IMPACT:

The Water Economy

SNAPSHOT: An emerging economy

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YES!

The world has an Emerging Water Economy

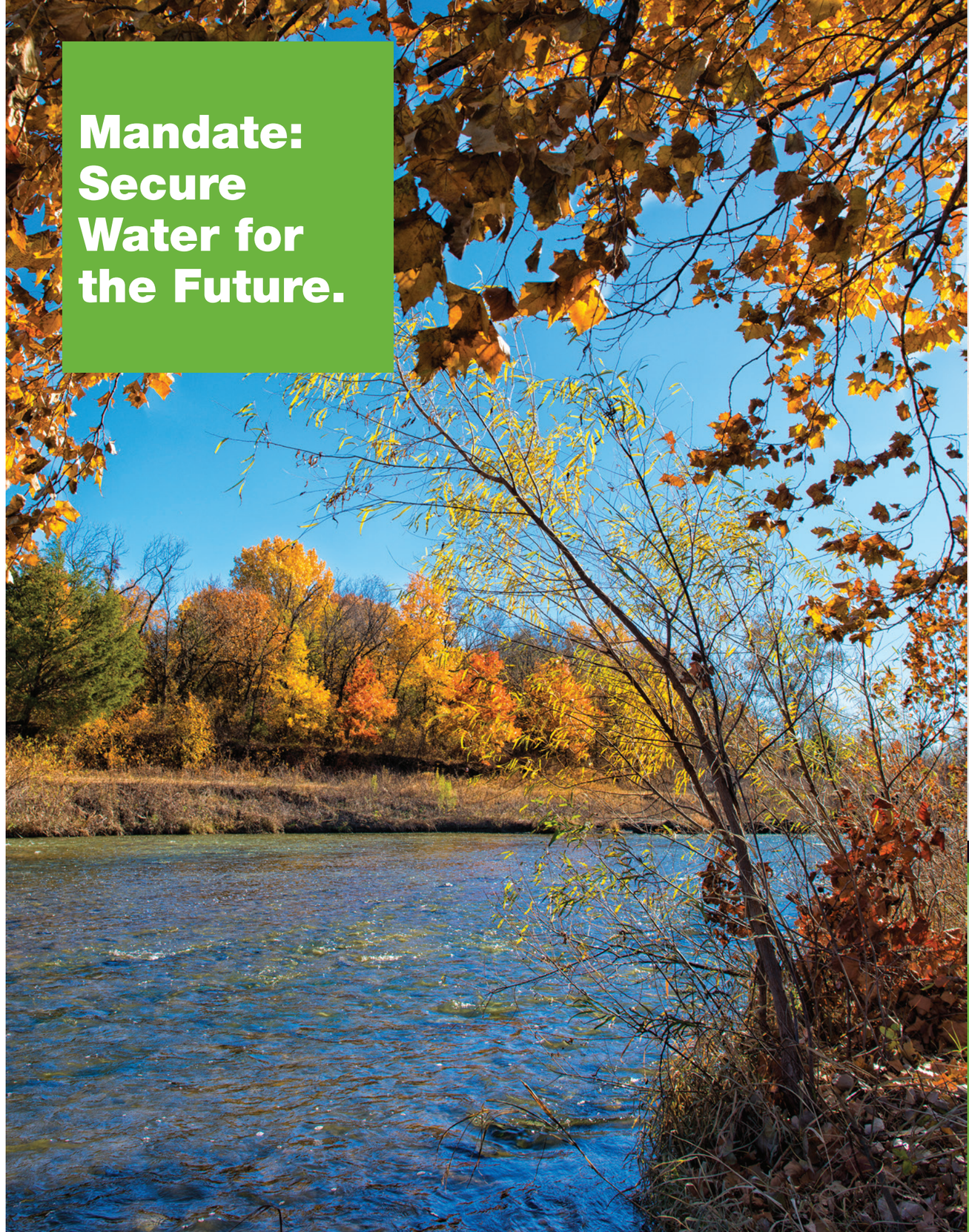
WHAT WE KNOW.

The water on earth is almost everywhere — above the Earth in the air and clouds, on the surface of the Earth in rivers, oceans, ice, plants, in living organisms, and inside the Earth in the top few miles of the ground.

The concerns for water — the lack thereof and its quality — continue to grow. According to the U.S. Geological Survey (USGS) office, about 71 percent of the Earth's surface is water-covered, and the oceans hold about 96.5 percent of all Earth's water. USGS indicates that in the United States in 2010, we used about 275 billion gallons of surface water per day, and about 79.3 billion gallons of groundwater per day.

