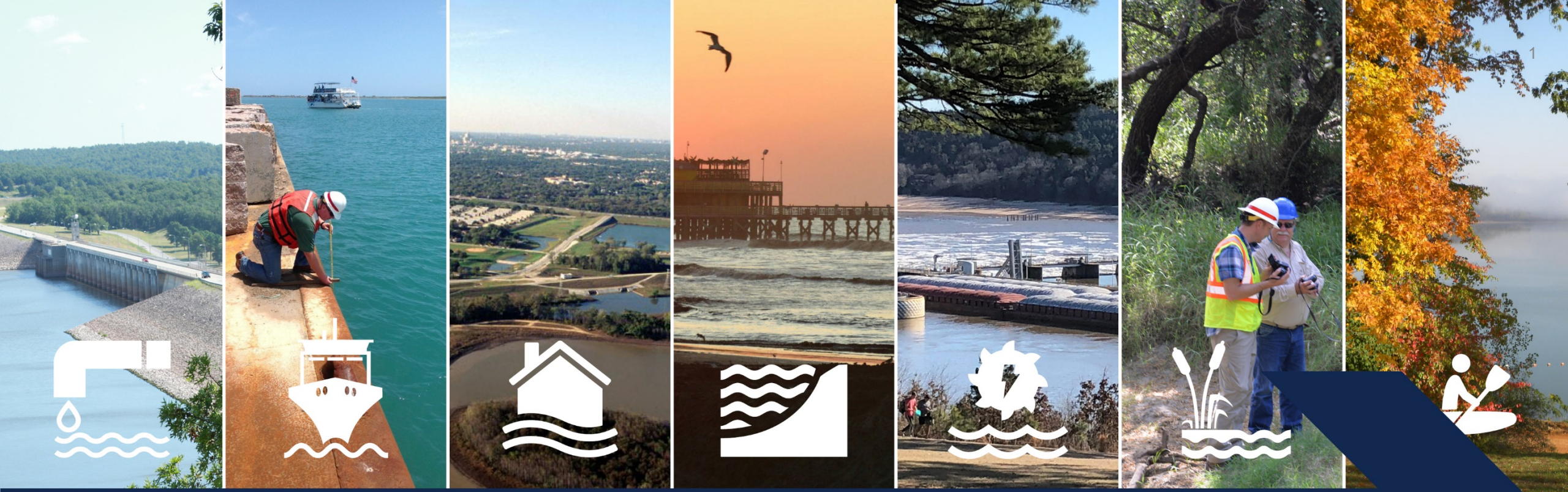


SWD Civil Works Strategic Plan

U.S. Army Corps of Engineers
Southwestern Division (SWD)

DRAFT

NOT FOR DISTRIBUTION

USACE-GALVESTON DISTRICT (SWG)
STAKEHOLDER PARTNERING FORUM (SPF)

SUMMER 2020

INTRODUCTION

- *Purpose of the Civil Works Strategic Plan*
- *Overview of development process*
- *Importance of stakeholder feedback*

Arnold (Rob) Newman
Director, Regional Planning and Environmental Center

TEAM INTRODUCTIONS

ILSI ENGINEERING | ARCADIS Design & Consultancy for natural and built assets | THE WATER INSTITUTE OF THE GULF

Core Team

Soupy Dalyander, PhD
Sr. Scientist
Project Lead

Colleen McHugh
Sr. Planner
SWG Lead Coordinator

Ajani Stewart
Sr. Mngt. Consultant
SWT, SWF, SWL
Lead Coordinator

Ryan Clark, PG
Sr. Tech. Lead
SWD Lead Coordinator

Annis Saniee
Mngt. Consultant

Allison DeJong, AICP
Sr. Planner

Advisory Team

Ronnie Schumann, Jr., PE, Project Manager
Falcolm Hull, Sr. Policy Advisor
Tom Denes, PhD, Sr. Policy Advisor
Stu Appelbaum, Sr. Policy Advisor

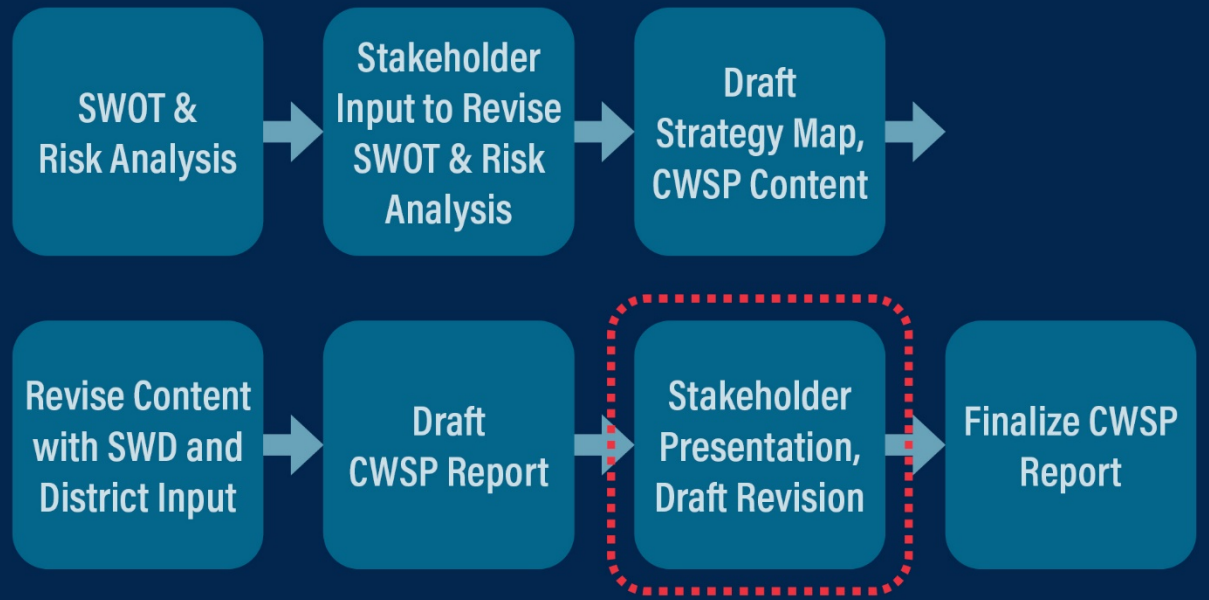
Carly Foster, AICP, CFM, Principal Resilience Lead
Hugh Roberts, PE, Sr. Engineer
Rich Manguno, Sr. Economist

USACE Southwestern Division Civil Works Strategic Plan (CWSP)

Goal: Ensure SWD and its Districts remain relevant and responsive to partners, providing Value to the Nation in addressing Integrated Water Resource Management (IWRM) challenges

- SWD developing CWSP by:
  - Scientifically defining driving future IWRM system uncertainties and stressors
  - Formulating plausible future driving scenarios and compound extreme hazards
- Opportunity to be forward-looking and future-ready by considering a 15-year planning horizon
- MSCs directed by HQUSACE to develop CWSPs in OCT 19
  - MSC CSWPs due to HQUSACE by SEP 20
  - Will be integrated and synthesized to inform the 2020-2035 USACE CWSP

Development Process: April - September 2020



Inputs:

- SWOT and Risk Analysis, USACE internal analysis
- Facilitated discussion with stakeholders (external perspective)
- Facilitated discussion and feedback sessions with SWD and District personnel
- National, state, and local coastal and inland water resources documents relevant to product development

SOURCES OF INPUT TO CIVIL WORKS STRATEGIC PLAN

- **Desktop research on external drivers** of demand across USACE business lines, including associated uncertainties
- **USACE Division and District personnel** – Galveston (SWG), Fort Worth (SWF), Tulsa (SWT), and Little Rock (SWL)
- **Stakeholders and partners working with each District**
    - Charette with representative SWG stakeholders May, 2020

STRENGTHS, OPPORTUNITIES, AND THREATS
STAKEHOLDER PERSPECTIVE

Explore/use greater flexibility in how projects are planned and executed

- Increased sharing of responsibility with local partners
- Combine USACE expertise with relative nimbleness of partners
- Support for timely funding/approval/implementation

Use resources and focus on coastal Texas to revolutionize SWG

- Update software programs to match industry standards
- Update Benefit Cost Ratio to account for more factors

Clarify and define/redefine USACE and stakeholder relationships

- Recognize/enable state agencies
- Lead coordination across interagency/partnering efforts in flood control

STRENGTHS, OPPORTUNITIES, AND THREATS
STAKEHOLDER PERSPECTIVE

Become more proactive than reactive

- Improve prediction of direct and indirect flooding impacts (e.g., siltation)
- Prioritize navigation projects to meet rising demand

Increase IWRM opportunities in practice

- Regional sed. management - more beneficial use of dredge material
- Sensible management of navigation channels as conduits to move floodwater
- Sedimentation studies/watershed-level planning

Project approval and implementation times too long

- Longer implementation time increases project cost
- Speed particularly important given current economic situation (COVID)

STRENGTHS, OPPORTUNITIES, AND THREATS
STAKEHOLDER PERSPECTIVE

Need for consistency, clarity, and communication

- Standardize and clearly communicate project review steps
- Regulatory process clarity
- Maintain consistency through leadership changes

Resource planning and availability

- Need for timely project execution
- Need for robust workplans to execute O&M

Concern commitment to coastal Texas will decline

- Communicate value of region and infrastructure/ports

DRAFT CWSP Structure

Executive Summary

1. Introduction:
A New Era for Civil Works in SWD

Provide context: foundation from which to build

2. Evolving Risks & Opportunities:
Key Drivers

Uncertainties about the world in which SWD must operate over the next 20 years

3. Strategies for Action:
Vision, Strategic Goals, Objectives

Guiding principles for how SWD will respond to change in the face of uncertainty

4. Framing the Future:
Scenario Planning

Potential futures (multiple due to uncertainties), identification of key gaps and how implementation of strategies can improve outcomes

5. Towards Implementation

Brief framing of next steps: "hooks" to facilitate linkage of CWSP to implementation

Call Out Boxes

Used throughout the document to illustrate specific connections to Districts, Business Lines, examples of strategies (e.g., projects) in action

1. Introduction: A New Era for Civil Works in SWD

Building on Strengths

Across the SWD, USACE possesses **vital experience and expertise** within core business lines including FRM, NAV, WS, and REC; **good relationships** with stakeholders and sponsors; and existing **capacity for surge** that can be leveraged and expanded to meet new challenges. These existing strengths can provide the **firm foundation for innovative, integrated new approaches** to project planning and execution, but only if the Division understands, anticipates, and plans for future drivers of needs.

