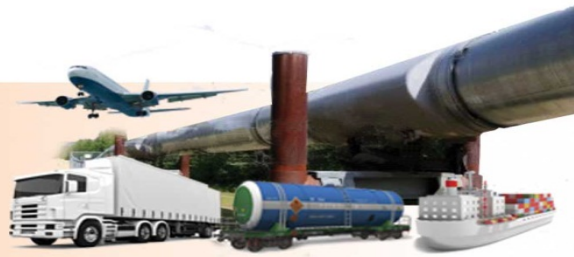
Improving Pipeline Safety and Innovation Through a Collaborative Partnership with the Federal Railroad Administration and the U.S. Pipeline Industry

February 2020

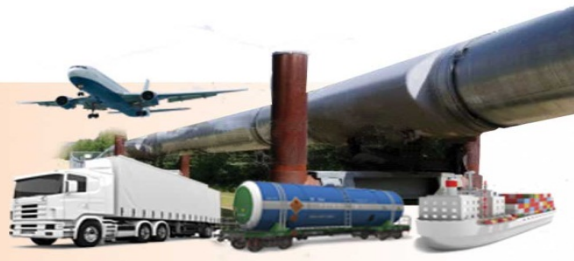


Pipeline Industry

The U.S. system of pipelines encompass 2.8 million miles of gas and liquid pipelines providing gathering, transmission and distribution of energy products that are essential to our way of life.

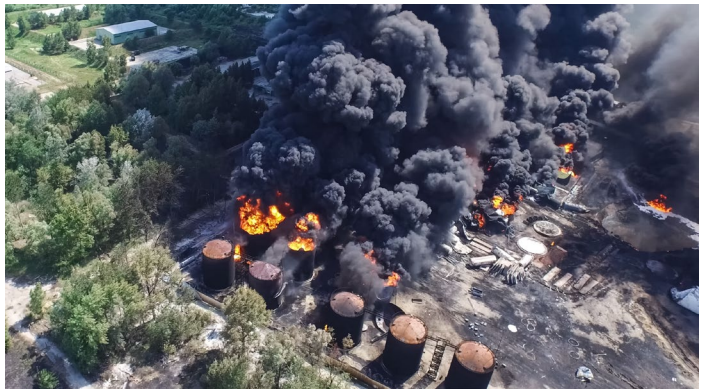
This vast system and critical component of our national transportation infrastructure continues to grow.

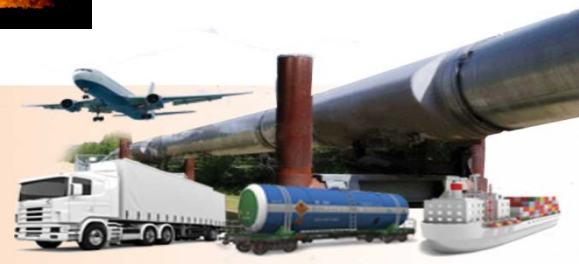
- Now moving two-thirds of energy used with 2,275 businesses, $63bn in total revenue, 2.8% annual growth.
- Heaviest growth in North America has been around major U.S. shale plays.
- Natural gas infrastructure is expected to make up more than half of the needed infrastructure development in the U.S. over the next decade.



Pipeline Safety

- Pipelines have always been the safest option for transporting large volumes of oil and gas.
- Continued advances in pipe manufacturing and installation quality control, employee and vendor vetting and training, welds, corrosion control, and inline inspection contribute to this laudable safety record.
- In spite of this good safety record, major incidents still occur.



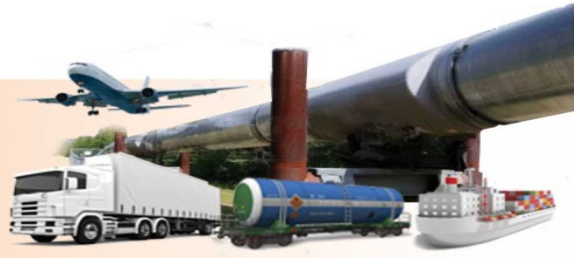


Pipeline Safety

- The pipeline industry has complained that PHMSA's permitting process is not keeping up with advancements in inspection technology that could further reduce causes of major pipeline incidents by allowing new technologies to be utilized more quickly.

