



## Linking Water Infrastructure to Community and Economic Development in Smaller Places

Wichita, Kansas ~ October 28-29, 2014

Sustainable Communities  
 Learning Network

**NADO**  
NATIONAL ASSOCIATION OF DEVELOPMENT ORGANIZATIONS  
RESEARCH FOUNDATION

**EFCN**  
environmental finance center network



# Background Information & Event Materials

## Welcome!

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Thank you for joining us in Wichita – we're glad you're here! This workshop is designed to build the capacity of HUD Sustainable Communities Regional Planning and Community Challenge grantees from smaller metros and rural communities in the areas of water infrastructure planning and economic development. Presentations and other event materials, as well as reports, case studies, and additional resources related to planning, economic and workforce development, transportation, and sustainable development can be accessed at [www.NADO.org](http://www.NADO.org) and [www.SCLearningNetwork.org](http://www.SCLearningNetwork.org).

*\*Cover image courtesy of Flickr user Sir Mildred Pierce*

## About the Sustainable Communities Capacity Building Program

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The NADO Research Foundation and the Environmental Finance Center Network are part of a larger team of organizations providing capacity building and technical assistance to HUD and EPA sustainable communities award recipients through the Sustainable Communities Learning Network. The capacity building teams have been forming networks among grantees to exchange ideas on successful strategies and best practices, lessons learned, and emerging tools. This work will strengthen the capacity of grantee communities to create more housing choices, make transportation more efficient and reliable, invest more effectively in water and wastewater infrastructure, and build vibrant, healthy, and economically prosperous places. Grantees and their partners can access resources, network with their peers, and find information about upcoming events on the Sustainable Communities Learning Network website, available at <http://SCLearningNetwork.org/>.

This program is a component of the *Partnership for Sustainable Communities*, an innovative interagency collaboration launched by President Obama in June 2009 between HUD, EPA, and DOT to lay the foundation for a 21st century economy by creating more financially, environmentally, and socially sustainable communities. More information about the Partnership and additional resources can be found at <http://www.sustainablecommunities.gov/>.

## Sponsors

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This workshop was coordinated and organized by the NADO Research Foundation and the Environmental Finance Center Network as part of the Sustainable Communities Learning Network through cooperative agreements with the Institute for Sustainable Communities, U.S. Department of Housing and Urban Development, and the U.S. Environmental Protection Agency. Any opinions, findings, conclusions, or recommendations expressed at this event do not necessarily reflect the views of HUD or EPA.



**Sustainable Communities**  
**Learning Network**

## About the NADO Research Foundation and the Environmental Finance Center Network

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The NADO Research Foundation is the non-profit research affiliate of the National Association of Development Organizations (NADO), a national membership association for the country's 500+ regional planning and development organizations that are focused on strengthening local governments, communities, and economies. Regional planning and development organizations—known locally as regional planning commissions, councils of governments, area development districts, or similar names—play a key role in regional and community economic development, business development finance, technology and telecommunications, transportation planning, workforce development, GIS analysis, disaster preparedness, and a variety of other types of services and support for member local governments.



The Environmental Finance Center Network is a university-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and improvement. The EFCN works with the public and private sectors to promote sustainable environmental solutions while bolstering efforts to manage costs. The Environmental Finance Centers are located throughout the United States at the University of Southern Maine; Syracuse University; University of Maryland; University of North Carolina, Chapel Hill; University of Louisville; Cleveland State University; University of New Mexico; and Dominican University.