USACE-SWT

- Extensive experience in emergency management and flood risk mitigation
- Strong relationships with local states and tribes within the AOR

USACE-SWL

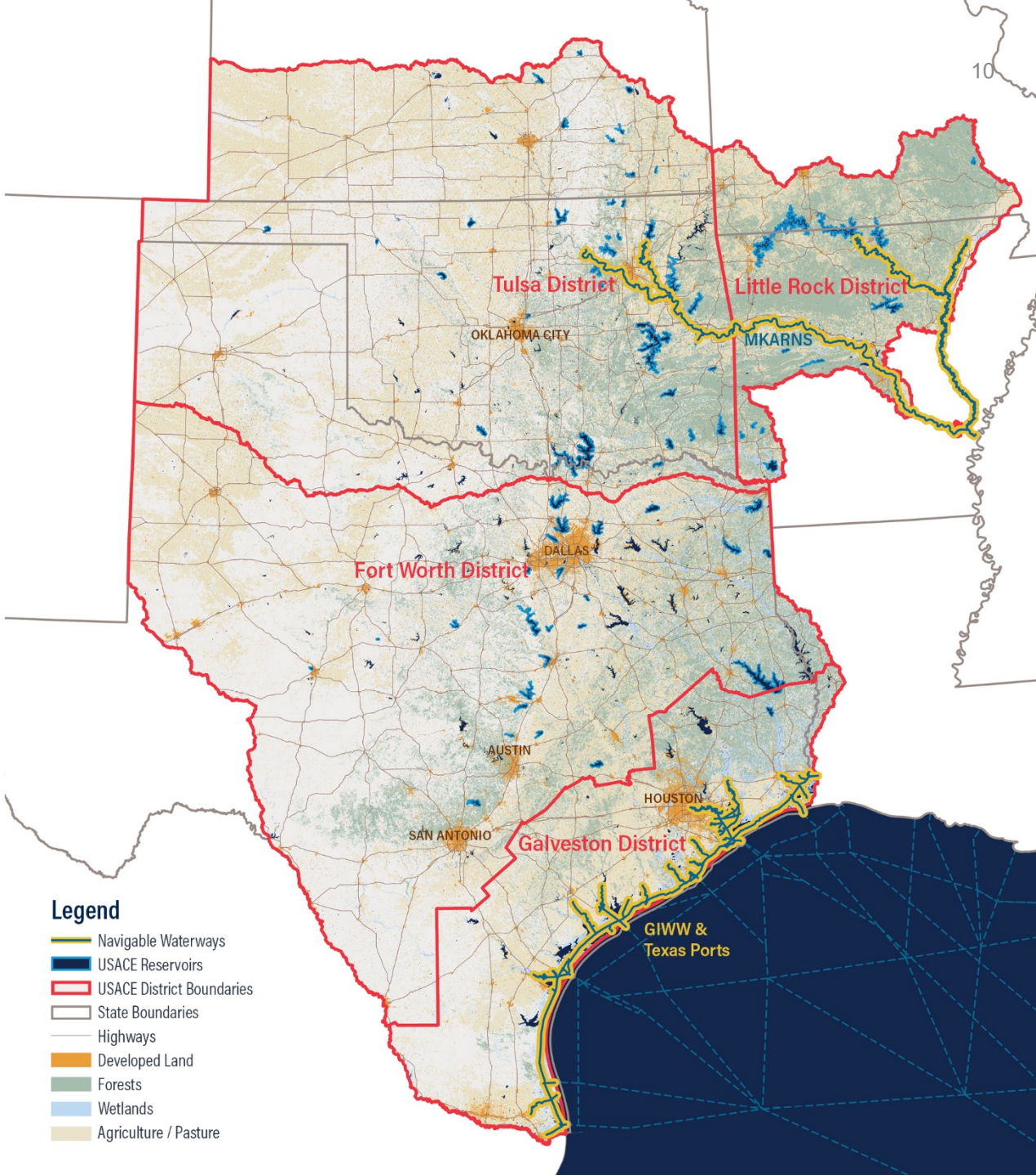
- Extensive experience partnering with federal, state, local, and tribal entities to reduce flood risk through the Silver Jackets
- Strong record of providing tech assistance to AOR through FPMS, PAS & CAP

USACE-SWF

- Effective project management structures, including senior level engagement in project delivery teams
- Significant CWMS modeling capacity, enabling real-time water management
- Increasing involvement in state-level planning efforts

USACE-SWG

- Extensive experience in navigation, flood and coastal storm risk management, and ecosystem restoration
- Strategic partnerships across the public and private sectors
- Capacity in geospatial planning tools for quantitative, data-driven decision making



2. Evolving Risks & Opportunities: Key Drivers

Rapid Population Growth & Urbanization

Rapid rural-urban out-migration combined with natural population growth are driving a **population explosion in major metropolitan areas** like metro Dallas, Houston, Oklahoma City, and NW Arkansas.

A Changing Regional Landscape

Urbanization, resource demands, extreme weather, and coastal erosion are **driving regional land use/cover changes**, impacting flood risk, water quality, channel morphology, local water balance, biodiversity, industry & recreation.

Extreme Weather: Floods & Drought

The **frequency** and **intensity** of droughts and inland and tropical storms are projected to increase, as are **rapid swings between the two weather extremes**. Sea level rise and subsidence will increase the risk of coastal flooding.

Uncertain Future of Energy

Texas oil and gas exports have **boomed recently**, but this boom may not last. Economic **downturns** and shifts to **renewables** may reduce global demand, while strained resources and risks to infrastructure may impact supply.

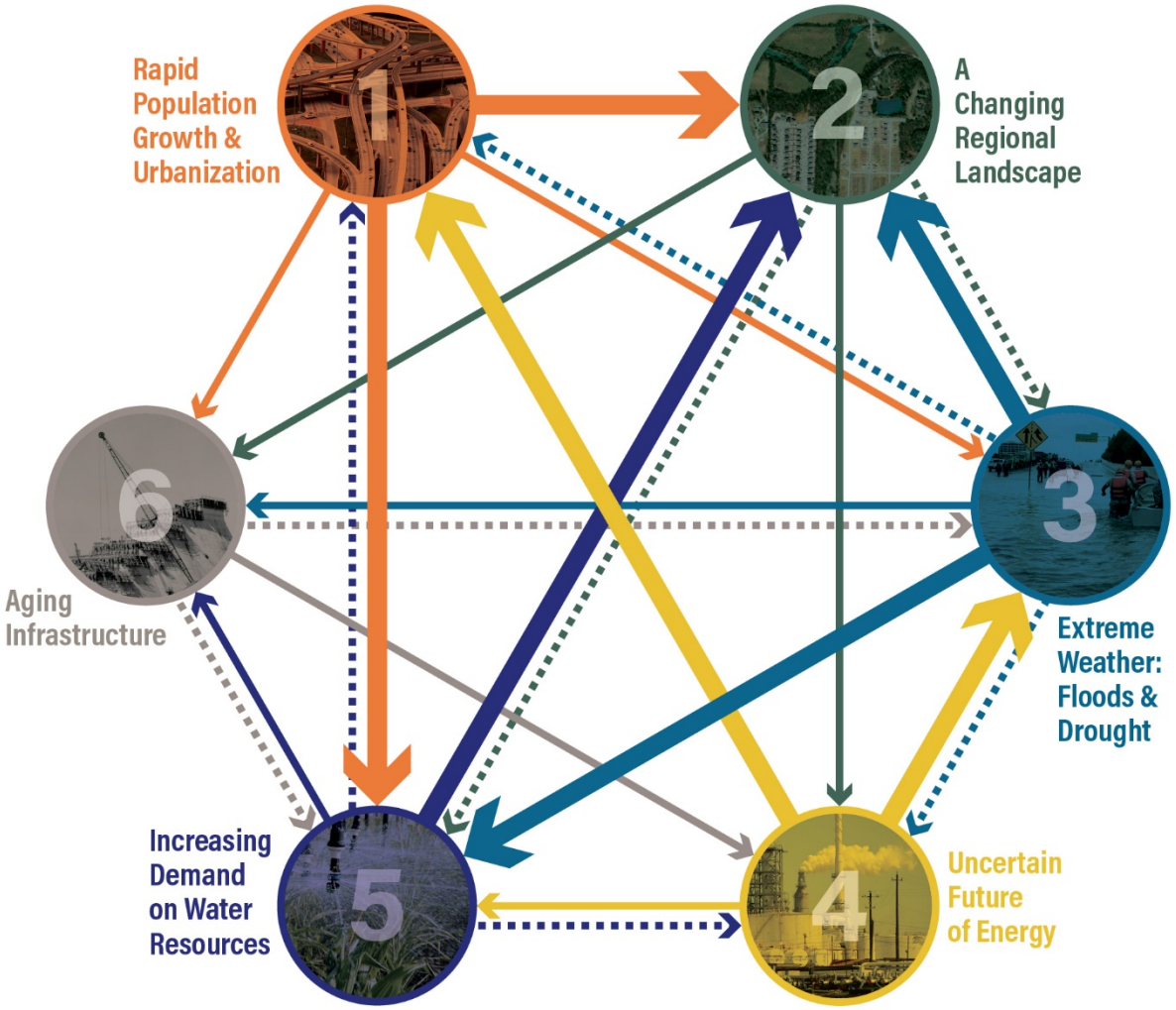
Increasing Demand on Water Resources

Regional **water supply is under severe pressure** from drought and environmental change. Simultaneously, regional **demand is increasing** for water resources as well as water-dependent food and energy resources.

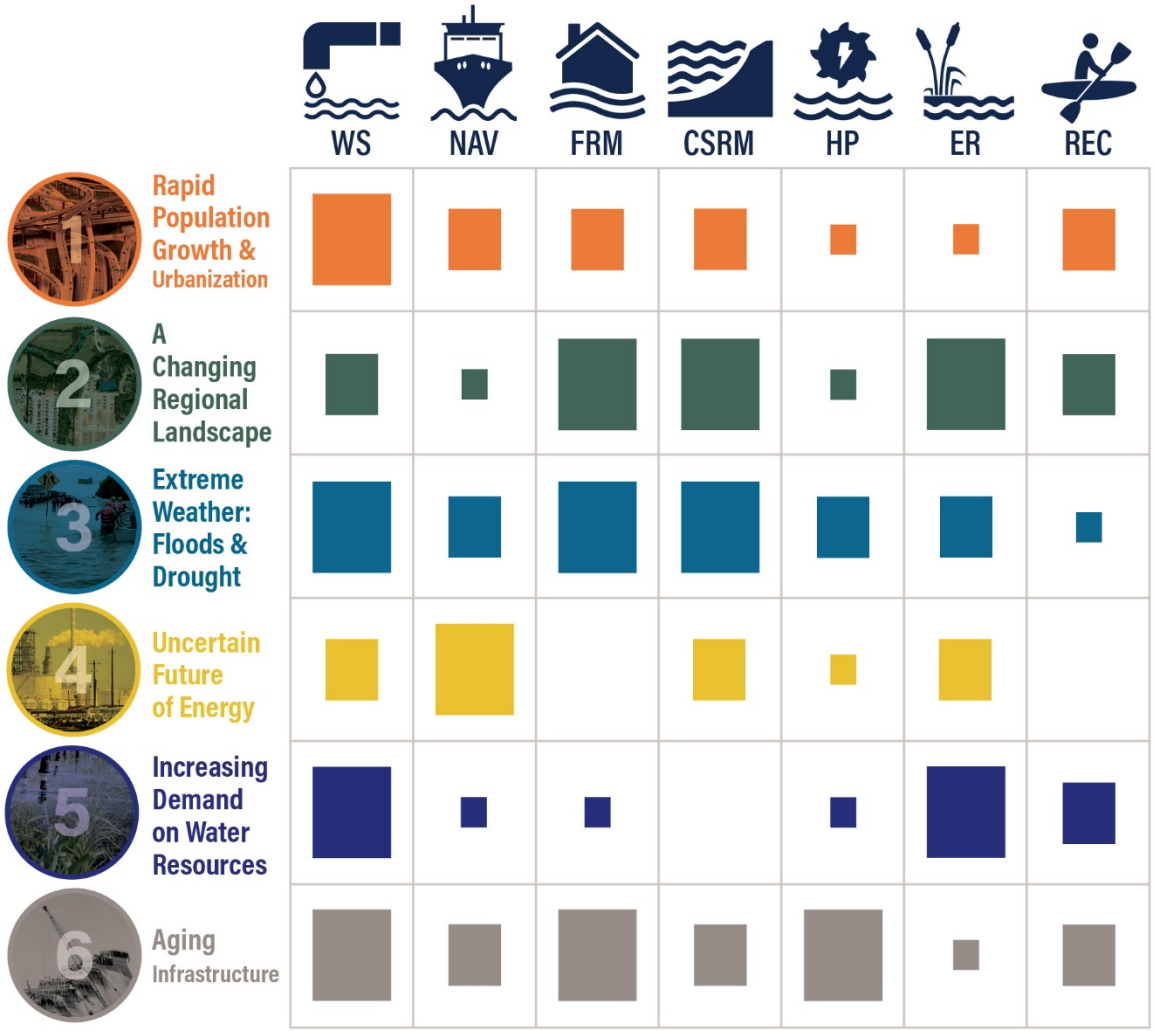
Aging Infrastructure

Degrading water infrastructure conditions across the region pose a **threat** to a growing population's **safety**, **exacerbate limited water resources** in the context of competing demands, and **threaten the vitality of local industries.**

These challenges are interconnected, with one driving or exacerbating another, often further amplified by feedback loops.



