



## **Health, Safety, and Environmental – Building Collaboration and Culture**

**AGI Critical Issues Forum  
Fort Worth, TX  
November 19 – 20, 2014**

**Doug Jordan  
Director, Corporate Environmental Programs**



**Development Solutions**  
Balancing Environment, Community & Economy  
a division of Southwestern Energy

# Forward-Looking Statements



All statements, other than historical facts and financial information, may be deemed to be forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements that address activities, outcomes and other matters that should or may occur in the future, including, without limitation, statements regarding the financial position, business strategy, production and reserve growth and other plans and objectives for the company's future operations, are forward-looking statements. Although the company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those in the forward-looking statements. The company has no obligation and makes no undertaking to publicly update or revise any forward-looking statements. You should not place undue reliance on forward-looking statements. They are subject to known and unknown risks, uncertainties and other factors that may affect the company's operations, markets, products, services and prices and cause its actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. In addition to any assumptions and other factors referred to specifically in connection with forward-looking statements, risks, uncertainties and factors that could cause the company's actual results to differ materially from those indicated in any forward-looking statement include, but are not limited to: the timing and extent of changes in market conditions and prices for natural gas and oil (including regional basis differentials); the company's ability to fund the company's planned capital investments; the company's ability to transport its production to the most favorable markets or at all; the timing and extent of the company's success in discovering, developing, producing and estimating reserves; the economic viability of, and the company's success in drilling, the company's large acreage position in the Fayetteville Shale play overall as well as relative to other productive shale gas plays; the impact of government regulation, including any increase in severance or similar taxes, legislation relating to hydraulic fracturing, the climate and over the counter derivatives; the costs and availability of oilfield personnel, services and drilling supplies, raw materials, and equipment, including pressure pumping equipment and crews; the company's ability to determine the most effective and economic fracture stimulation for the Fayetteville Shale formation; the company's future property acquisition or divestiture activities; the impact of the adverse outcome of any material litigation against the company; the effects of weather; increased competition and regulation; the financial impact of accounting regulations and critical accounting policies; the comparative cost of alternative fuels; conditions in capital markets, changes in interest rates and the ability of the company's lenders to provide it with funds as agreed; credit risk relating to the risk of loss as a result of non-performance by the company's counterparties and any other factors listed in the reports the company has filed and may file with the Securities and Exchange Commission (SEC). For additional information with respect to certain of these and other factors, see the reports filed by the company with the SEC. The company disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

The SEC has generally permitted oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use the terms "estimated ultimate recovery," "EUR," "probable," "possible," and "non-proven" reserves, reserve "potential" or "upside" or other descriptions of volumes of reserves potentially recoverable through additional drilling or recovery techniques that the SEC's guidelines may prohibit us from including in filings with the SEC. These estimates are by their nature more speculative than estimates of proved reserves and accordingly are subject to substantially greater risk of being actually realized by the company.

The contents of this presentation are current as of August 1, 2013.

# Areas of operation



## Exploration & Production Segment

2013

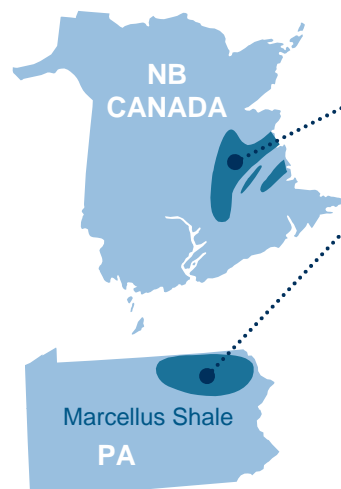
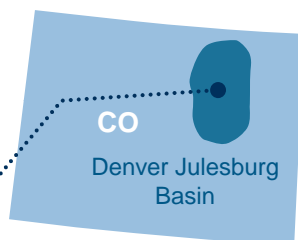
6,976 Bcfe\* of proved reserves

657 Bcfe of production

2014 est. production: 740 – 752 Bcfe

### Denver Julesburg Basin

Acreage: 302,000 net acres



### New Brunswick

Acreage: 2.5 million net acres

### Marcellus Shale

Acreage: 292,446 net acres (at 12/31/13)

2013 Reserves: 1,963 Bcfe (28% of total)

2013 Production: 151 Bcfe (23% of total)

### Fayetteville Shale

Acreage: 905,684 net acres (at 12/31/13)