THE ECONOMY OF WATER

Water-centric technologies and the products being generated are creating additional sources and resources for existing business: filtration to sensors, meters to regulators. An emerging WATER INDUSTRY & ECONOMY is creating opportunities for small business and entrepreneurs — and the jobs that follow — while creating much needed global solutions.



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DEVELOPMENT

QUALITY: Water quality can be thought of as a measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics. From acid rain to bacteria, from pesticides to sewage overflows, sediment to nitrogen — there are many potential human-induced, as well as naturally-occurring water contaminants; whether it is used for direct human consumption or industrial processing, the QUALITY OF THE WATER MATTERS.

QUALITY is the first step in SECURITY. According to the EPA, declining source water quality poses challenges for conventional water treatment plants in meeting drinking water standards.

REUSE: Conservation isn't enough. The scarcity of water mandates increasing REUSE — there are growing opportunities for recycled water:

WATER RESILIENCY

"It is the biggest threat facing the world."

— World Health Organization, January 2016

- **Term: Gray Water — used to describe 'captured' water from residential & commercial drains**
- **Public landscaping and golf courses were some of the first-adopters of water reuse; Gray Water**
- **Power-Generation Facilities have water-intense cooling needs at high capacity**
- **Aquifer & Stream Flow Maintenance can directly benefit from reuse, with appropriate treatment**
- **Utilities are increasingly considering & researching potable reuse**
- **Other common users include: oil refineries, paper mills, carpet dyers; activities using reused water: toilet flushing, dust control, construction activities, concrete mixing, and artificial lakes**
- **EPA is among the greatest proponents of REUSE, including published guidelines**

WaterSense®

WHAT WE THINK WE KNOW.

While there is no doubt that WATER is an increasingly important topic, with all of the 'need' relative to QUALITY available water, there are a number of projections and assumptions regarding Economic Impact AND Economic Opportunity.

THE PHILOSOPHY OF WATER

"Without water, there is no life. In the 21st Century humans have become primary 'drivers' of the pressures on our planet's water systems. More than ever it is crucial to understand the cultural ways humans interact with water." — Dr. Irene Klavner, UNT professor of philosophy and religion

While addressing economic concerns and impacts, there are cultural nuances and HUMAN BEHAVIORS that must be considered alongside market developments.

WATER RESILIENCY = Security + Quality + Availability

- **Security:** QUALITY and PROTECTION. It is THE reason to explore "solutions" for water's integrity and sheer survival; a huge technology AND behavioral opportunity.
- **Economic Development:** Flint, MI. Sadly, the "poster child" for water's impact on economic development: INDUSTRY needs water and is making location decisions related.
- **Research and Development:** DEPLOYMENT. That is the necessary "next step" for water technologies and solutions, conservation to reuse.
- **Technology:** Providers may face a complex system of state and local requirements. BUT the EPA is driving technology and acceptance will grow via mandates.
- **Investment and Entrepreneurship:** Israel has led in water technology solutions for decades; with water needs growing daily, so too are business opportunities.
- **Regulation:** The government is pushing hard in this area of technology, therefore the regulatory environment is "primed" (with market, public support).
- **Cultural Adoption and Behavior Modification:** Humans are human; individuals and businesses: Modification MUST occur in seeking AND deploying water resiliency solutions.

A WATER ECONOMY

THE FORECAST

Humans hold the key to the world's water future; awareness and targeted investment must grow.

AWARENESS BUILDING

Without water, neither small businesses nor major global industries can function. Business-as-usual will not meet future need. The business community must further outcome-driven discussion & decision-making.

SECURITY FIRST

Flint, Michigan has served as a 'wake up call'. WATER SECURITY — its RESILIENCY — is critical to our future. Poor water quality, limited or unreliable access to water needs addressing, as does: CYBERSECURITY for water infrastructure.

INNOVATION

Innovation is critical to the future of water. Government has been risk averse to 'new ideas'. The time has come to set aside fear & innovate necessary solutions — technology to cultural shifts. On-site metering & management technologies are needed in industry.

INVESTMENT

Public and private investment are in a face-off. Risk aversion by government (understood) places pressure on progress. DEMONSTRATION & INFRASTRUCTURE INVESTMENT MUST INCREASE.

SHARED RESPONSIBILITY

Water is an essential asset; effective management and planning is a shared economic responsibility: business and industry, farms and factories, individuals and communities. Cultural Change. Behavior Modification.

RESILIENCY = SURVIVAL

To withstand AND sustain — WATER must be resilient, it IS our future; human-created, nature-based solutions are necessary for the economy and humankind to survive.

"The cure for anything is salt water: sweat, tears or the sea."

— Isak Dinesen

Learn more about partnering with UNT:

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