Each of these challenges impacts multiple civil works mission areas.



3. Strategies for Action

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SWD CIVIL WORKS VISION

SWD works towards ***a safe, reliable, sustainable, and resilient water future*** for the communities we serve and the value they provide to the Nation, meeting the increasing challenges and demands on the region's water resources through an ***integrated approach*** to their management.

What is Integrated Water Resource Management?

A holistic, coordinated, and cross-sectoral approach to the development and management of water, land, and related resources in order to maximize economic benefits, ecosystem quality, and health and public safety. Achieving IWRM requires a new, more comprehensive approach to **Projects, Processes,** and **Partnerships.**

GOAL 1:
Enable innovative solutions to complex challenges.

PROJECT OBJECTIVES

1.1 Encourage and prioritize **multi-use and multi-benefit** projects

1.2 Reevaluate **cost and benefit considerations** in decision making to be more inclusive

1.3 Consider **structural and non-structural approaches** in flood risk management that can be implemented by USACE or with partners

PROCESS OBJECTIVES

1.4 Coordinate business lines and project timelines around key **nexus opportunities and tradeoffs**

1.5 Optimize workflows and processes to be more **agile, flexible, faster, and less risk averse** while maintaining safety and reliability

1.6 Enable and encourage **interdisciplinary and creative** approaches to problem solving

PARTNERSHIP OBJECTIVES

1.7 Coordinate to identify and develop solutions at **regional watershed and landscape scales**

GOAL 2:
Shift towards a proactive response mode.

PROJECT OBJECTIVES

2.1 Invest in **pre-disaster** planning and **resilience** improvements

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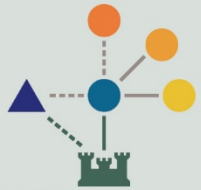
PARTNERSHIP OBJECTIVES

2.5 Engage with academia to build the **workforce needed for the future**

GOAL 3:
Re-envision role as a collaborative partner.



PROJECT OBJECTIVES

3.1 Identify action strategies for **studies that result in recommended approaches outside of USACE authority**

3.2 Support the **leadership of state and local agencies** in regional water resources strategic planning initiatives

PROCESS OBJECTIVES

3.3 Ensure **consistent messaging and communication** from leadership through project teams

PARTNERSHIP OBJECTIVES

3.4 **Raise awareness** of the USACE Mission at the local, state, and national level through **targeted outreach**

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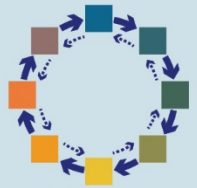
GOAL 4:
Adaptively manage full lifecycle of water resources infrastructure.



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OLD PARADIGM:
Relatively Isolated Business Lines

NEW PARADIGM:
Integrated Water Resources Management

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PARTNERSHIP OBJECTIVES

1.7 Coordinate to identify and develop solutions at **regional watershed and landscape scales**

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GOAL 1:
Enable innovative solutions to complex challenges

Consider additional factors in cost/benefit analysis

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NEW PARADIGM:
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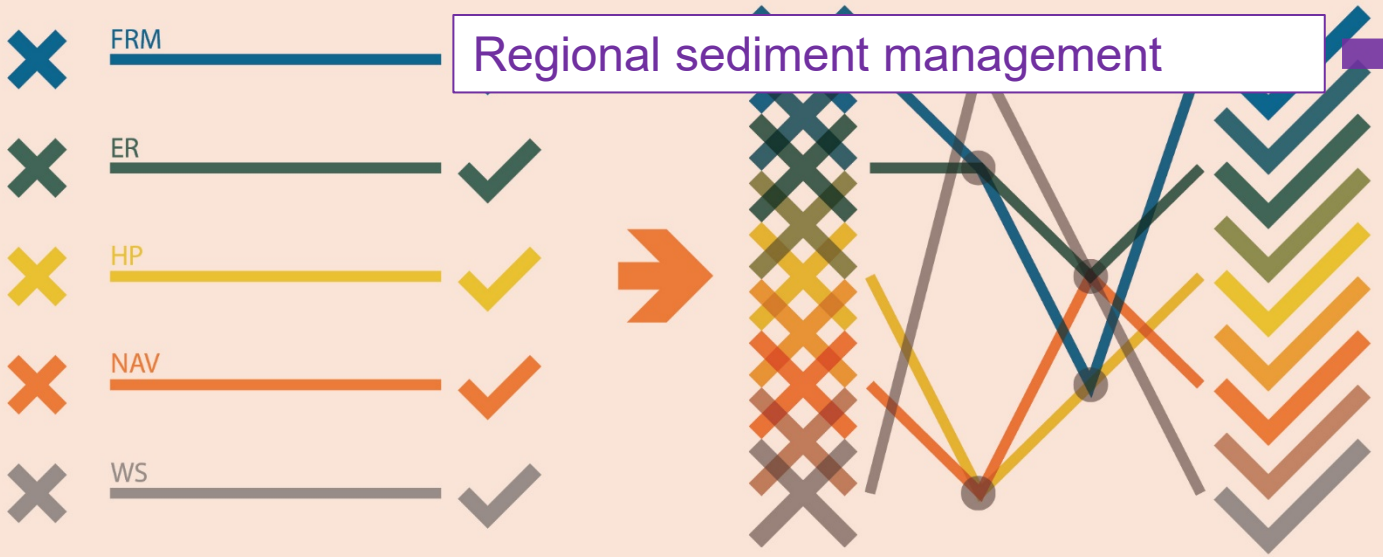

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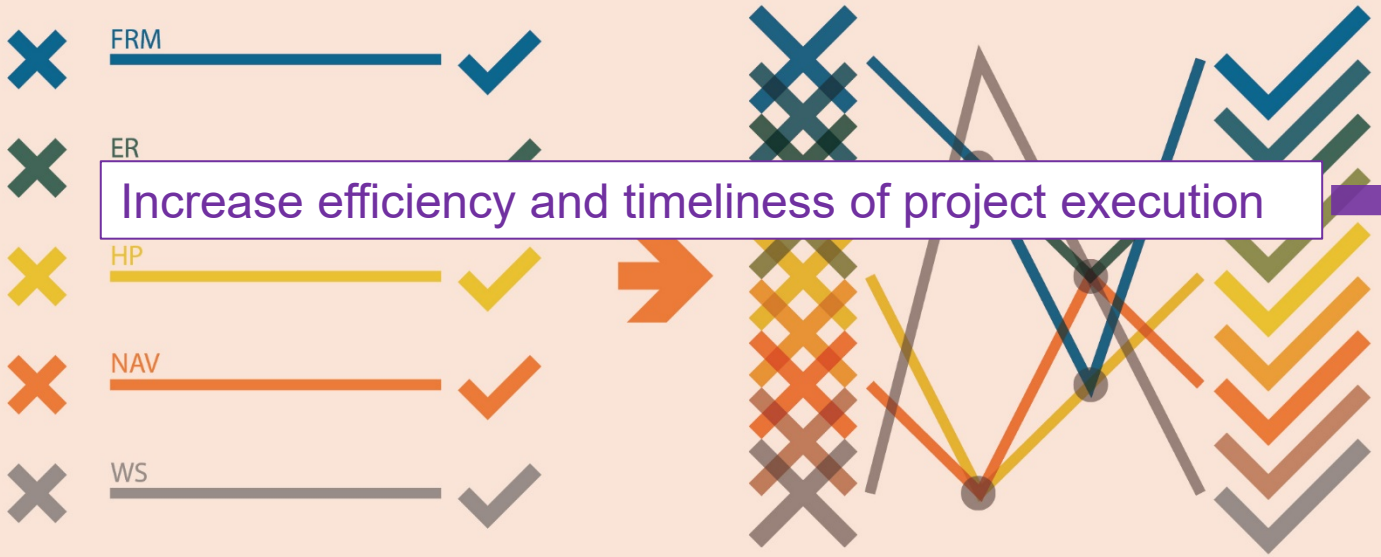

Increase efficiency and timeliness of project execution

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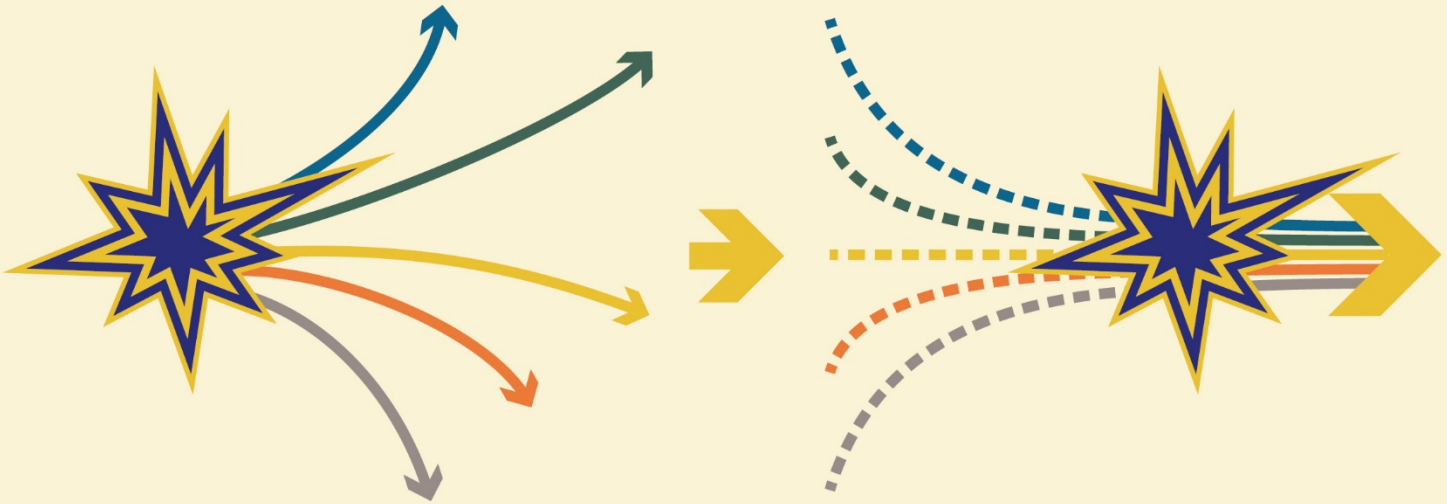
GOAL 2:
Shift towards a proactive response mode.

