"> • Loxahatchee National Wildlife Refuge (CS) 	
---	---	--

Flows to NW & Central WCA3A

Henderson Creek

Melaleuca Eradication

WPA Conveyance

Optimize Storage and Flexibility

- Increase regional storage water capacity and the availability of options to water managers to safely convey water to the Everglades system for the purposes of restoring sheetflow, improving the quality of the lake and estuarine habitats and for improving the overall resilience of our water resources such that central and southern Florida's regional water needs can be better met during periods of dry conditions or drought

Optimize Storage and Flexibility

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Accelerated

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
Water Storage & Operations 	Everglades Agricultural Area (EAA) Storage #1 (A8) (CS) C-51 Storage Component (CS) Indian River Lagoon (IRL) South C-44 (A8) (CS)	Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS) <div style="border: 1px solid black; background-color: black; color: white; padding: 2px; text-align: center;">System Operating Manual</div>	Site 1 Impoundment (CS) Lake Okeechobee ASR Pilot (CS) <div style="border: 1px solid black; background-color: black; color: white; padding: 2px; text-align: center;">System Operating Manual</div>			IRL South C-23/24 Reservoir (CS)
Historic Flow Patterns 		Kissimmee River Restoration (CS)	Modified Water Deliveries Tamiami Trail (F)			
Eastward Seepage Reduction 	Modified Water Deliveries (MWD) 8.5 SMA (F)	C-111 South Dade (CS)	MWD Conveyance & Seepage (F) L-31 N Seepage Pilot (CS)			
Water Quality Improvements 	Seminole Big Cypress Reservation Plan (E&SF) (CS)		IRL-S C-23/24 STA (A8) (CS) EAA STA Expansions (NF)			
Retain, Improve, Expand Habitats 				Winsberg Farm (CS)		

Cumulative Benefits By Period

■ : foundation projects

\$200 M

Optimize Storage and Flexibility

CS: Cost-shared NF: Non-Federally funded F: Federally funded A8: Accelerated

Completion	2009/2010	2011/2012	2013/2014	2015/2016	2017/2018	2019/2020
 Water Storage & Operations	Everglades Agricultural Area (EAA) Storage #1 (A8) (CS) Lake Okeechobee ASR Pilot (CS) C-51 Storage Component (CS) Indian River Lagoon (IRL) South C-44 (A8) (CS)	Caloosahatchee C-43 West Basin Storage Reservoir (A8) (CS) Site 1 Impoundment (CS) IRL South C-23/24 Reservoir (CS)	System Operating Manual	IRL South C-25 Reservoir & STA (CS)	Lake Okeechobee Watershed (LOW) (CS) Hillsboro ASR #2 (CS)	System Operating Manual
 Historic Flow Patterns		Kissimmee River Restoration (CS)	Modified Water Deliveries Tamiami Trail (F)			
 Eastward Seepage Reduction	Modified Water Deliveries (MWD) 8.5 SMA (F) L-31 N Seepage Pilot (CS)	C-111 South Dade (CS)	MWD Conveyance & Seepage (F)	Broward County Water Preserve Area (WPA) (CS)	ENP Seepage (CS)	Wastewater Reuse Tech Pilot (CS)
 Water Quality Improvements	Seminole Big Cypress Reservation Plan (E&SF) (CS) IRL-S C-23/24 STA (A8) (CS)		EAA STA Expansions (NF)			
 Retain, Improve, Expand Habitats		Winsberg Farm (CS)				

Cumulative Benefits By Period  : foundation projects \$400 M

OPTIMIZE STORAGE AND FLEXIBILITY – PROJECTS TO BE DETERMINED

\$200M

<p>•Water Storage & Operations</p> 	<ul style="list-style-type: none"> • C-43 ASR (CS) • Central Lake Belt Storage (CS) • North Lake Belt Storage (CS) • Lake Belt Pilot • EAA Storage #2 (CS) • Lake Okeechobee ASR (CS) • IRL-South C-25 (CS) <ul style="list-style-type: none"> • North Palm Beach County (NPBC) ASR (CS) • North Palm Beach County (NPBC) Storage Components (CS) • Palm Beach County (PBC) Ag Reserve and ASR (CS) • Hillsboro ASR #2 (CS) • Lake Okeechobee Watershed (CS)
<p>•Water Quality</p> 	<ul style="list-style-type: none"> • South Miami Dade Reuse (CS) • West Miami Dade Reuse (CS) • Miccosukee Water Management Plan (CS) <ul style="list-style-type: none"> • Seminole Tribe Water Conservation Plan (CS) • Wastewater Reuse Tech Pilot (CS)
<p>•E. Seepage Reduction</p> 	<ul style="list-style-type: none"> • Broward County WPA (CS) • ENP Seepage (CS)

Not Assigned to A Theme

- Strazulla
- Acme Basin B
- Lakes Park
- C-4 Structure
- Flows to NW & Central WCA3A
- Henderson Creek
- Melaleuca Eradication
- WPA Conveyance