"The problem is federal regulations can't keep pace with fast-moving technology innovations. In fact, outdated PHMSA regulations sometimes conflict with the latest knowledge and techniques. Congress can do more to allow PHMSA and pipeline operators to improve safety by pilot testing innovations and learn from shared pipeline safety insights."

Andy Black – CEO Association of Oil Pipe Lines
Testimony - House T&I Hearing on Pipeline Safety
April 2, 2019

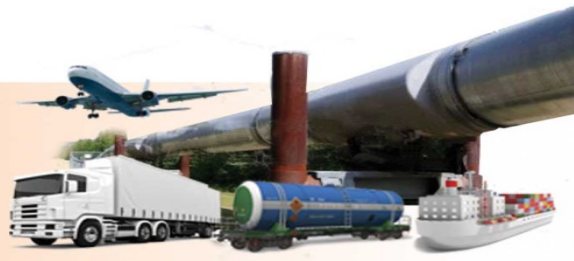


Objective

Create a way to allow pipeline safety innovation to move more quickly from concept to testing to application.

Requirements:

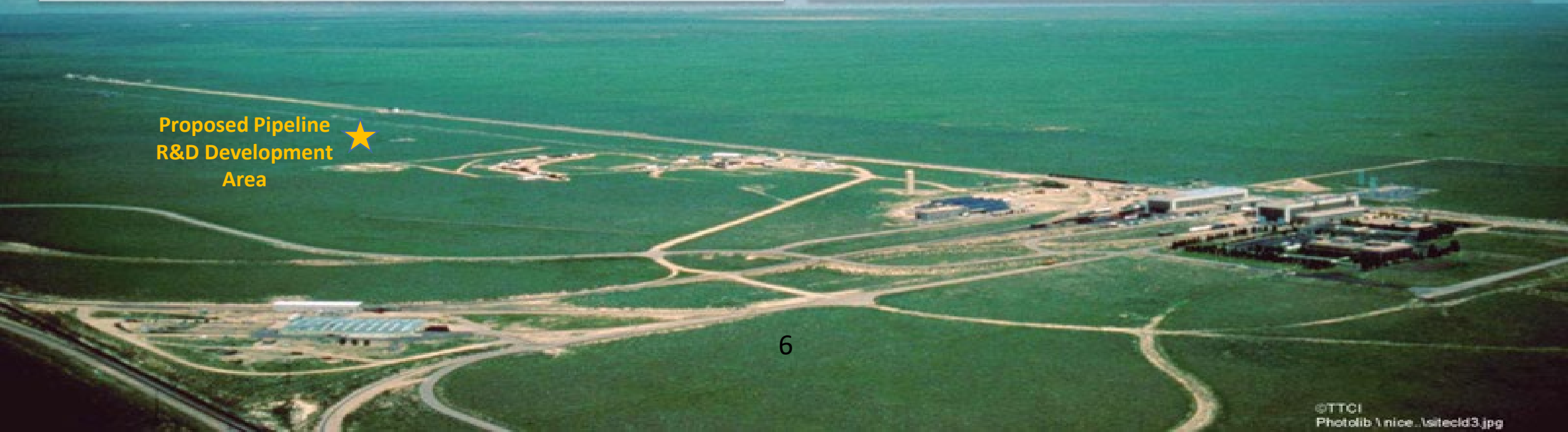
- Stimulate pipeline industry to engage by providing readily available proving ground for development of new technologies beyond what is available today.
- Provide PHMSA with independent validation of proposed safety technology.
- Enable greater adoption of new pipeline safety technologies industry-wide.
- Encourage greater collaboration and engagement between government, industry, researchers and the public.
- ***Utilize existing R&D site capable of expansion in order to expedite start-up time.***