OLD PARADIGM:
More Reactive Response Mode

NEW PARADIGM:
Proactive Response Mode



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PARTNERSHIP OBJECTIVES

2.5 Engage with academia to build the **workforce needed for the future**

DRAFT

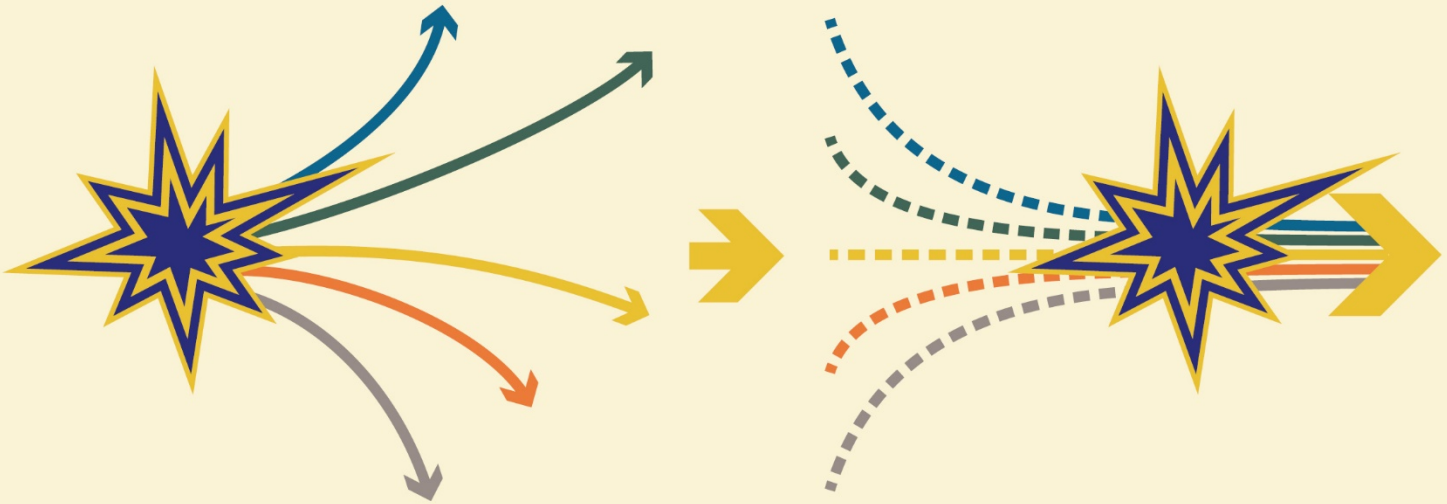
GOAL 2:
Shift towards a proactive response mode.

OLD PARADIGM:

More Reactive Respons

NEW PARADIGM:

Proactively anticipate/meet rising demands



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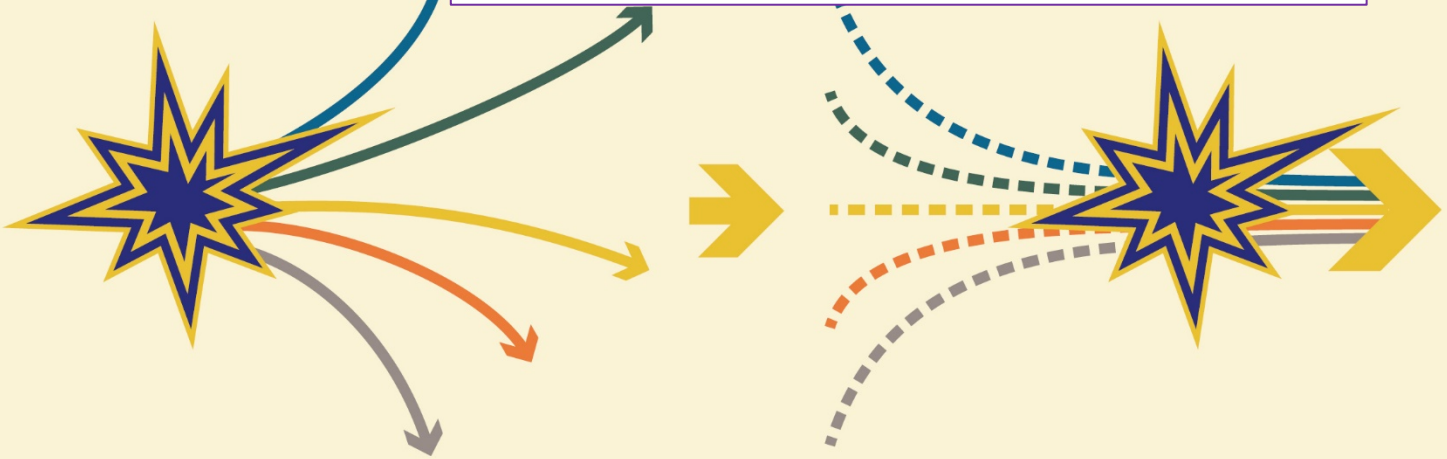
NEW PARADIGM:
Proactive Response Mode

Update technology to improve efficiency



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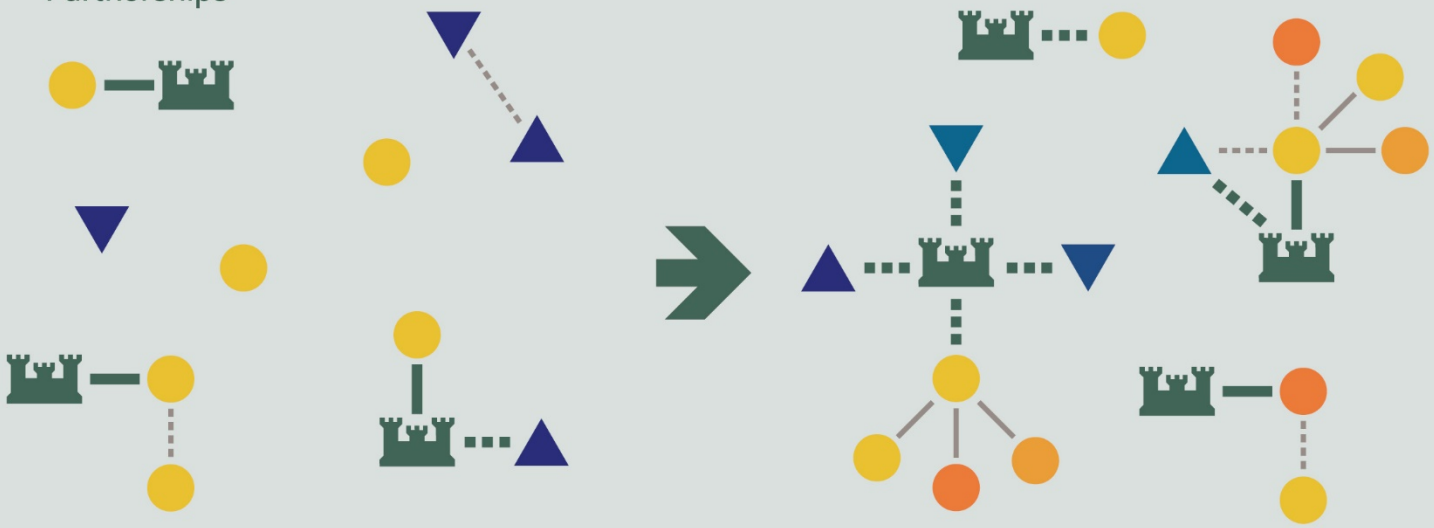
GOAL 3:
Re-envision role as a collaborative partner.

OLD PARADIGM:
Conventional, Compartmentalized Partnerships

NEW PARADIGM:
Diversity of Collaborative Roles



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DRAFT

GOAL 3:

Re-envi collaborative partner.

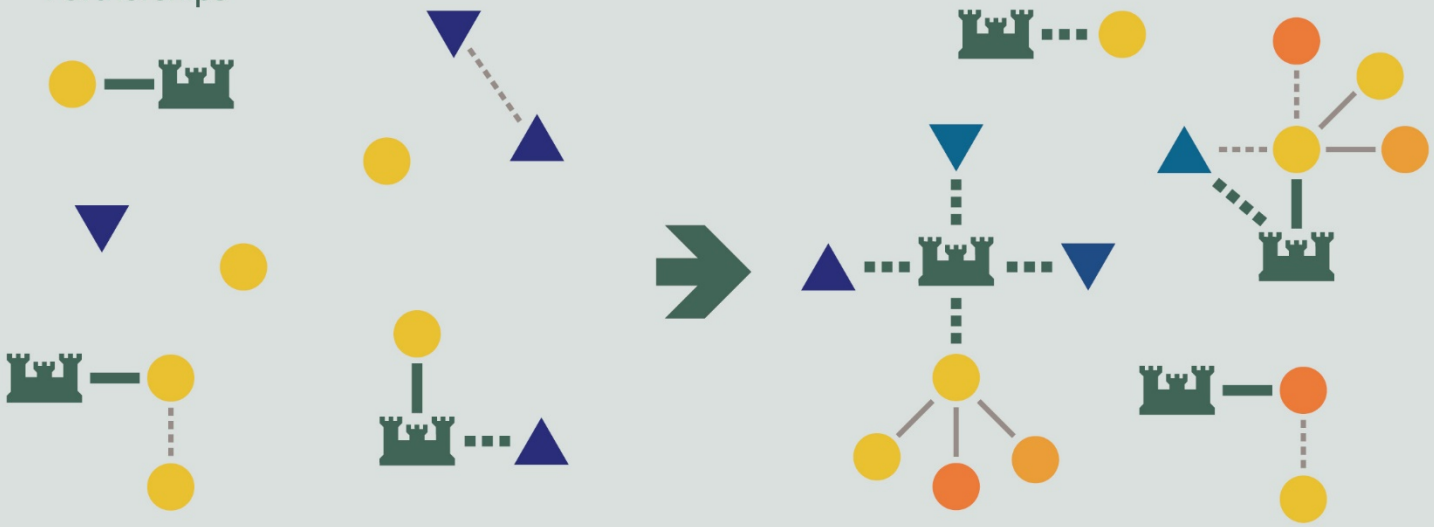
Enable other entities for action

OLD PARADIGM:

Conventional, Compartmentalized Partnerships

NEW PARADIGM:

Diversity of Collaborative Roles



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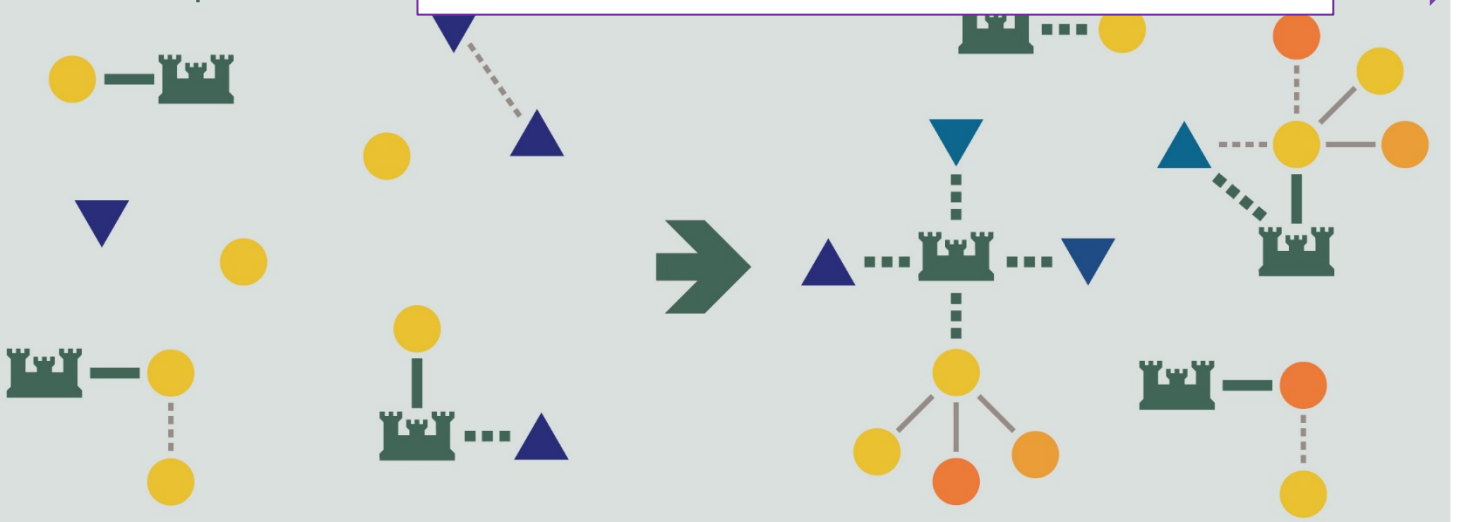
Ensure clear, consistent communication



