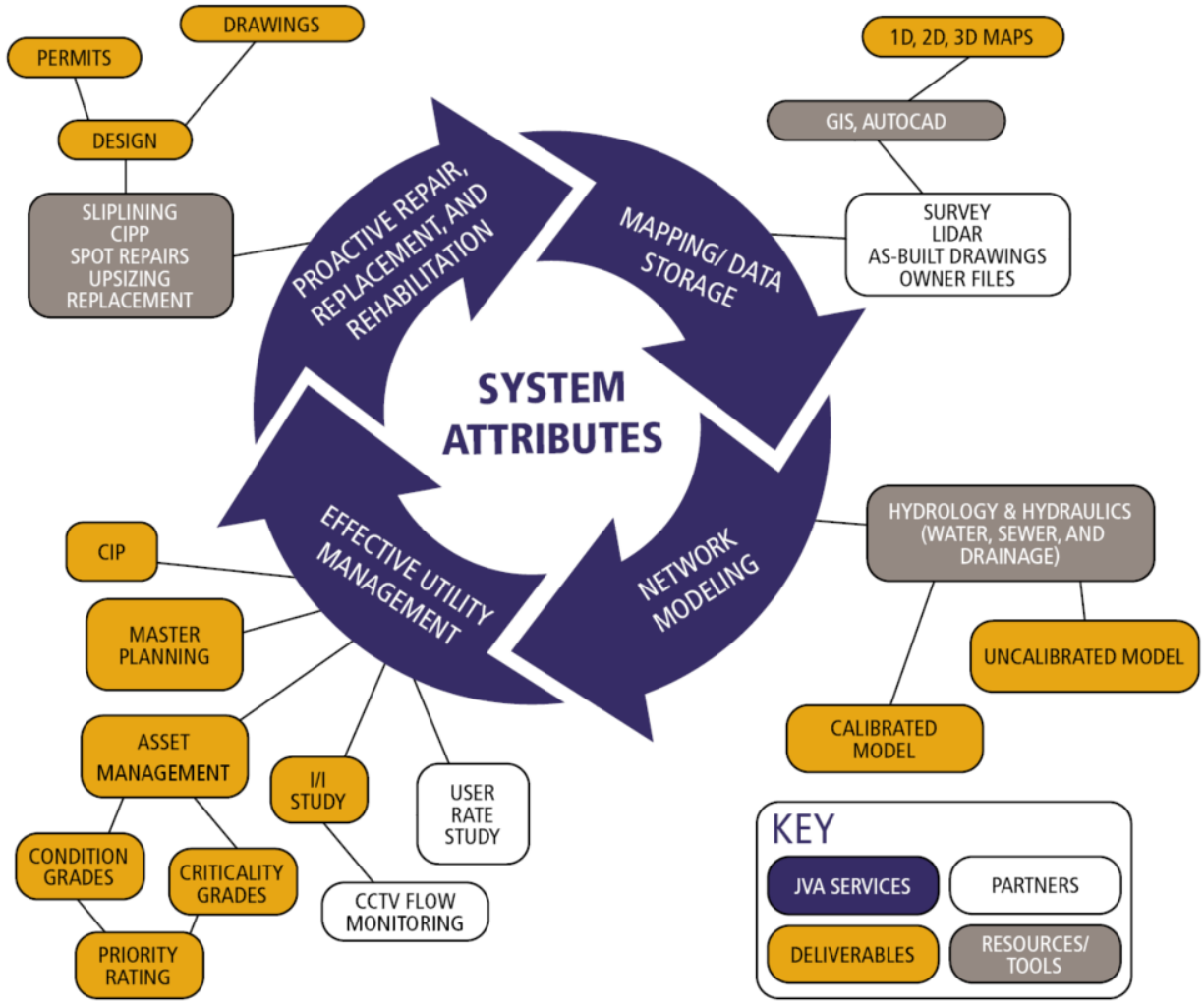


Utility Network Services are used for data collection, storage, mapping, modeling, analysis, master planning, effective utility management, and risk management of utility networks and assets to create and maintain proactive rehabilitation and replacement programs.