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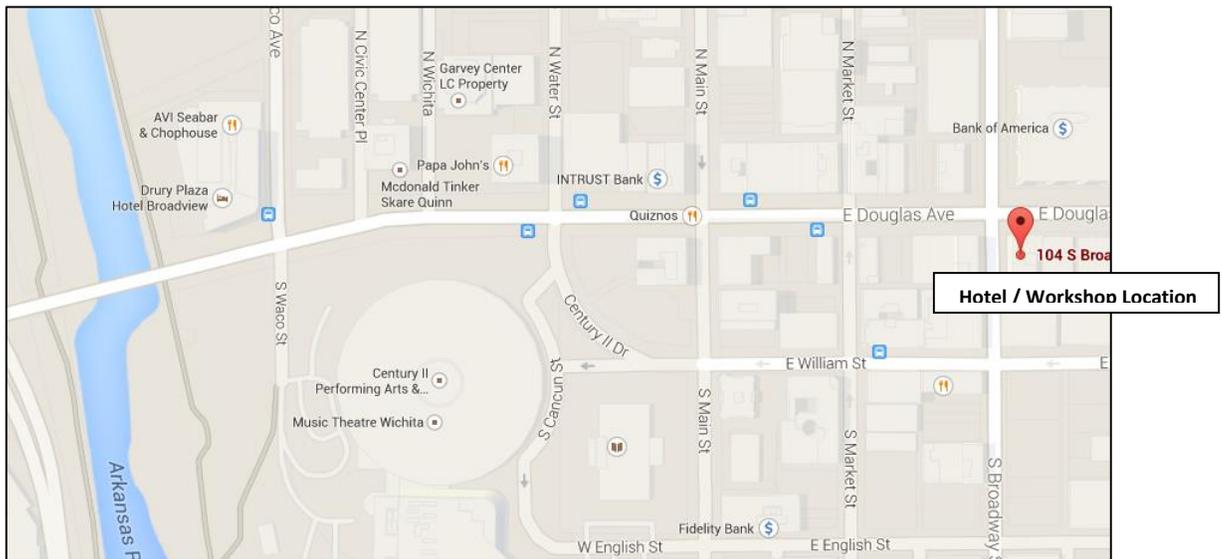
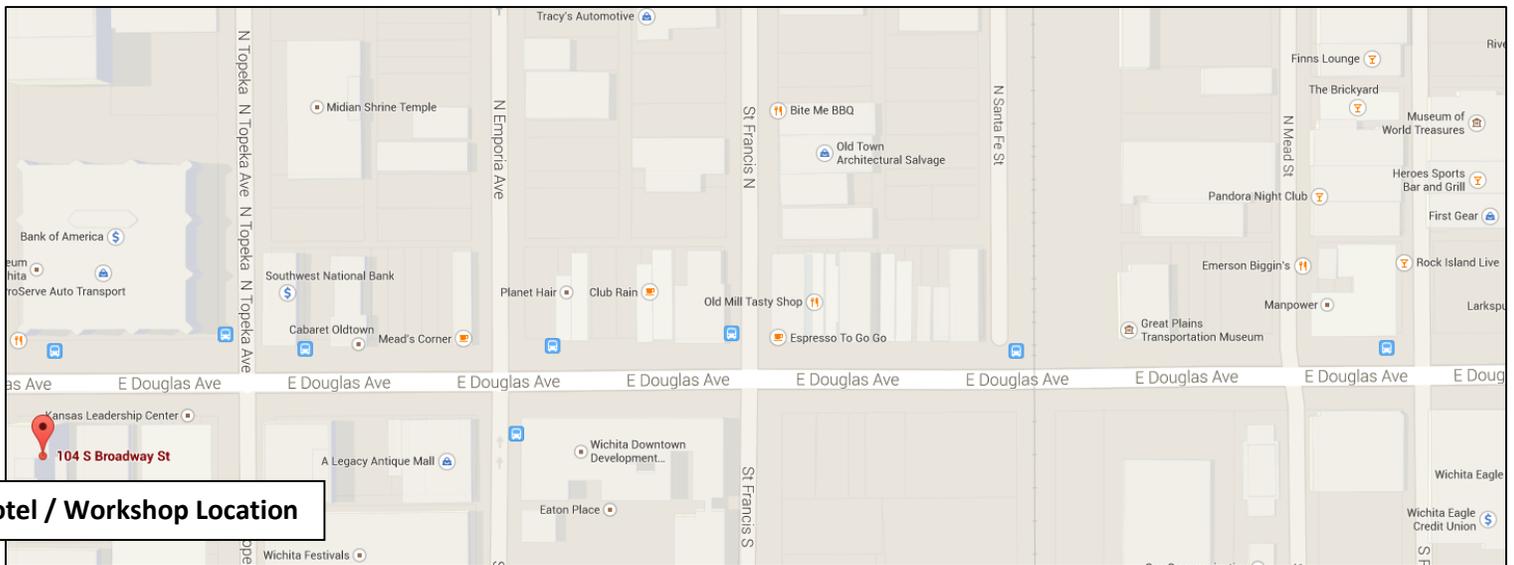
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# Location Information

**Accommodations / Venue:** **Ambassador Hotel Wichita**  
104 S. Broadway  
Wichita, KS, 67202  
316.239.7100

**Meeting Space:** Regent Meeting Room (Second Floor)

**Attire:** Business Casual (don't forget comfortable shoes for the tours!)



# Linking Water Infrastructure to Community and Economic Development in Smaller Places

**Ambassador Hotel Wichita  
(Regent Room - Second Floor)**

## TUESDAY, OCTOBER 28

**8:30 a.m. Registration and Networking Breakfast**

Coffee and breakfast

**9:15 a.m. Welcome and Introductions**

*Brett Schwartz, Program Manager, NADO Research Foundation*

*Angela Buzard, Director, Wichita State University Environmental Finance Center*

**9:30 a.m. Keynote: Investing In Resilient Communities**

*Craig Anthony (Tony) Arnold, J.D., Boehl Chair in Property and Land Use, Professor of Law, Louis D.*

*Brandeis School of Law, University of Louisville*

Strategies and policies to link water with economic development will not succeed if water systems are vulnerable to shocks and disturbances such as drought, pollution, floods, negative effects of population growth and land development, and climate change. The resilience of local economies, ecosystems, communities, and water systems are interconnected. Smart communities invest in both water and economic development in ways that build local adaptive capacity and resilience to unexpected changes. Professor Arnold will discuss these concepts and share illustrative examples from communities that have chosen resilience-building strategies.