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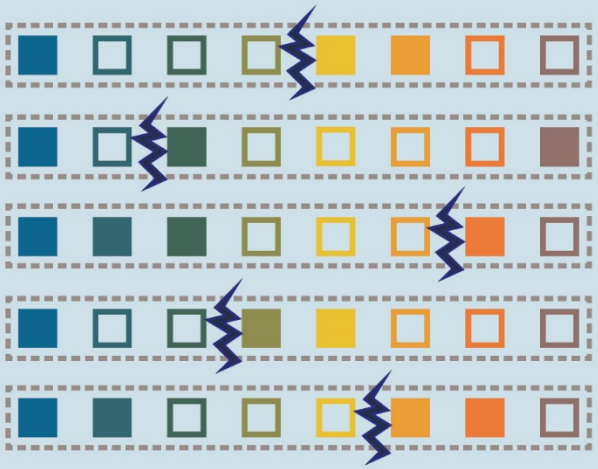
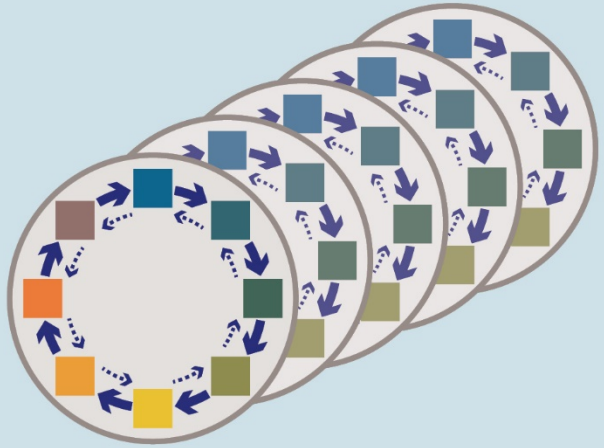
GOAL 4:
Adaptively manage full lifecycle of water resources infrastructure.

OLD PARADIGM:
Standalone Projects with Short-Term Focus



NEW PARADIGM:
Integrated Portfolio Managed Through Lifecycle



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PARTNERSHIP OBJECTIVES

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DRAFT

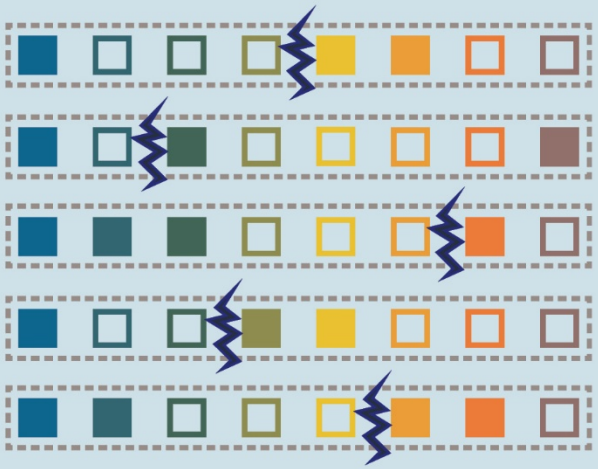
GOAL 4:

Adaptively mana of water resources infrastructure.

Plan for a resilient future

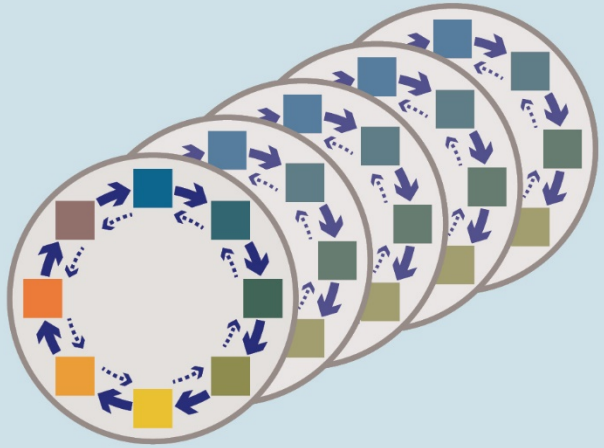
OLD PARADIGM:

Standalone Projects with Short-Term Focus



NEW PARADIGM:

Integrated Portfolio Managed Through Lifecycle



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PARTNERSHIP OBJECTIVES

4.6 Consider **public-private partnership** options and delegation of authority in developing, rehabilitating, and improving water resource infrastructure

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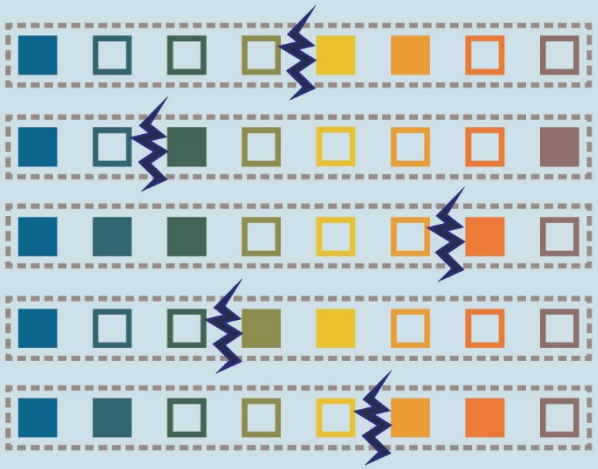
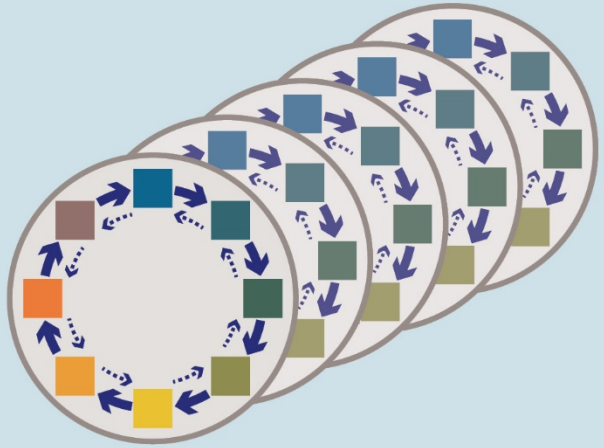
GOAL 4:
Adaptively manage full lifecycle of water resources infrastructure.

OLD PARADIGM:
Standalone Projects with Short-Term Focus



NEW PARADIGM:
Integrated Portfolio Managed Through Lifecycle



Leverage others' strengths

PROJECT OBJECTIVES

4.1 Design **new projects** with a **plan for long-term operations and maintenance** in mind

4.2 Consider the benefits of **natural and nature-based features** (NNBF) and other approaches in improving and extending project performance over time

4.3 Evaluate the most efficient and cost-effective ways to meet current needs, including **opportunities to revamp existing projects**

PROCESS OBJECTIVES

4.4 Integrate project monitoring and metrics as part of an **adaptive management approach**

4.5 Develop a **Division-wide operations and prioritization plan** for Civil Works funding.

PARTNERSHIP OBJECTIVES

4.6 Consider **public-private partnership** options and delegation of authority in developing, rehabilitating, and improving water resource infrastructure

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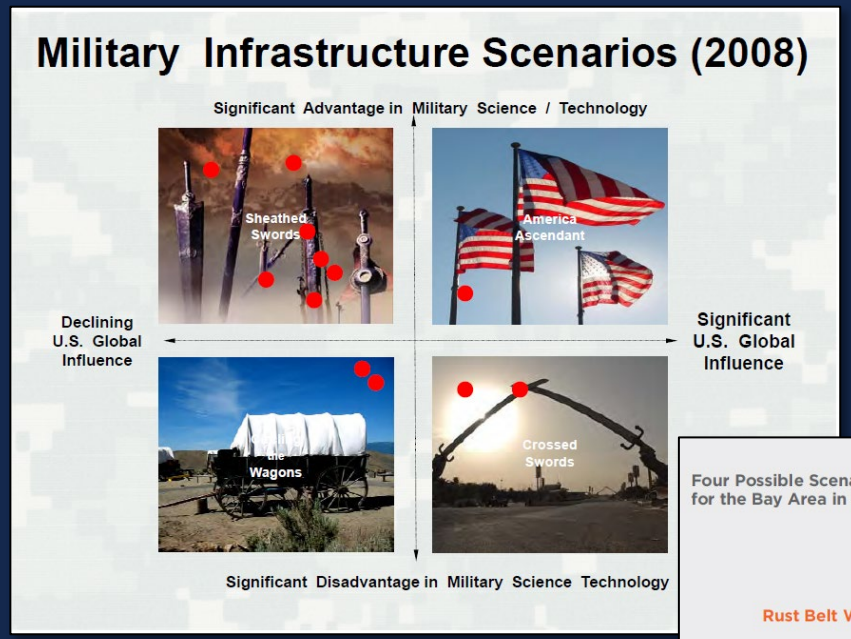
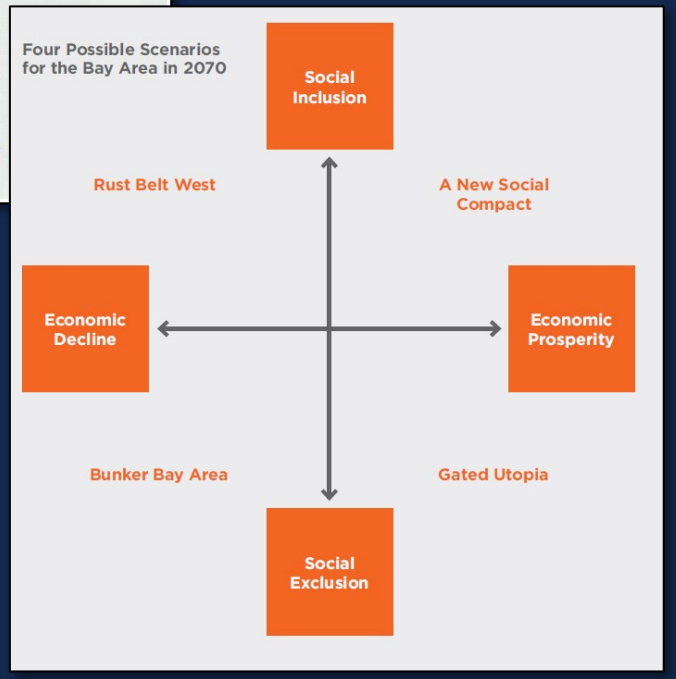
FUTURE SCENARIO PLANNING

WHAT IS IT?



USACE 2012 Leaders Emeritus Readahead

- Mechanism for thinking about multiple futures, including drivers outside of direct control
- "What ifs": identify uncertainties and what possible outcomes might occur



Four Future Scenarios for the San Francisco Bay Area
SPUR Region Strategy, August, 2018

- Provides a linkage to planning and how to make the best decisions despite uncertainty

Examples only:
Not developed for SWD or USACE

FUTURE SCENARIO PLANNING

WHY USE IT?