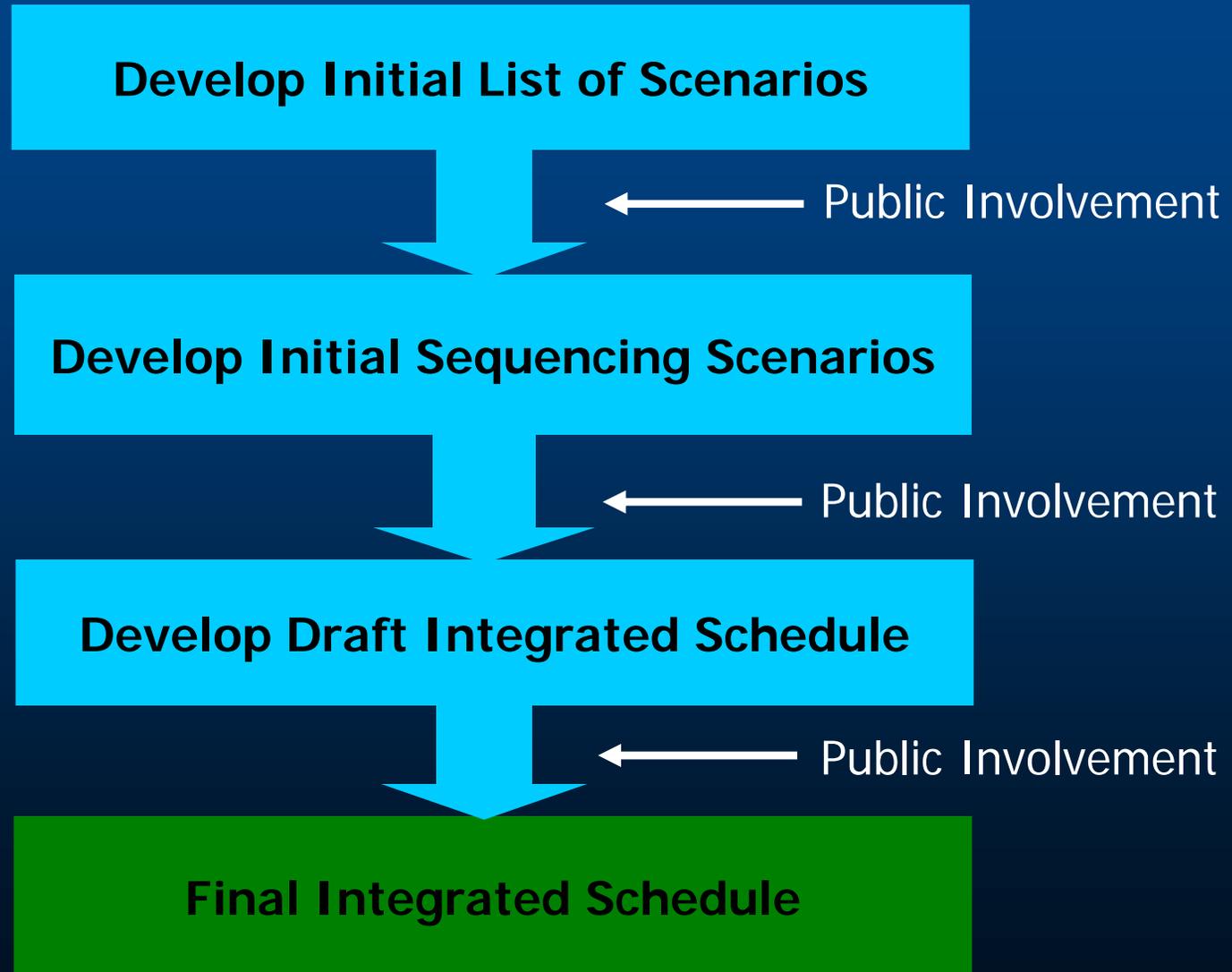
\$400M

<p>•Water Storage & Operations</p> 	<ul style="list-style-type: none"> • C-43 ASR (CS) • Central Lake Belt Storage (CS) • North Lake Belt Storage (CS) • Lake Belt Pilot • EAA Storage #2 (CS) • Lake Okeechobee ASR (CS) <ul style="list-style-type: none"> • North Palm Beach County (NPBC) ASR (CS) • North Palm Beach County (NPBC) Storage Components (CS) • Palm Beach County (PBC) Ag Reserve and ASR (CS) • Hillsboro ASR #2 (CS)
<p>•Water Quality</p> 	<ul style="list-style-type: none"> • South Miami Dade Reuse (CS) • West Miami Dade Reuse (CS) • Miccosukee Water Management Plan (CS) • Seminole Tribe Water Conservation Plan (CS) • Wastewater Reuse Tech Pilot (CS)

Not Assigned to A Theme

- Strazulla
- Acme Basin B
- Lakes Park
- C-4 Structure
- Flows to NW & Central WCA3A
- Henderson Creek
- Melaleuca Eradication
- WPA Conveyance

Integrated Schedule Process



Discussion