**10:30 a.m. Break**

**10:45 a.m. Grantee Success Stories: Sharing What's Working (5x5 Presentations)**

Grantee participants will each have five minutes and five PowerPoint slides to highlight one key water success story from their project in this fast-paced series of short presentations followed by Q&A.

**12:00 p.m. Lunch Presentation: South Central Kansas Prosperity Plan**

*Paula Downs, Project Manager, Regional Economic Area Partnership Prosperity Plan*

*Joe Pajor, Deputy Director of Public Works and Utilities, City of Wichita*

Learn about the status of water resources in our host region of south central Kansas and hear about a variety of water-related planning initiatives underway. One of these is the South Central Kansas Prosperity Plan, a 2011 HUD Regional Planning grant addressing the five-county region's built environment, healthy community design, natural resources, transportation, water, and workforce development.

**1:30 p.m. Afternoon Session: Water's Impact on Economic Development**  
*Angela Buzard, Director, Wichita State University Environmental Finance Center*  
*Nick Willis, Program Manager, Wichita State University Environmental Finance Center*

We have all seen the water headlines related to contamination, scarce supply, and high rates. While water may not be the #1 reason businesses choose to stay or relocate, negative water headlines can certainly impact economic development. Good customer engagement and advanced planning helps keep your customers informed, water rates reasonable, and the economic development climate positive. Hear case stories from Wichita and the nearby small city of Hays, which have responded to water quality and quantity issues in innovative ways, including Hays' stringent water use standards which have resulted in impressive conservation.

**2:15 p.m. Break and Meet Outside Hotel to Board Bus for Aquifer Storage and Recovery Project Tour**

**2:30 p.m. Aquifer Storage and Recovery Project (ASR) Tour**

Tour the [Aquifer Storage and Recovery Project \(ASR\)](#), designed to restore the invaluable Equus Beds aquifer and ensure that it remains a bountiful and clean source of water for future generations. The idea behind the ASR program is simple: It takes flood water from the Little Arkansas River, purifies it, and returns it to the depleted aquifer for future city use.

**5:45 p.m. Return to Hotel; Adjourn Day 1**

## WEDNESDAY, OCTOBER 29

**8:30 a.m. Breakfast and Networking**  
Coffee and breakfast

**9:00 a.m. Hazard Mitigation as an Economic Development Strategy**  
*Josh Human, Director*  
*Andrea Pompei Lacy, Project Manager*  
*Center for Hazards Research and Policy Development at the University of Louisville*

Planning for natural disasters is a critical component in building local economic resilience. CHR staff will share principles for sound hazard mitigation planning in small cities and rural places. They will also discuss how communities are beginning to realize efficiencies by combining local hazard mitigation plans and Comprehensive Economic Development Strategies (CEDS) plans.

**10:30 a.m. Networking Break**

**10:45 a.m. Saving Costs through a Regional Approach to Water Infrastructure**  
*Monica Billig, Program Manager, University of Maryland Environmental Finance Center*

Towns in rural regions can be hesitant to share resources and programs, but the potential cost savings of doing so are significant. While still in the beginning phases, the University of Maryland

Environmental Finance Center has been working with collaborative groups of municipalities in the Mid-Atlantic region to move communities towards a more regional approach to infrastructure management, with a focus on stormwater. In this session, learn how rural places can build regional collaboration by sharing water infrastructure resources, funding mechanisms, and implementation strategies.

**11:30 a.m. Lunchtime Discussion**

Tables will be labeled with various topics for discussion. Grab your lunch and choose a table for a facilitated discussion with your peers and trainers.

**12:15 pm. Break and Meet Outside Hotel to Board Bus for WATER Center Tour**

**12:30 p.m. WATER Center Tour**

The [Wichita Area Treatment, Education & Remediation \(WATER\) Center](#) serves as a treatment facility for the Gilbert-Mosley Project, as well as a public education resource. The remediation system begins with five and a half miles of conveyance piping and thirteen extraction wells, which extract and convey the polluted groundwater to the WATER Center treatment facility. This remediation system limits the spread of and removes the groundwater contamination.