Garfield Storm Sewer and Modeling, Wellington, CO



CIPP/Sewer Rehab Projects, Mead, CO



Main Street Waterline Replacement, Lamar, CO

DEFINITIONS

System Attributes	Driving force for high quality deliverables	<ul style="list-style-type: none"> Elevation, depth, northing, easting, pressures, soil type, capacity, install date, repairs, condition grades, age, material, slopes, criticality, and more.
Mapping/Data Storage	Compiling, collecting, and creating databases for system infrastructure and their attributes	<ul style="list-style-type: none"> 1D (Hydraulic Profile), 2D (Alignment only), 3D (Elevation of Inverts and Rim with Plan and Profile)
Network Modeling	Hydrologic and hydraulic calculations on a water, sewer, drainage, storm, and floodplain systems	<ul style="list-style-type: none"> Common Software – WATERGEMS, INFOWATER, INFOSEWER, EPA SWMM, INFOWORKS, PCSWMM, EPA-NET, HEC RAS, BCA Uncalibrated Model vs. Calibrated Model: A calibrated model includes analyzing field measured system data to adjust properties in the uncalibrated model to better match actual system conditions
Effective Utility Management	The development and use of system planning documents that identify capacity and failure risks to create proactive plans for capital improvements and maintenance.	<ul style="list-style-type: none"> Master Planning – Documentation of systems and their current and future needs I/I Study – Documentation of field measured data of sanitary systems to locate inflow and infiltration Asset Management – the analysis of the criticality and condition of the system to develop a priority rating Capital Improvement Plan (CIP) – Prioritized list of required budgets of identified projects via master plans, owner observations, and asset management risk assessments User Rate Study – Analysis of projected available revenues to identify rate increases needed to fund operation, maintenance budget, and CIP
Proactive Rehabilitation and Replacement Construction	Individual project design and construction documents based on the priorities identified in the effective utility management documents including new, rehab, and replacement projects.	<ul style="list-style-type: none"> Ultimate goal to provide tools for a successful and high quality rehabilitation and replacement program

Deliverables:

- Reports / Technical Memos
- Annual Budget Recommendations
- Asset Map and Database including priority ratings
- Network Model
- Design and Construction Documents

Funding:

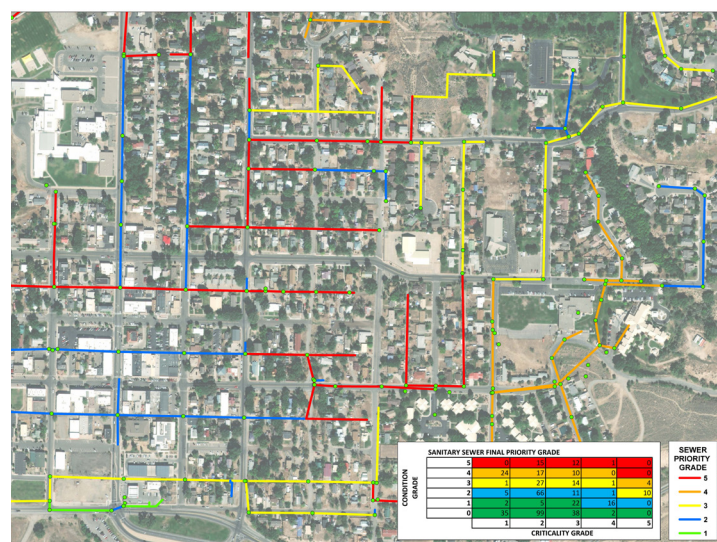
- Grants and Loans
- Enterprise Funds and Allocated Revenue Sources

Partnerships:

- Financial (rate studies)
- Install Flow Monitoring Equipment
- Survey, Drone/Surfaces, Lidar

Permitting:

- Colorado Department of Public Health and Environment (CDPHE)
- Mile High Flood District (MHFD)
- Drainage and Flood Control District (UDFCD)
- Regional Planning (NFRWQPA)
- Railroad, Canal and Ditch Companies
- Colorado Department of Transportation (CDOT)



Sewer Priority Grades, Riffe, CO