- Supports decision-making, including understanding range of possible outcomes, in the face of a future with great uncertainty
- More likely to identify “unthinkable” scenarios than when focusing only on most-likely future (example: pandemic impacts)
- Mechanism for clear communication of potential future outcomes
- Provides a structured way for USACE to address uncertainty
- Provides benchmarking opportunities
- Note: Scenario planning is **NOT** about predicting the future

FUTURE SCENARIO PLANNING

APPROACH IN THE USACE SWD CIVIL WORKS STRATEGIC PLAN

- Construct a set of focused scenarios that identify and articulate uncertainties in drivers and provide linkages to potential USACE-SWD strategies
  - **Future Population Growth and Water Supply**
  - **Future of Energy**
  - **Extreme Weather Variability**
- Combine the focused scenarios into a small set of overarching scenarios that illustrate the range of possible futures and how USACE-SWD can enable positive outcomes

SCENARIO 1: FUTURE POPULATION GROWTH & WATER SUPPLY

Challenge

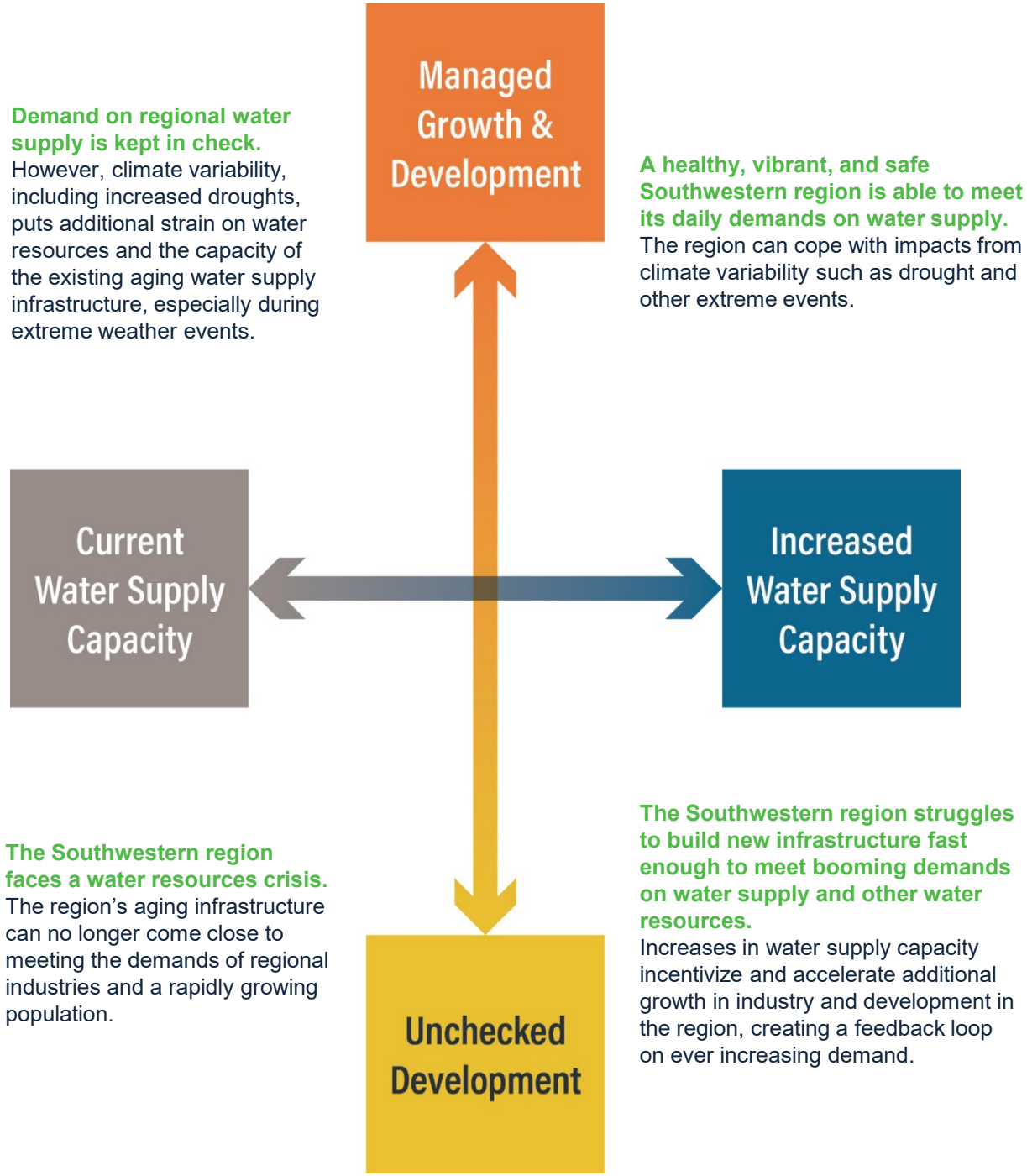
- Rapid population growth and diversification
- Increased demand on water supply and strain on water resources

Drivers/uncertainties

- Population growth, economic conditions, climate variability, funding

Response opportunities

- Policy/guideline changes
- Reallocation, regional studies
- Infrastructure/new starts
- Coordination with regional partners



SCENARIO 2:
FUTURE OF ENERGY

Challenge

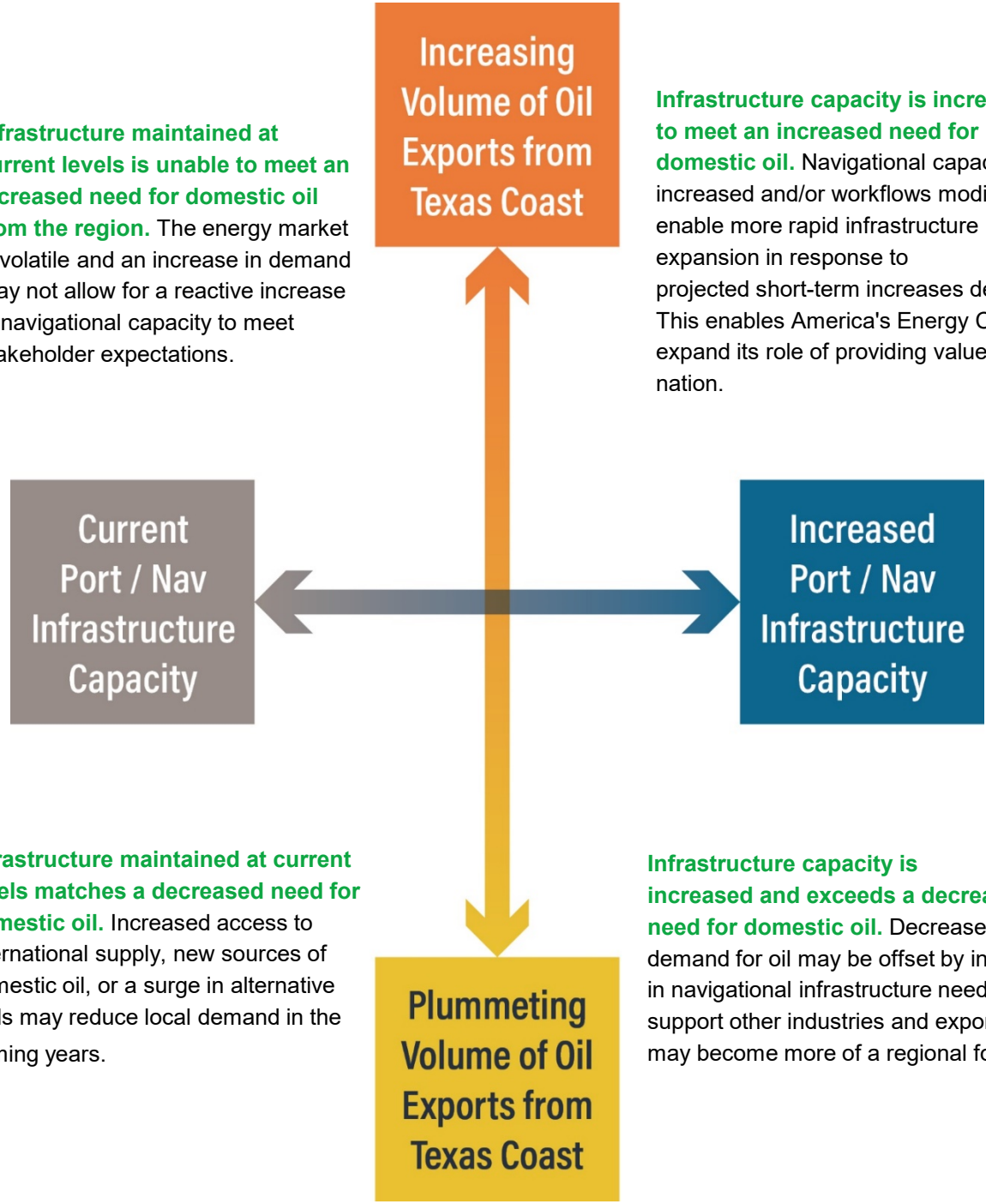
- Future of global energy and demand is high uncertain and volatile
- Strained resources and infrastructure vulnerability may threaten supply

Drivers/uncertainties

- Macro-economic trends, competition with other supply, domestic policy, resources

Response opportunities

- Nav channel improvements, process efficiencies to meet demand/backlog, local/regional partnerships



Infrastructure maintained at current levels is unable to meet an increased need for domestic oil from the region. The energy market is volatile and an increase in demand may not allow for a reactive increase in navigational capacity to meet stakeholder expectations.

Infrastructure capacity is increased to meet an increased need for domestic oil. Navigational capacity is increased and/or workflows modified to enable more rapid infrastructure expansion in response to projected short-term increases demand. This enables America's Energy Coast to expand its role of providing value to the nation.

Infrastructure maintained at current levels matches a decreased need for domestic oil. Increased access to international supply, new sources of domestic oil, or a surge in alternative fuels may reduce local demand in the coming years.

Infrastructure capacity is increased and exceeds a decreased need for domestic oil. Decreases in demand for oil may be offset by increases in navigational infrastructure needs to support other industries and exports that may become more of a regional focus.

SCENARIO 3: EXTREME WEATHER VARIABILITY

Challenge

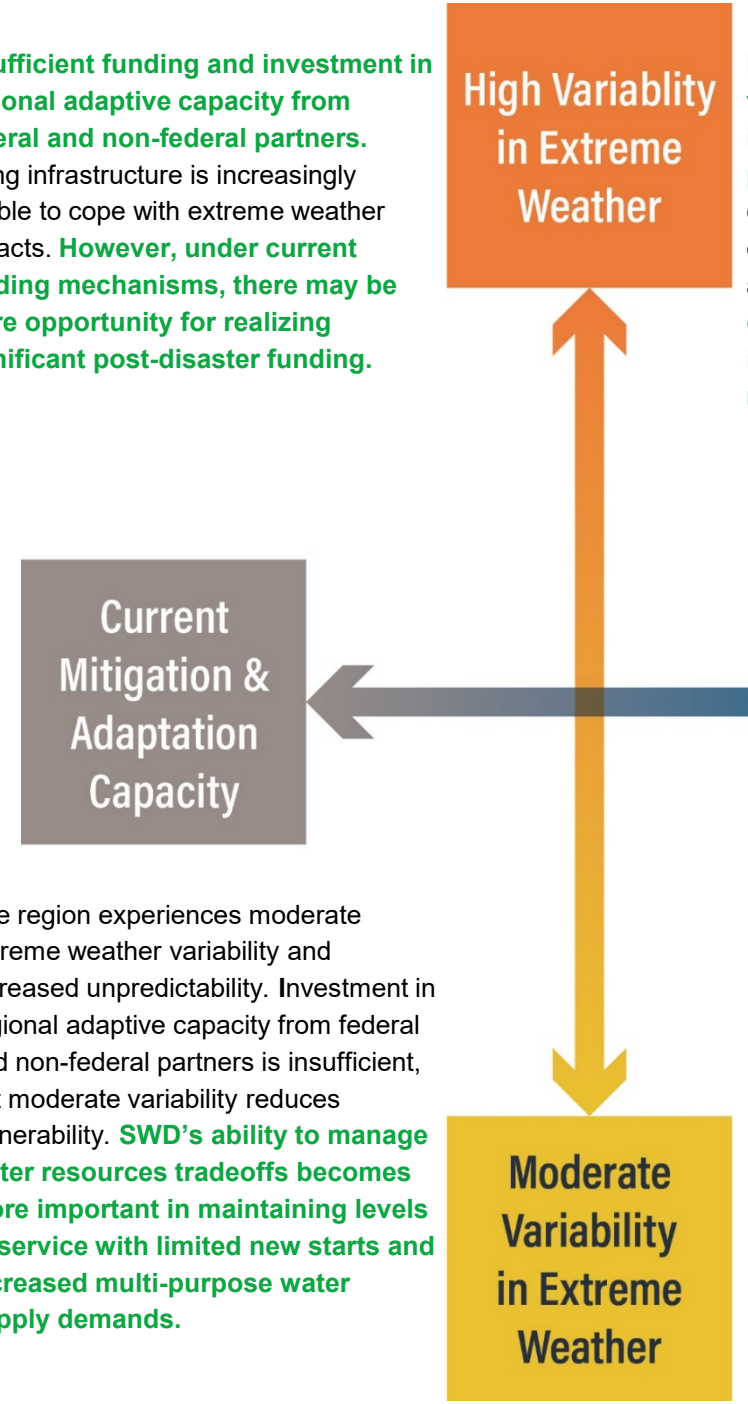
- Increases in frequency and intensity of droughts, extreme precipitation, coastal flooding
- Aging infrastructure and population growth exacerbate risk