**2:30 p.m. Return to Hotel; Adjourn Workshop**

# Participating Grantee Profiles

## REGIONAL ECONOMIC AREA PARTNERSHIP – PROSPERITY PLAN

**LOCATION:** South Central Kansas - Wichita region

**LEAD GRANTEE ORGANIZATION:** Regional Economic Area Partnership (REAP)

**PROJECT PARTNERS:** Consortium Partners: Sedgwick County; City of Wichita; City of Wellington; City of El Dorado; Harvey County; City of Newton; Reno County; City of Hutchinson; Wichita Area Metropolitan Planning Organization (WAMPO); Wichita State University's Hugo Wall of Public Affairs and Center for Community Support and Research (CCSR); Visioneering Wichita; Wichita Downtown Development Corporation; United Way; Kansas Health Foundation; Wichita Independent Neighborhood (WIN); Independent Living Resource Center (ILRC); and the University of Kansas School of Medicine-Wichita

**COUNTIES/MUNICIPALITIES SERVED:** Planning area includes 5 counties and 66 incorporated cities (not all of which are REAP members or planning partners)

**PROJECT POPULATION AREA:** 687,572

**GRANT TYPE AND YEAR AWARDED:** FY2011 – Regional Planning Grant

**PROJECT SCOPE:** South Central Kansas is competing globally and in order to be successful, we must develop a coordinated plan to foster long-term job creation with adequate infrastructure to affordably access employment and services. The plan will provide the region with a framework to address economic competitiveness, social equality, public health, and the environment in a cooperative manner and develop integrated policies that addresses housing, land use, economic and workforce development, transportation, and infrastructure investments. The planning effort focuses on six key areas: workforce and business development; built environment; transportation; water; natural resources; and healthy community design. The goal of the plan is to make long-term decisions together that:

- Use limited public funds more efficiently;
- Connect people with quality jobs through coordinated workforce development;
- Align regional housing, transportation, and infrastructure investments;
- Protect important resources such as water, air, and farmland;
- Build safe, healthy, and attractive neighborhoods; and
- Create lasting value for our local communities and economies.

The plan will provide an overall vision for sustainability in the region by developing goals, strategies, and actions steps to support that vision. Specifically the plan will create a regional integrated plan involving regional partners and stakeholders. The plan will focus on engagement processes that will bring together stakeholders from public, private, and non-profit organizations. Resources are dedicated to engage populations that are typically under-represented in the planning process, including a focus on youth engagement and education. In order to utilize the good planning work already completed or underway, the plan will support already developed regional strategies by reviewing existing plans and then assessing information and data to identify the opportunities/gaps in the region. A “preferred future” scenario will be developed to provide a lens in which to make decisions around resource allocation and projects. Through continued engagement and the development of a strong implementation strategy, the regional plan will be adopted by the REAP organization, Consortium Leadership Team, and member consortium partners. Moving forward the plan will set forth policy direction, alternative strategies, and action steps to coordinate future planning and project implementation by individual entities, thus allowing for and acknowledging local autonomy. As a method of tracking

regional sustainability progress, measures and indicators will be included to track and assess progress towards the achievement of regional sustainability in the five-county region.

**MAJOR WATER ISSUES FACING THE REGION:** South Central Kansas has identified four major challenges related to water: the limited nature of water resources; the need for drought resiliency planning; the need for conservation information and improved marketing around conservation; and the need to address the lack of preventative infrastructure maintenance/replacement. We are fortunate in this region to have several water sources available to us (rivers, reservoirs, equus beds) and have a long-term commitment to water projects, such as the Aquifer Storage and Recovery (ASR) project. However, a recent severe drought and population projections highlighted the need to identify future water supply options for the region to address residential, industrial, commercial, and agricultural needs.

As in most regions, we face an aging water/wastewater infrastructure issue, where there has been a lack of priority placed on preventative maintenance and replacement programs. Our infrastructure is severely aged and will require extensive funding commitments to fully address. Kansas is a "prior appropriation state" in regard to water rights spelled out in the state's water appropriation act (KSA 82a-701). This act operates under the general principal of "first in time-first in right," which means in times of shortage, the last people to obtain water rights are the first to be affected by whatever remedy(s) is prescribed. Ownership of a water right protects your use against all users who developed a right after you. In order to balance water rights, the region will need to intentionally collaborate to ensure this finite resource meets current and future needs. The presence of numerous water providers across the region tends to fragment resource planning. Factors such as the continuing drought, diminishing revenue, and deteriorating infrastructure conditions also constrain opportunities for long-term, regional planning.

**EFFORTS UNDERWAY:** The region recognizes that water is a high regional priority and that it is an economic and community development tool that is needed to support our economy. REAP has had a long-term commitment to the role of water in the region and have dedicated resources to create a forum for information exchange and learning opportunities for regional elected officials. They provide an annual water conference and lobby for continued state funding support of water projects, including the ASR. On the ballot in November is an opportunity for residents of the City of Wichita to vote on a 1 cent sales tax that is expected to generate about \$400 million over five years to help fund several community needs, including identifying and developing a water supply option. With the help of the Sustainable Communities grant, we have been able to bring together diverse voices in the region to develop issues and strategies to promote coordinated water resource management throughout the region. As we think about implementation of the Prosperity Plan, water is such a high priority topic that a taskforce is in place to ensure that strategies are put into action.

