

PROTECTING UTILITIES DURING CRISIS:

THE CRITICAL ROLE OF WATER AND SEWER INTERCONNECTIONS FOR REGIONAL RESILIENCE

Presented by:



Jason Roberts

*Region I Planning and
Development Council (WV)*

304-431-7225

jasonroberts@regiononepdc.org



Jeffrey Hartley

*Project Manager
The Thrasher Group*

304-848-7030

jhartley@thethrashergroup.com



Mary Hartley

*Client Marketing Manager
The Thrasher Group*

304-848-7832

mhartley@thethrashergroup.com

REGION I & IV PLANNING & DEVELOPMENT COUNCILS

SERVING THE PEOPLE OF MCDOWELL, MERCER, MONROE, RALEIGH, SUMMERS, WYOMING, FAYETTE, NICHOLAS, GREENBRIER, POCAHONTAS & WEBSTER COUNTIES



WHO WE ARE

- Public agency established under WV Code (Chapter 8, Article 25)
- Two of 11 Regional Planning & Development Councils in WV
- Serves 11 counties across southern and central WV, including 27 municipalities in Region I and all municipalities in Region IV.



LEADERSHIP & PARTNERSHIPS

- Governed by Board of Directors (local officials + private sector representation)
- Collaborates with:
 - Economic Development Authorities
 - Public Service Districts
 - MPO & Transit Authorities
 - State & federal partners



WHAT WE DO

- Support infrastructure development (water, sewer, utilities)
- Advance economic growth, housing, and community health
- Promote environmental protection and regional sustainability



SPECIALIZED SERVICES

- GIS mapping & analysis
- Demographic insights and asset inventory
- Custom mapping and planning solutions
- Funding assistance

Driving stability, growth, and progress in southern West Virginia.

ABOUT THRASHER

ARCHITECTURE, ENGINEERING, AND FIELD SERVICES FIRM SERVING CENTRAL APPALACHIA

40+

YEARS IN BUSINESS

350+

EMPLOYEES

10

OFFICE LOCATIONS



Architecture



Civil Engineering
& Survey



Water & Wastewater
Engineering



Transportation
Engineering



Environmental
Services



GIS &
Survey



Construction
Administration &
Materials Testing

We're known for utility work, but offer a comprehensive suite of services to fill every project need.

ABOUT *the* PROJECT

REGION I UTILITY INTERCONNECTION STUDY

THE CLIENT

Region I & Region IV
Planning and Development
Councils - partnering to
serve an 11-county area in
southeastern West Virginia.



THE CHALLENGE

Recurring flood disasters
exposed critical
vulnerabilities in public
water and sewer systems.



THE SOLUTION

A Utility Interconnection
Study to identify emergency
backup connections
between neighboring water
and sewer systems.



STUDY AREA *at a glance*

11 COUNTIES IN WEST VIRGINIA

82 PUBLIC UTILITY PROVIDERS

112 WATER AND SEWER SYSTEMS

148 INTERCONNECTION POSSIBILITIES IDENTIFIED

A MASSIVE GEOGRAPHIC FOOTPRINT – SPREAD ACROSS RUGGED APPALACHIAN
TERRAIN – MADE FOR A BIG UNDERTAKING IN A SHORT AMOUNT OF TIME

METHODOLOGY

DATA COLLECTION

1

IDENTIFY ALL PROVIDERS

Catalogued every public utility provider across the 11-county area - 112 systems across 82 entities.

2

DEVELOP EVALUATION CRITERIA

Distance between systems · Elevation & terrain · System capacities · Source water · Environmental concerns