Drivers/uncertainties

- Precipitation rates, temperature changes, sea level, population growth, damage to infrastructure

Response opportunities

- Water reallocation, planning studies, channel/reservoir improvements, inter-agency and stakeholder coordination



Insufficient funding and investment in regional adaptive capacity from federal and non-federal partners. Aging infrastructure is increasingly unable to cope with extreme weather impacts. **However, under current funding mechanisms, there may be more opportunity for realizing significant post-disaster funding.**

Region experiences extreme weather variability in the form of more intense/frequent drought or extreme precipitation, coastal floods. Stronger catastrophic events like hurricanes elevate risk of economic disruption across the region. **Regional adaptive capacity increases with investments in policy, planning and projects to mitigate losses.**

The region experiences moderate extreme weather variability and increased unpredictability. Investment in regional adaptive capacity from federal and non-federal partners is insufficient, but moderate variability reduces vulnerability. **SWD's ability to manage water resources tradeoffs becomes more important in maintaining levels of service with limited new starts and increased multi-purpose water supply demands.**

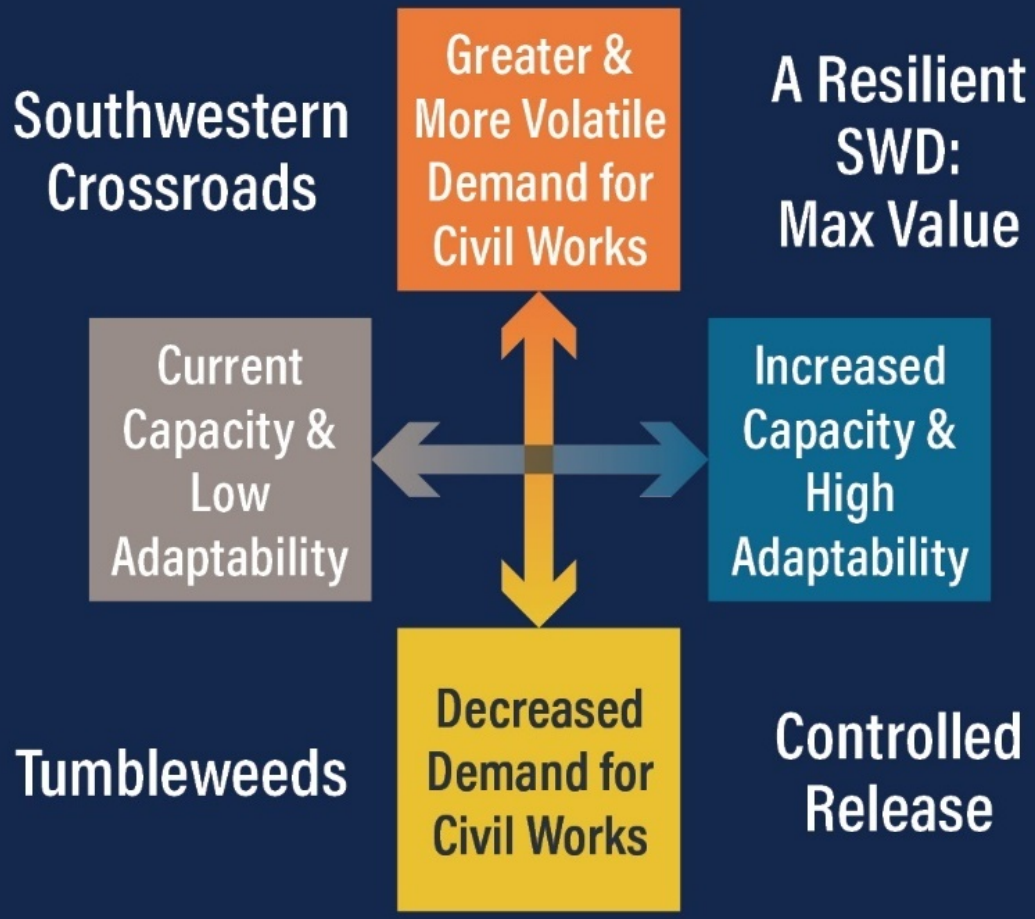
The region experiences moderate extreme weather variability with manageable predictability and trajectories. Catastrophic events like hurricanes still pose elevated risk of economic disruption across the region. **Combination of moderate extreme weather variability and increased adaptive capacity allows region to plan, prepare and respond effectively to extreme weather impacts.**

OVERARCHING SCENARIO:
CAPACITY & ADAPTABILITY TO MANAGE DEMAND & VOLATILITY

Challenge
- Rapidly changing world means several possible future scenarios for SWD
- Drivers have feedbacks and interconnectivity, such as population growth/extreme weather and impacts to risk

Scenario Overview
- Explores nuance, complexities, and opportunities for SWD

Response opportunities
- Water reallocation, planning studies, channel/reservoir improvements, inter-agency and stakeholder coordination

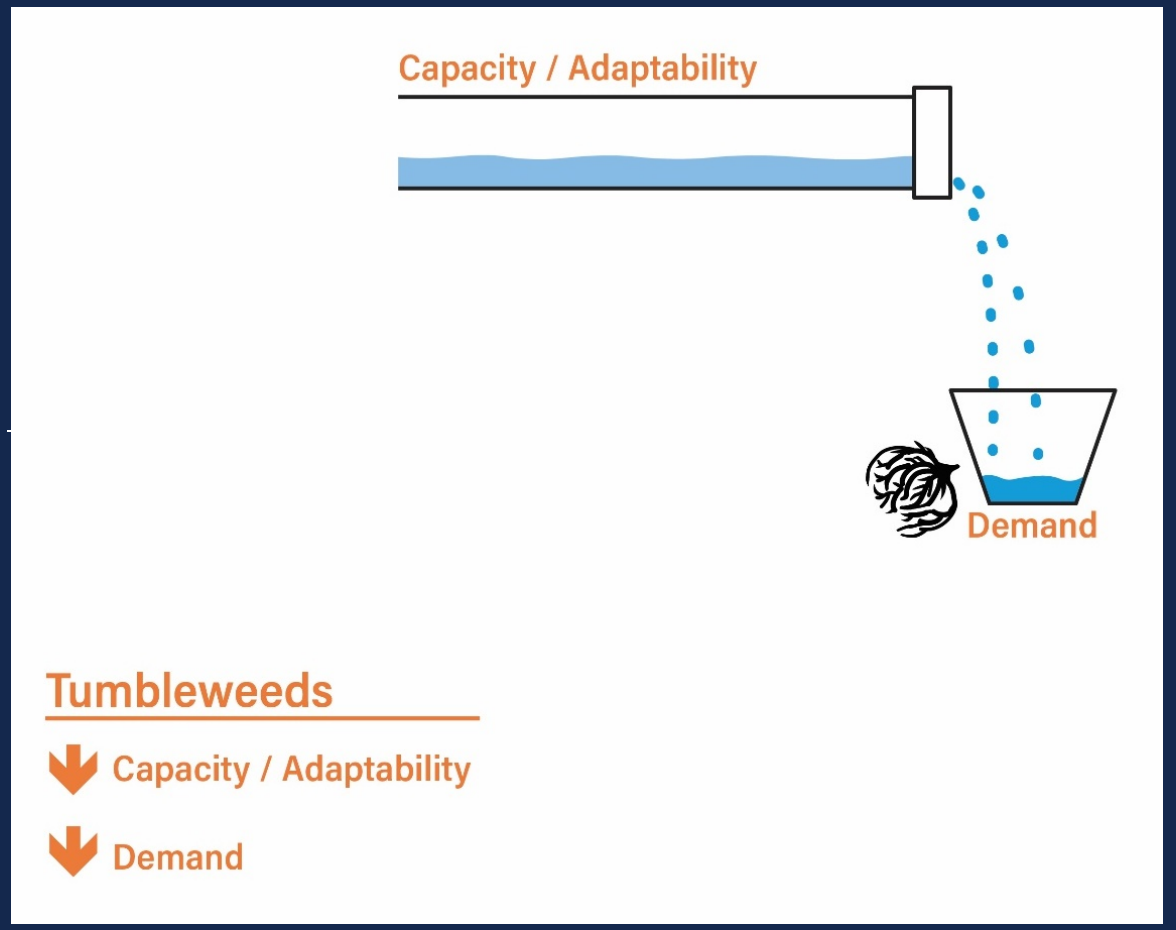


TUMBLEWEEDS SCENARIO

- Drivers combined to reduce demand on civil works and current capacity is maintained with limited flexibility and adaptability

Declining populations, reduced revenues and major shifts in energy alter the regional economic landscape and reduce funding and demand for civil works

- Right sized for a period of reduced need, but risk of being unable to adequately and efficiently meet surges or shifts
- Potential feedback: limited investment is perpetuated by less available funding, and capacity may start to decline as a result