U.S. DOT Transportation Technology Center (TTC)
Pueblo, Colorado

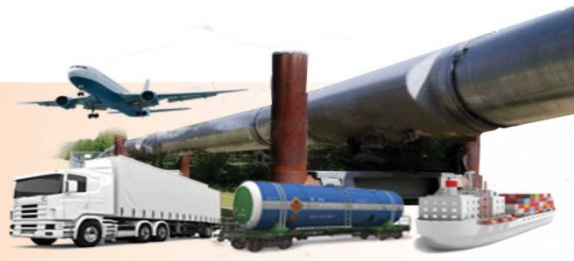
- Owned/Operated by Federal Railroad Administration (FRA)
- Facility authorized by law in 1965 - construction began in 1970
- **Facility has been a catalyst for innovation and modernization in the rail industry for almost 50 years**
- 52 square mile of property
- 50 miles of railroad test track
- **FRA encourages the creative use of TTC to support the broader mission of transportation safety, security and innovation**

The TTC site and its proven business model offers the real potential to improve the safety of the Nation's 2.8 million miles of gas and liquid pipeline by rapidly expanding the research and innovation capacity of the pipeline industry to a level currently unavailable today.



Benefits of FRA – TTC Business Model

Structure	Federally owned site that promotes private R&D and innovation
Reputation	Currently seen as one of the world's top transportation research centers
Longevity	35+ years of experience in innovation and safety research and development
Collaboration	Vast domestic and international experience
Agility	Technical staff and infrastructure able to pivot to assist in the pipeline arena
Results	Proven advancements in safety and technology in the rail industry because of work conducted at TTC