3

LEVERAGE EXISTING DATA

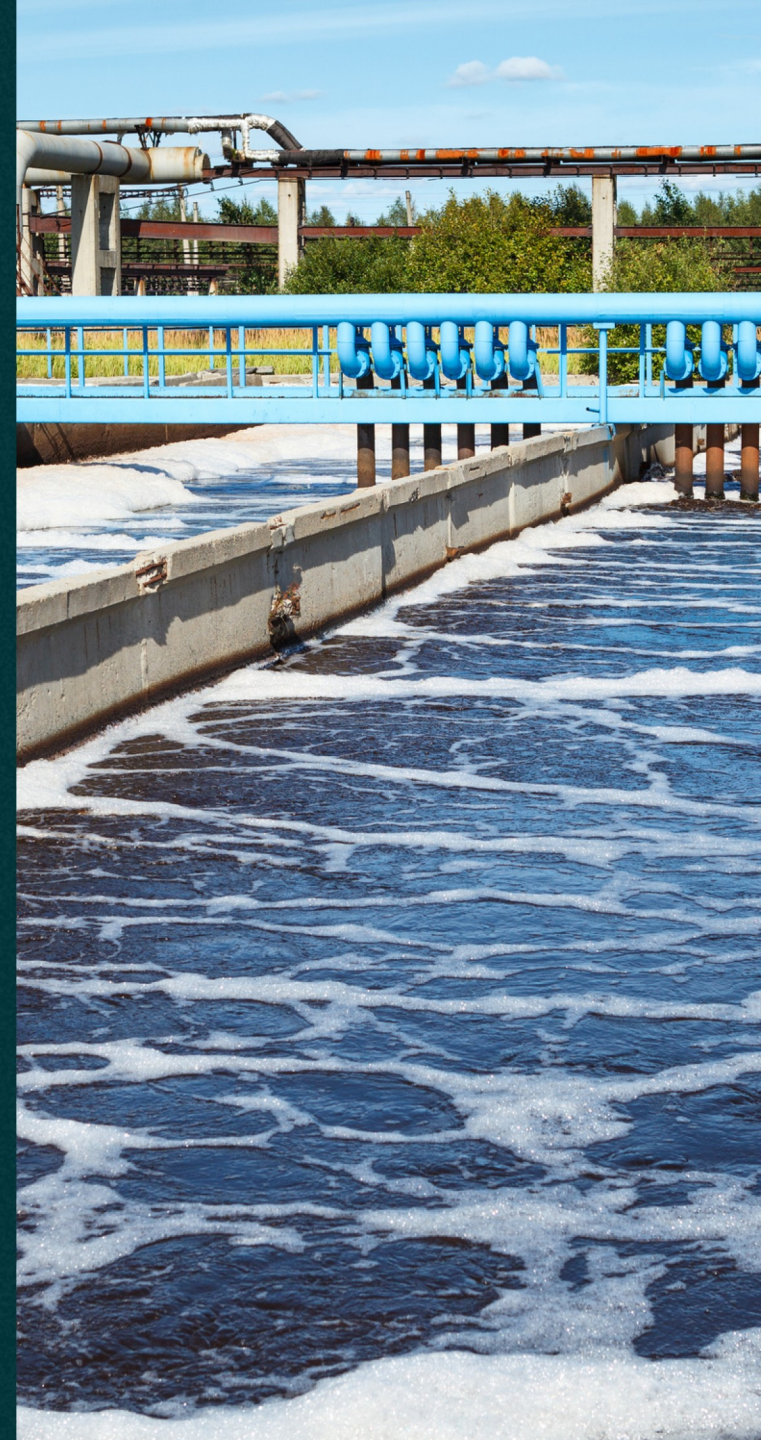
Thrasher already had many systems mapped in CAD from prior utility work.

4

SURVEY REMAINING SYSTEMS

Contacted and surveyed utilities not yet in our database, gathering data against the evaluation criteria directly from operators.

OUR EXISTING UTILITY RELATIONSHIPS MEANT WE HIT THE GROUND RUNNING - A DIRECT BENEFIT OF THRASHER'S DECADES OF INFRASTRUCTURE WORK IN WV.