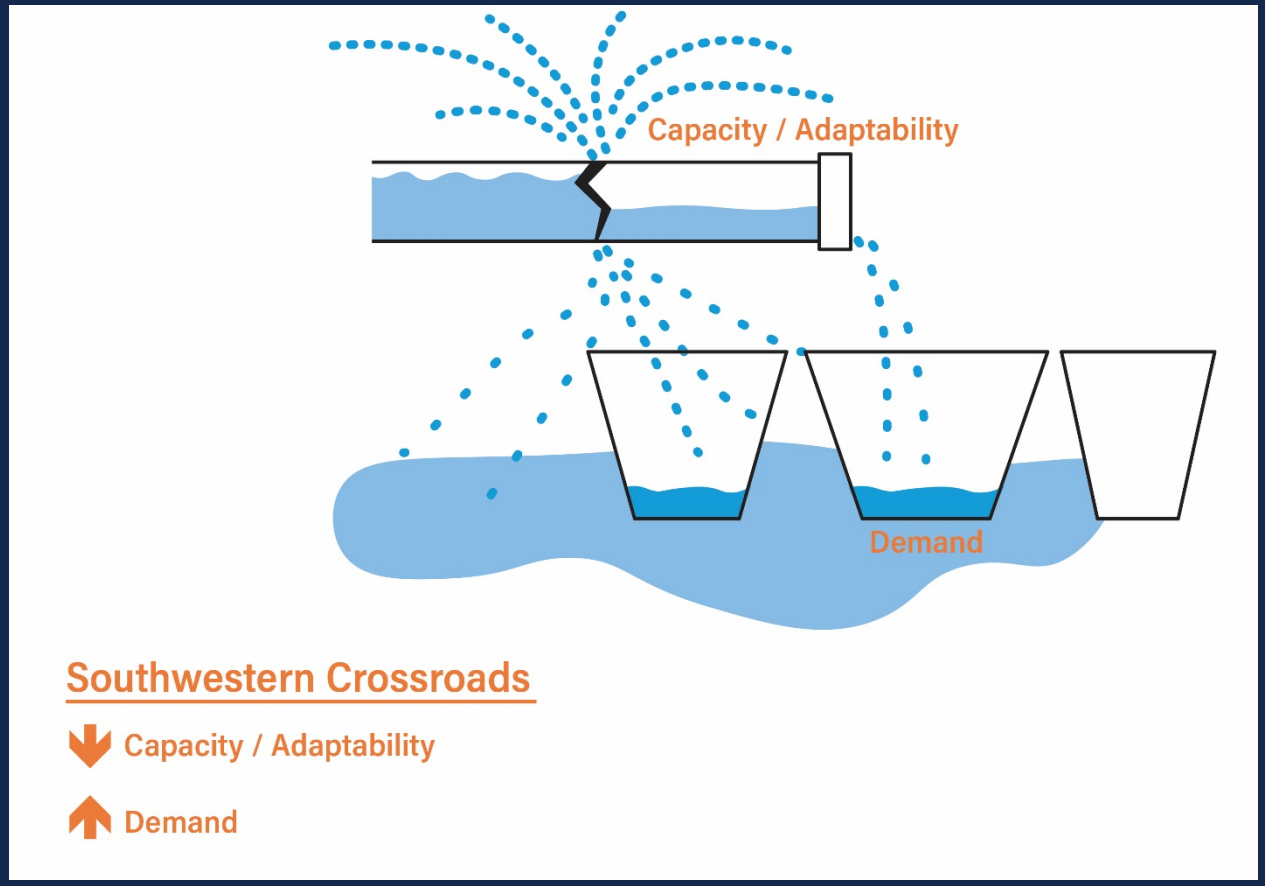


SOUTHWESTERN CROSSROADS SCENARIO

- SWD faces increasing challenges to maintain level of service, manage tradeoffs for water use, and allocate resources.

Infrastructure is increasingly vulnerable to extreme weather risks, and SWD is not positioned to adapt operations to changing trends or respond to rapid change.

- Despite limited investment in civil works capacity and few or no new starts, region continues to experience growth and increased demand.
- Continued need/demand for civil works projects presents opportunities to fund investments.



CONTROLLED RELEASE SCENARIO

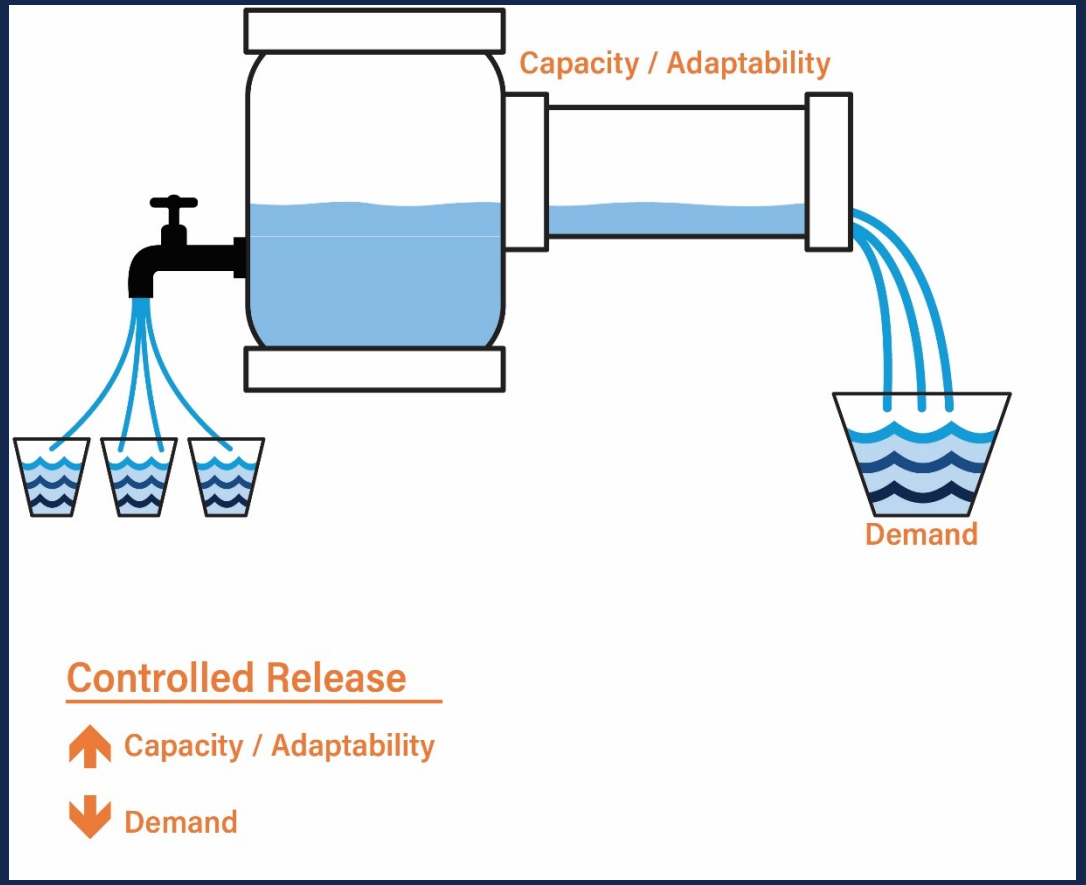
- Drivers combined to reduce demand on civil works, but capacity is expanded and adaptability improved

Potential to be overbuilt in time of reduced need, but able to nimbly redirect capacity and resources to needs within and beyond the region

- Proactive mode: investment enables broader range of future responses to potential surges

SWD analyzes trends and drivers and uses that information to prepare for changes

- Potential feedback: SWD is a center of expertise that supports IWRM for the region and beyond

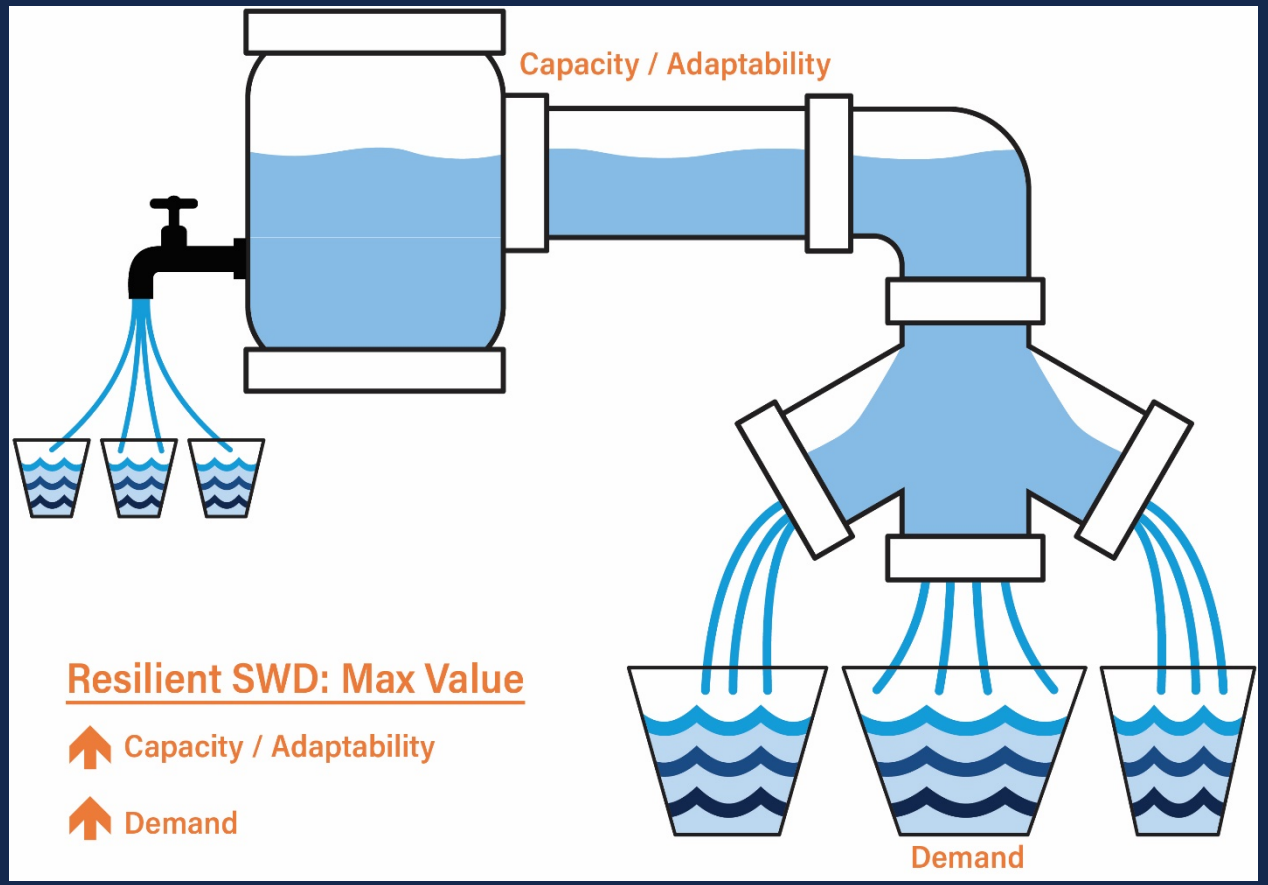


A RESILIENT SWD: MAXIMUM VALUE PROPOSITION

- SWD and regional stakeholders have increased civil works capacity to better adapt to changes in demand, extreme weather risks and economic volatility.
- Prosperous region supported by robust SWD
- Nimbleness to meet demand volatility

Capacity investments allow SWD to proactively and efficiently allocate resources, manage tradeoffs for water use, and align operations in response to rapid change.

- Potential feedback: In a volatile future with increased risk, a resilient SWD helps retain and attract investment, drive economic growth, and increase demand for civil works.



DRAFT CWSP Structure

Executive Summary

1. Introduction:
A New Era for Civil Works in SWD

Provide context: foundation from which to build

2. Evolving Risks & Opportunities:
Key Drivers

Uncertainties about the world in which SWD must operate over the next 20 years

3. Strategies for Action:
Vision, Strategic Goals, Objectives

Guiding principles for how SWD will respond to change in the face of uncertainty

4. Framing the Future:
Scenario Planning

Potential futures (multiple due to uncertainties), identification of key gaps and how implementation of strategies can improve outcomes

5. Towards Implementation

Brief framing of next steps: "hooks" to facilitate linkage of CWSP to implementation

Call Out Boxes

Used throughout the document to illustrate specific connections to Districts, Business Lines, examples of strategies (e.g., projects) in action

USACE CWSP – MOVING FORWARD

- What are your initial impressions of the USACE CWSP?
- Do you have questions about the framework or content?
- What potential connections do you see between the USACE strategies and your interests and concerns as a stakeholder?
- What opportunities do you see for USACE to implement their strategies in connection to your interests and concerns as a stakeholder?
- What thoughts do you have for your continued engagement in developing implementation plans based on the CWSP?

USACE Southwestern Division Civil Works Strategic Plan (CWSP)

Next Steps:

- Continue working towards final CWSP report
- MSC CSWPs due to HQUSACE by SEP 20
- Will be integrated and synthesized to inform the 2020-2035 USACE CWSP
- SWD and its Districts will use the SWD CWSP in the development of Implementation Plans

Development Process: April - September 2020