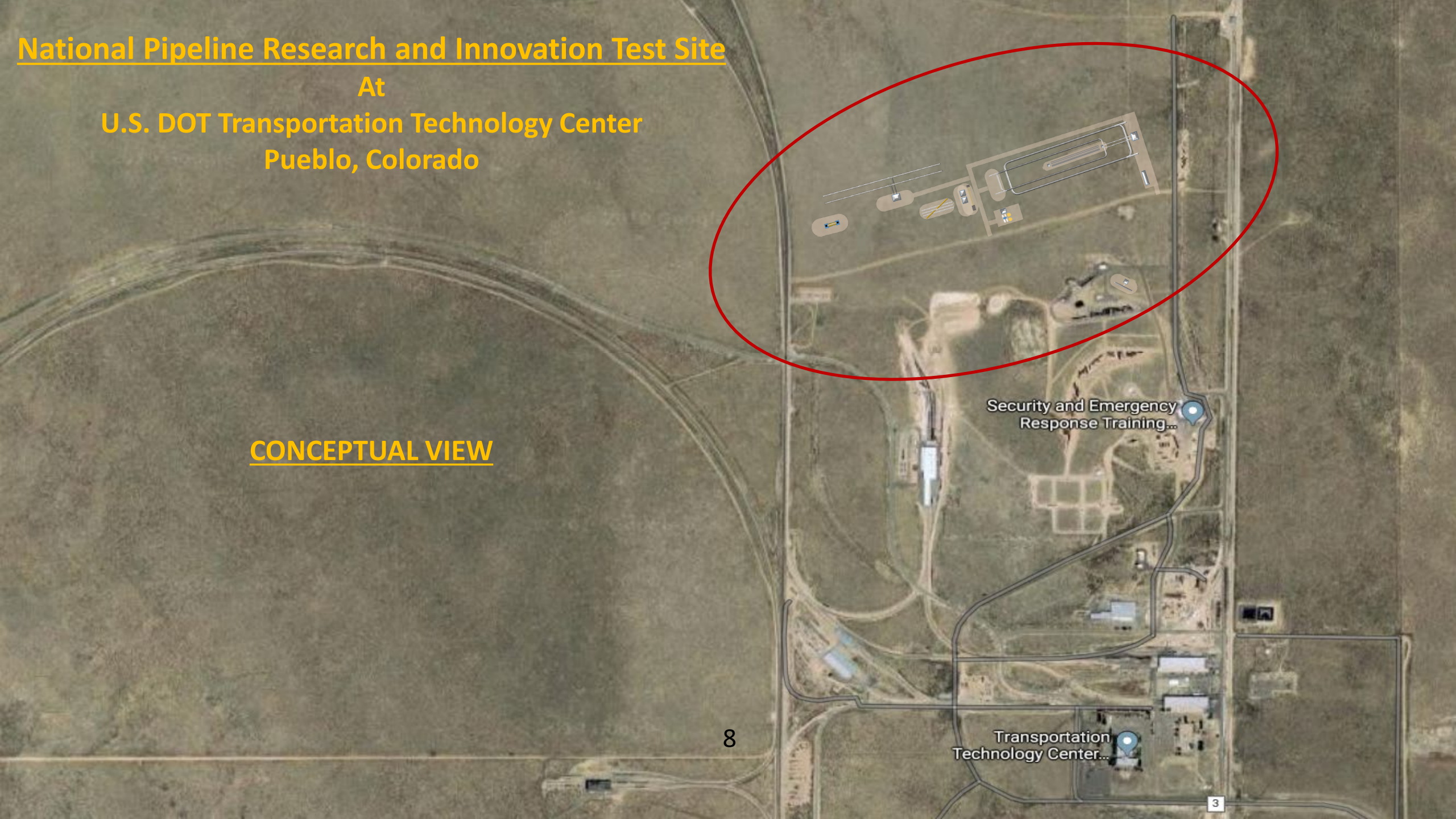


National Pipeline Research and Innovation Test Site

At

U.S. DOT Transportation Technology Center

Pueblo, Colorado

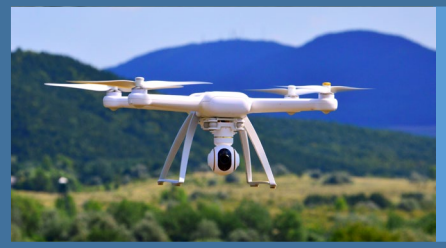


CONCEPTUAL VIEW

National Pipeline Research and Innovation Test Site
At
U.S. DOT Transportation Technology Center
Pueblo, Colorado

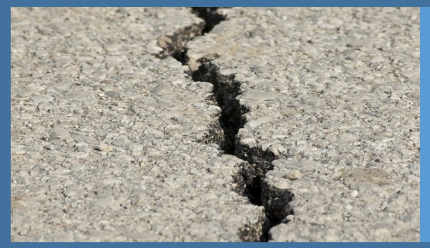
CONCEPTUAL VIEW

Low & High Pressure Gas Distribution Test Site



Underground Leak Detection Test Site ★

Underground Pipe Detection and Excavation Test Site



Seismic and Land Shift Stress Test Site

Pipeline Under Rail Tracks Stress Test Site ★

Large & Small Diameter Pipe Test Loop w/ Launcher

Office & Control Room

Corrosion and Cathodic Protection Test Area

Small Scale LNG Facility Test Site

Pipeline Firefighter Training Site ★

Metallurgy Lab Dynamics Lab ★

★ Shovel-Ready Projects

Next Steps

- Complete work with FRA and site manager to establish a memorandum of understanding and necessary contractual agreements to allow work to begin. COMPLETE.
- Assign an Office of Pipeline Safety Engineer as primary PHMSA technical project manager. COMPLETE.
- Complete scope-of-work and begin implementation of five "*quick win–low drag*" projects. Two of five COMPLETE.
- Develop a comprehensive site design master plan with participation from industry, government and site manager. In PROGRESS.