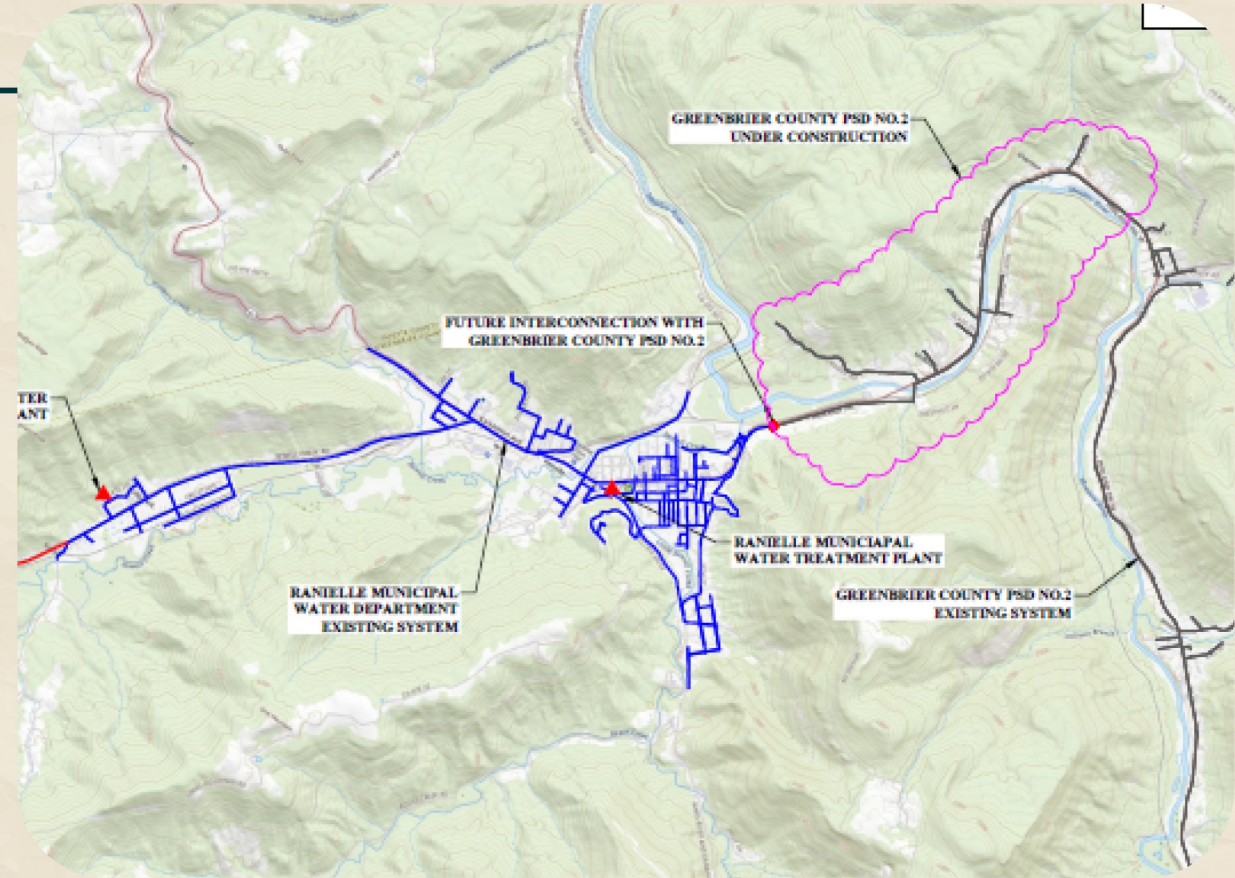


METHODOLOGY

ANALYSIS & ESTIMATION

INTERCONNECTION ANALYSIS

- Consolidated all utility data into a unified CAD environment
- Mapped geographic relationships between neighboring systems
- Evaluated each pairing against all criteria
- Identified viable interconnection scenarios for each county



METHODOLOGY

ANALYSIS & ESTIMATION

COST ESTIMATION

- Developed preliminary cost estimates for each viable interconnection scenario
- Estimates account for terrain complexity, pipe routing, and infrastructure needs
- Designed to support long-term investment planning and grant applications
- Empowers Regions I & IV to prioritize which connections to pursue first

Public Water Utility Interconnectivity:

WATER SOURCE



- Type
- Sustainability (limitations, environmental factors)

CRITICAL WATER SYSTEM COMPONENTS



- Service areas
- General system description (infrastructure limitations)
- Water treatment plant
 - Capacity
 - Age/Condition
- Water loss
- Water storage tanks (capacity)
- Boosters (distribution criticality)
- Current projects for extensions or an increase in capacity
- Telemetry and connectivity (capacity, capability, and compatibility)

CUSTOMER BASE



- User types (residential, commercial, industrial, resale)
- Seasonal variations
- Future needs

LOCATION



- General area description
- Proximity to transportation hubs
- Development opportunities
- Geographical factors

Public Sewer Utility Interconnectivity:

DISCHARGE LOCATION



- Type
- Receiving stream/watershed
- Permit (issues, limitations)
- Sustainability (limitations, environmental factors)