# RESILIENT REGION PLAN

**LOCATION:** North Central Minnesota

**LEAD GRANTEE ORGANIZATION:** Region Five Development Commission

**PROJECT PARTNERS:** Central MN Initiative Foundation; Clean Energy Resource Teams; Central MN Housing Partnership; Envision MN; Ensearch; UofM Regional Sustainable Partnerships

**COUNTIES/MUNICIPALITIES SERVED:** 5 Counties, 65 Cities, 1 Army Camp and 1 Tribe

**PROJECT POPULATION AREA:** 167,000

**GRANT TYPE AND YEAR AWARDED:** FY2010 – Regional Planning Grant

**PROJECT SCOPE:** The goal of creating the Resilient Region plan was/is to create a Community driven - University assisted partnership around planning sustainable regions that integrated the disciplines of housing, transportation, natural environment (land use), and economic development (including energy and local foods) that will encompass in-reach strategies through HIGHLY involved civic engagement in efforts to build an inclusive region that will provide opportunities, be free from discrimination, and improve the quality of life of ALL residents.

**MAJOR WATER ISSUES FACING THE REGION:** Land conversion from forest to agriculture, urban development, and intensification of shore line development are perhaps the greatest threats to our local water economy. Impacts on water quality and quantity are becoming evident across the region. Climate related change in precipitation frequency and severity complicates the land use change conditions. Protecting local drinking water sources from transportation threats (trucks and rail) is a growing risk management issue at all levels of government in the region. Many of these water related challenges/opportunities were identified in the Natural Resources and Land Use theme within the Resilient Region Plan. An additional piece of context is that our region, in addition to having a direct local water economy, also represents the source water supply for the 2-million people dependent on Mississippi River for drinking water in the greater Minneapolis/St. Paul region of the state.

**EFFORTS UNDERWAY:** Communities have/are developing Drinking Water Supply Management Area controls to protect local well heads. Local government is/has developed local controls to control site and regional storm water impacts on lake and river water quality. River and lake monitoring is occurring at multiple government levels. State agencies are working on water appropriation level regulation and agricultural land practices to reduce ground water contamination.

# HEART OF TEXAS EFFICIENT TOWNS & COUNTIES CO-OP

**LOCATION:** Bosque, Falls, Freestone, Hill, and Limestone Counties, Texas

**LEAD GRANTEE ORGANIZATION:** Heart of Texas Council of Governments

**PROJECT PARTNERS:** 5 counties, 37 cities, 15 organizations

**COUNTIES/MUNICIPALITIES SERVED:** 42

**PROJECT POPULATION AREA:** 114,347

**GRANT TYPE AND YEAR AWARDED:** FY2011 – Regional Planning Grant

**PROJECT SCOPE:** Regional Planning Grant: The Heart of Texas Efficient Towns and Counties Co-Op (Consortium) is producing a Regional Plan for Sustainable Development that has community engagement at its core and focuses primarily on gathering and integrating data and recommendations for three key areas: community, economy, and environment. The Regional Plan is assessing and mapping existing conditions as well as conducting analyses and recommendations in the following areas: housing; transportation; water; infrastructure; air quality; solid waste; community engagement and engagement resources; entrepreneurship and small business; community priorities, needs, and concerns; issues creating disparities in access; economic vulnerability points, both for physical communities and for characteristic communities; and climate vulnerability points, especially drought and subsequent flooding.

**MAJOR WATER ISSUES FACING THE REGION:** Aging, failing infrastructure; lack of water; drought

**EFFORTS UNDERWAY:** Infrastructure mapping; water supply corporations and communities are working together on grant applications

# OYATE OMNICIYE | OGLALA LAKOTA PLAN

**LOCATION:** Pine Ridge Indian Reservation, South Dakota

**LEAD GRANTEE ORGANIZATION:** Thunder Valley Community Development Corporation

**PROJECT PARTNERS:** BNIM

**COUNTIES/MUNICIPALITIES SERVED:** Region defined by boundary of reservation in rural South Dakota; Shannon, Jackson, and Bennett counties

**PROJECT POPULATION AREA:** Census data = 16,000; work force study = 30,000 tribal members

**GRANT TYPE AND YEAR AWARDED:** FY2010 – Regional Planning Grant

**PROJECT SCOPE:** Since the creation of the Pine Ridge Indian Reservation (PRIR), there was no holistic plan that afforded the Oglala Lakota a chance to coordinate and calibrate its economy, its culture, its services, and its government in a comprehensive and sustainable manner. Although there have been attempts, there is currently no active planning department, no adopted building codes, and limited to few results from the few fragments of previous “strategic visions” that have been acted on. Each segment of the government and its agencies are often caught in bureaucratic protocols and struggle to keep up with the sheer amount of need (housing, infrastructure, health care) on the Pine Ridge Indian Reservation. The Sustainable Communities Planning Grant and RPSD has provided a chance to build on the limited attempts of the past and launch a holistic approach given new concepts and leadership from outside the government and inside the communities.