CRITICAL WASTEWATER SYSTEM COMPONENTS



- Service areas
- General system description (infrastructure limitations)
- CSO or SSO, if applicable
- Current projects for extensions or an increase in capacity
- WWTP
 - Capacity
 - Treatment technology
 - Age/Condition
- Lift stations
- Telemetry and connectivity (capacity, capability, and compatibility)

CUSTOMER BASE



- User types (residential, commercial, industrial, resale)
- Seasonal variations
- Future needs

LOCATION



- General area description
- Proximity to transportation hubs
- Development opportunities
- Geographical factors

DELIVERABLES



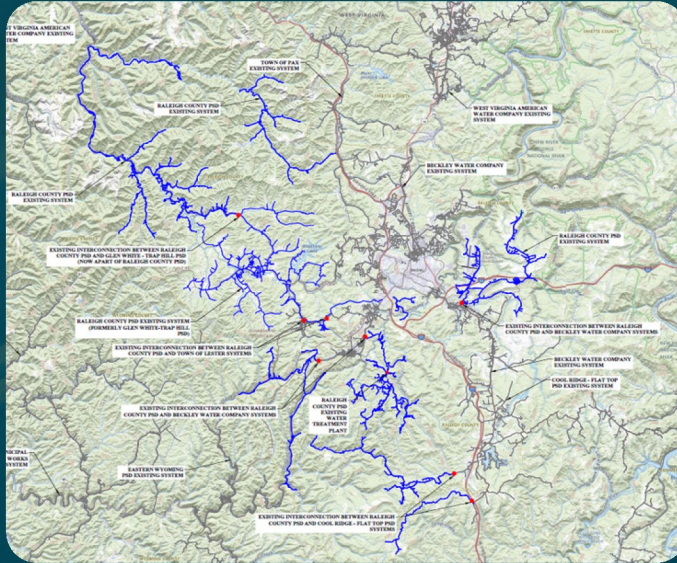
REGION 1 & REGION 4

Planning & Development Councils

Utility Interconnection Study

COMPREHENSIVE REPORT

All 148 interconnection possibilities documented - evaluation criteria, feasibility analysis, and preliminary cost estimates for each.



COUNTY-LEVEL MAPS

Dedicated maps for every county - one for water systems, one for sewer systems - clearly showing existing infrastructure and proposed connections.



ARCGIS PRO DATASET

Final maps translated into ArcGIS Pro for dynamic, interactive access to the full interconnection data - enabling ongoing use by stakeholders.

WHAT'S *next*?

PHASE 2 – EXPANDING THE SCOPE

- Examining critical utility assets across the region
- Evaluating water and sewer capacity needs for future housing developments
- Thrasher has started Phase 2 - building directly on this study's foundation

EXPANDING ACCESSIBILITY – ESRI STORYMAP

Translating the study's findings into an interactive public StoryMap - making the data accessible to community stakeholders, planners, and elected officials across the region.

POTENTIAL FUTURE APPLICATIONS

- **Transportation networks**
- **Stormwater systems**
- **Electric distribution**
- **Broadband/fiber**
- **Airport facilities**
- **Regional master planning**
- **Housing study**
- **Recreation facilities**

Questions?

See more details on the study at:



THE SITUATION



West Virginia has seen devastating flooding, particularly in southern counties

THE CHALLENGE



Use CDBG-DR funds to examine water and sewer utilities to find potential interconnections

11

Counties

82

Utilities Involved

112

Systems Examined

148

Potential Interconnections

3

Months to Complete

THE DELIVERABLE



A 375-page report detailing critical system components, potential interconnection scenarios, cost estimates, and system maps

THE NEXT STEPS



Phase 2: Continue studying critical facilities and housing; create an Esri StoryMap to communicate results



Jason Roberts

*Region I Planning and
Development Council (WV)*

304-431-7225

jasonroberts@regiononepdc.org



Jeffrey Hartley

*Project Manager
The Thrasher Group*

304-848-7030

jhartley@thethrashergroup.com



Mary Hartley

*Client Marketing Manager
The Thrasher Group*

304-848-7832

mhartley@thethrashergroup.com

QUESTIONS?



Jason Roberts

*Region I Planning and
Development Council (WV)*

304-431-7225

jasonroberts@regiononepdc.org



Jeffrey Hartley

*Project Manager
The Thrasher Group*

304-848-7030

jhartley@thethrashergroup.com



Mary Hartley

*Client Marketing Manager
The Thrasher Group*

304-848-7832

mhartley@thethrashergroup.com