During the regional planning process, listening provided a mountain of information, and additional research and data gathering created another mountain. The planning process began by researching the topics of: Climate, Data Infrastructure, Culture & Spirituality, Economic Development, Education, Energy, Environment, Food & Agriculture, Governance & Sovereignty, Health, Housing, Justice, Land Use, Natural Resources, Public Facilities, Public Safety, Social Services, Transportation, Waste, and Water. Through remembering the connectedness of all things and by focusing on the ways in which health, culture, prosperity, and the natural world overlap, patterns emerged. These patterns pointed to areas where work could be done that would help solve one problem and ripple outward with a positive impact. The process maintained a feedback loop that looked to the community-established Vision for guidance and focusing on the emerging patterns with the greatest potential to heal and make life on Pine Ridge more fulfilling. Twelve Initiatives became the framework for projects, policies, and programs: 1) Regional Planning Office, 2) Governance, 3) Language, 4) Youth and Young Ones, 5) Model Community Development, 6) Health and Wellness, 7) Education, Training, and Outreach, 8) Economy, 9) Land Use, 10) Environment and Ecosystems, 11) Communication, 12) Transportation.

**MAJOR WATER ISSUES FACING THE REGION:** Many wells and much of the water and land on the Reservation are contaminated with pesticides and other poisons from farming, mining, open dumps, and commercial and governmental mining operations outside the Reservation. A further source of contamination is buried ordinance and hazardous materials from closed U.S. military bombing ranges on the PRIR. Scientific studies show that the High Plains/Oglala Aquifer which begins underneath the PRIR is predicted to run dry in less than 30 years due to commercial interest use and dryland farming in numerous states south of the Reservation. This critical North American underground water resource is not renewable at anything near the present consumption rate. Recent years of drought have simply accelerated the problem. The lagoon and water treatment systems throughout the reservation have exceeded capacity and are not functioning well. Untreated waste water is overflowing into streams and groundwater.

**EFFORTS UNDERWAY:** Every drop of water is a precious resource, and intrinsically related to the health of people in a community. The Thunder Valley Regenerative Community (a Model Community Development initiative) will increase clean water sources by embedding strategies in streets, homes, and businesses to collect and use rainwater productively. Attention to daily habits as well as sensitive construction practices will help to clean the water that enters lakes and streams. This clean water will renew habitat as well as replenish the aquifers deep below the ground.

Thunder Valley CDC's regenerative development seeks to be a testing ground for water conservation and reuse strategies both for tribal nations and many other areas of the United States faced with this challenge. The alternatives studied in the preliminary engineering analysis included two primary systems:

- 1) Roadside bioswales, culverts, and rain gardens
- 2) Storm drain inlets, culverts, curb & gutter, and rain gardens

The first alternative was recommended since it is not only the most cost effective but also provides the most capacity to filter rainwater and recharge the aquifer through vegetated areas. Future infrastructure improvements could include underground cisterns for rainwater capture as well. Depending on the filtration systems used and connections to buildings, underground cisterns may provide potable water, additional water for irrigation systems, or water to flush toilets in homes and businesses, thereby reducing the balance of potable water supply needed.

Water on the reservation has been tainted by Uranium mining and tests have shown the presence of Arsenic and Barium among other radioactive elements. Mni Wiconi, which means "water is life" in the Lakota language, is a large scale water infrastructure project that carries water to the reservation through pipelines from the Missouri River. The Mni Wiconi Water Treatment Plant and Coreline project replaces contaminated water sources and bring safe drinking water to communities throughout the reservation. The project was completed in 2013. The overall project has been managed by the OST Rural Water Supply System in partnership with the Bureau of Reclamations. The Mni Wiconi project has run a main water supply line (8" diameter) along the adjacent road, and the Thunder Valley CDC development may connect to this for water supply that is owned and regulated by the tribal Rural Water Department. The development will maintain its own fire protection storage tank to maintain a daily supply of 238,000 gallons.

Current South Dakota standards are used for expected water demand. Through conservative water use practices and rainwater reuse this development will benchmark its water use and monitor meter readings to achieve an increasingly efficient balance of supply and use. Future infrastructure efficiencies could include graywater reuse and water routed from cisterns for potable uses, depending on appropriate filtration and permitting from South Dakota Department of Environment and Natural Resources.

A new model of caring for our water is needed and this development seeks to provide that replicable model for the Reservation and other tribal nations. Thunder Valley CDC has focused on treatment options that use natural processes to clean and reuse water on site. The preliminary engineering study analyzed five alternatives for sanitary sewer system collection and treatment:

- 1) Constructed Wetland Bioreactor System
- 2) Living Machine Treatment Facility
- 3) Orenco Treatment Unit
- 4) Discharge into Sharps Corner Lagoons
- 5) Cluster Treatment Systems

Each of the alternatives was evaluated by cost, environmental impact, capacity to reuse treated waste water, land use requirements, and energy use. The system that has the greatest potential to meet the goals of Thunder Valley Regenerative Community Development is the Constructed Wetland Bioreactor System. The Constructed Wetland Bioreactor (CWB) System utilizes naturally occurring biological processes to treat wastewater. The CWB consists of three feet of coarse gravel with a top layer of fine gravel. A shallow berm is maintained around the wetland area to aid in eliminating surface runoff, and an impervious liner to the wetland area is installed to eliminate groundwater contamination. The wastewater is piped in approximately 3 inches below the top of the gravel to make sure that the top layer stays dry, odorless, and does not promote insect breeding ground or human contact with wastewater.

Prior to wastewater entering the wetland, the wastewater goes through a tank to reduce solids and trap grease. Regular tank cleanout is a part of the operation and maintenance of this system. Liquid (effluent) from this primary treatment

phase then enters the wetland where microorganisms that live in the coarse gravel and in the roots of plants that thrive in wetland conditions clean the effluent. The more microorganisms that grow in this wetland the faster it treats the water. The plant roots further increase the efficiency of the treatment through carrying oxygen and emitting molecules which stimulate the microbial system. Once the effluent is treated it will be routed to storage tanks to be used for irrigation.

The estimated irrigation need for the development is 860,000 gallons per month. Based on the anticipated average of 58,000 gallons of effluent daily, there will be more than enough to meet the development's irrigation needs and excess is discharged to Thunder Valley Creek to supply the watershed with clean water and recharge the aquifer.

The preliminary engineering study proposes that there would be three CWBs on the site. The placement of the CWBs would likely allow the flow to rely on gravity, thereby negating the cost and maintenance of pumps for operation. This decentralized approach reduces the amount of piping required to collect wastewater and redistribute treated water. This approach also allows the CWBs to be integrated throughout the development on approximately 1.6 acres of land currently owned by Thunder Valley CDC. Additionally, the plants grown in the CWBs provide habitat for many species of animals, generate oxygen, sequester carbon, and provide even more natural beauty to the development.

# GRANITE STATE FUTURE

**LOCATION:** State of New Hampshire

**LEAD GRANTEE ORGANIZATION:** Nashua Regional Planning Commission

**PROJECT PARTNERS:** Nine state agencies and organizations including the NH Departments of Transportation, Health and Human Services, Environmental Services, the Office of Energy Planning, and NH Housing Finance Authority; and a broad cross-section of community partners from a variety of sectors including the University of New Hampshire, Healthy Eating Active Living NH, the New Hampshire Charitable Foundation, and others

**COUNTIES/MUNICIPALITIES SERVED:** All 9 of New Hampshire's state-designated regions

**PROJECT POPULATION AREA:** 1.3 million

**GRANT TYPE AND YEAR AWARDED:** FY2011 – Regional Planning Grant

**PROJECT SCOPE:** All nine regional planning commissions in New Hampshire will complete integrated, coordinated, and sustainable regional plans covering the areas of transportation, housing, water, and air quality that are tied to local comprehensive land use. The plans address the unique needs of each community and region, integrate sustainability principles into planning for housing, transportation, water infrastructure, natural resources, economic development, climate change and adaptation, and energy efficiency and include scenario planning that informs future development patterns.

**MAJOR WATER ISSUES FACING THE REGION:** The Nashua Region faces several issues, including flash-flooding exacerbated by outdated water infrastructure, a lack of sewer in some areas experiencing growth and economic development, development demands in areas surrounding public water supplies, and stormwater and septic-related pollution into water bodies.

**EFFORTS UNDERWAY:** A series of floods in the early 2000s has focused attention on culverts and other outdated water infrastructure in the region. Virtually every community is placing a significant focus on stormwater pollution and assembling frameworks to minimize stormwater pollution associated with new development. The City of Nashua installed crest gates atop a downtown dam to encourage re-use of several riverfront mills and historic structures that were previously in the flood plain.

# PARKVIEW GARDENS: A SUSTAINABLE AND ACCESSIBLE NEIGHBORHOOD

**LOCATION:** University City, MO (Inner-Ring Suburb in St. Louis Metropolitan Area)

**LEAD GRANTEE ORGANIZATION:** City of University City, MO

**PROJECT PARTNERS:** City of University City; Washington University in St Louis; Parkview Gardens Association; Great Rivers Greenway District; Trailnet; Regional Housing and Community Development Alliance; Arcturis; St. Louis Regional Arts Commission; City of St. Louis. Advisors - Gateway Foundation (Christy Fox, Executive Director); Metro; University City Arts and Letters Commission; University City Parks Commission

**COUNTIES/MUNICIPALITIES SERVED:** One urban neighborhood

**PROJECT POPULATION AREA:** 3,300

**GRANT TYPE AND YEAR AWARDED:** FY2010 – Community Challenge Grant

**PROJECT SCOPE:** To create a sustainable redevelopment plan for Parkview Gardens, an urban neighborhood located in the easternmost part of University City, an inner-ring suburb which abuts the City of St. Louis. Issues in the planning area to be addressed include: a lack of neighborhood connectivity, a need for additional affordable housing, and a need to improve the quality of existing open spaces. In addition, connecting residents to existing transit bus routes and light rail system and the planned Loop Trolley are included in the study. Part of the 2.2-mile alignment of the Loop Trolley will run along a section of Delmar Blvd., a major entertainment and cultural business corridor (Delmar Loop) which is the southern border of the Parkview Gardens neighborhood.

## **MAJOR WATER ISSUES FACING THE REGION:**

- The River des Peres has a very large watershed and the City of University City has the downstream end of the River running through it. This means that the City receives not only stormwater from within the City limits, but a lot of the water is actually from other communities.
- In University City, a majority of the sewer systems are combined (sanitary and storm sewer in the same pipe), thus causing more than just rain water issues during large storm events. During heavy rains the sewer systems are often overcharged, causing flooding in streets and basements. These waters contain sewage waste and require a much more extensive cleanup process.
- When flooding occurs in University City, typically there are flash floods, so often residents and owners do not have the time to protect themselves or their belongings if they reside in a floodplain.

## **EFFORTS UNDERWAY:**

- The recently completed DRAFT Heman Park Master Plan includes conceptual designs that will clear out invasive species from along the River des Peres and open up the banks of the river throughout the park. The reasons for this are to open up the park and make it look like one large park, but more importantly, it will create additional storage for water during large rain events. The City recently applied for a Department of Conservation grant to begin the implementation of conceptual designs.
- Because some of the homes in University City regularly flood and have severe repetitive losses, City staff continues to explore ways to remove these homes and revert these areas back to green space. For instance, as a result of the flood in 2008, the City received a grant through FEMA and was able to purchase and demolish 24 homes along Wilson Avenue through a voluntary buyout process. The City recently submitted a grant application through FEMA for additional acquisitions and demolitions. If the grant is awarded, three more homes will be bought out. Previously the City had demolished 2 other homes on Wilson Avenue using FEMA funds in 2004.
- Removing homes from the floodway/floodplain has provided the community with the opportunity to expand on the trail systems in the area. Great Rivers Greenway has proposed an extension to the Centennial Greenway that will use the land purchased on Wilson to continue the trail, ultimately connecting the existing Heman Park trail to the existing Mona

Trail in University City. When these trails are constructed along the River des Peres, the City will increase the opportunity for alternate forms of transportation throughout the City.

- The City does not own the sewer systems, but continues to work with the St. Louis Metropolitan Sewer District to ensure that the sewer systems are clean and functioning correctly during flooding events.
- The City continues to publish information to make residents aware of the floodplain and how to prevent water in basements during flooding (including some options for floodproofing).

# Tour Site Visit Information



## **Aquifer Storage and Recovery Project (ASR)**

The City of Wichita's Equus Beds Aquifer Storage and Recovery (ASR) Project is one aspect of the City's Integrated Local Water Supply Plan established to ensure that Wichita has the water it needs through the year 2050 and beyond. The Equus Beds Aquifer has been a major source of water for the city since 1940. Since the 1950s, water levels in the aquifer have dropped 40 feet, due in large part to water rights and pumpage that have exceeded the aquifer's natural recharge rate of six inches per year. As a result, the Equus Beds Aquifer is being threatened by saltwater from the Arkansas River and by oilfield brine. The ASR project plans to rectify these issues and benefit water users in the region by adding 70 billion gallons of water to the aquifer to meet the City's demands during drought periods; protecting the aquifer from water quality deterioration through the installation of a hydraulic barrier to stop the intrusion of natural and man-made sources of saltwater; and reducing power costs for pumping, for both the City and other water users, because of higher groundwater levels. The ASR project is an innovative model for water supply efforts and has attracted visitors from several national and international communities.



## **Wichita Area Treatment, Education & Remediation (WATER) Center**

Since 2003, the WATER Center has served as a treatment facility for the Gilbert-Mosley Project as well as a public environmental education resource. The City of Wichita faced a significant environmental challenge when volatile organic compounds impacted a large volume of groundwater extending south of the downtown area to the Arkansas River. The contaminated groundwater posed a threat to human health and the environment as well as economic development due to the environmental liability concerns across the project area that encompasses about 3,850 acres and 8,000 parcels of residential, commercial, and industrial properties. The City assessed the contaminated groundwater, designed and built a ground water treatment system to protect human health and the environment, and created the Wichita Area Treatment, Education, and Remediation (WATER) Center to provide environmental education resources for the entire Wichita community and visitors. The City has turned an environmental liability that threatened human and environmental health and community and economic development into an environmental education resource and community asset for current and future generations.

# Workshop Participant List

First	Last	Professional Title	Organization	City	State	E-mail
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