2013 Reserves: 4,795 Bcfe (69% of total)

2013 Production: 486 Bcfe (74% of total)

### Brown Dense Project

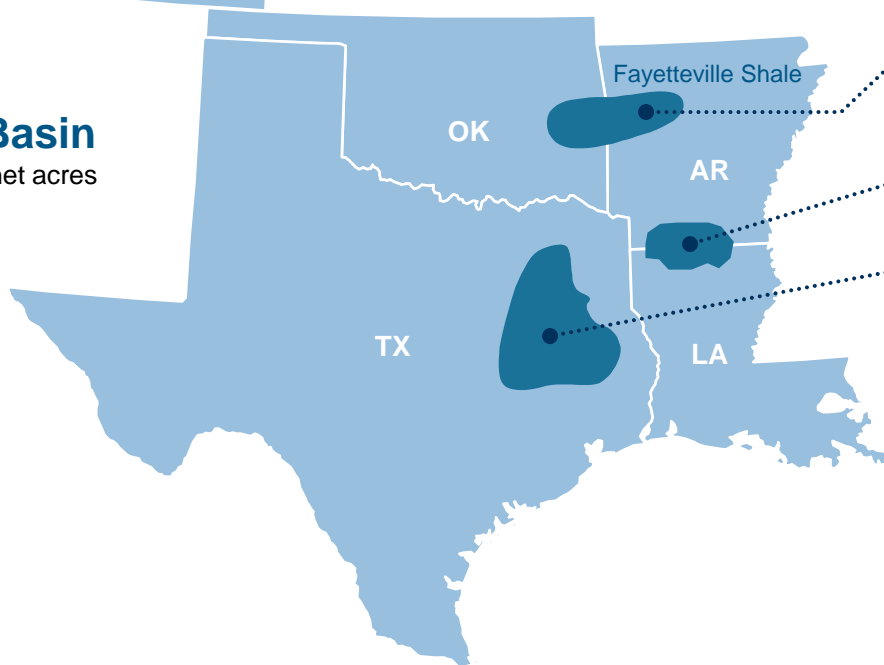
Acreage: 459,000 net acres (at 12/31/13)

### Ark-La-Tex

Acreage: 152,937 net acres (at 12/31/13)

2013 Reserves: 215 Bcfe (3% of total)

2013 Production: 18 Bcfe (3% of total)



• Bcfe is an equivalent measurement of one billion cubic feet of mixed oil and gas reserves

• \*\* Arkoma acreage excludes 124,653 net acres in the conventional Arkoma Basin operating area that are also within the company's Fayetteville Shale focus area.





# HS&E Culture



**Values + Behaviors = Culture**

**A true HSE culture exists when:**

- **HSE becomes part of everyday business.**
- **One has pride in HSE just like having pride in being excellent in production, footage drilled, and customer satisfaction.**
- **HSE is not an afterthought, but a way of doing business.**



**Culture is a key to continued HSE excellence!**

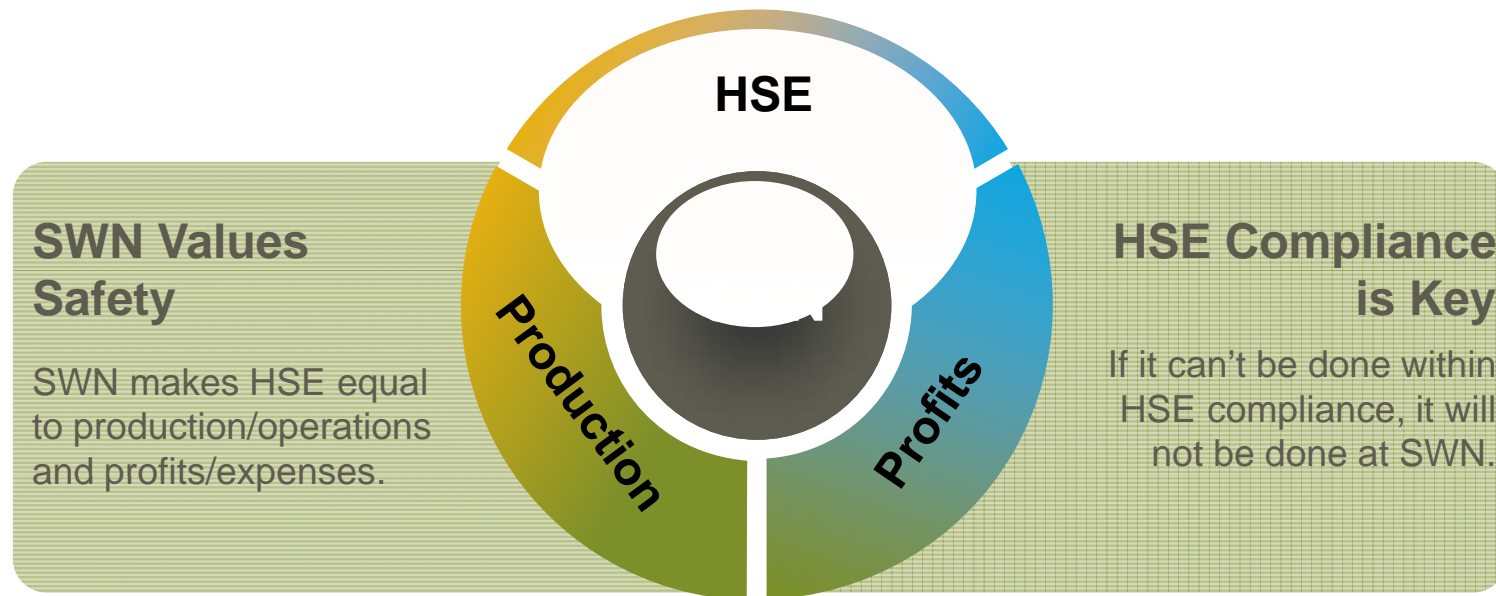
# Key Steps in Developing an HSE Culture



Embrace HSE as a value  
integral to the organization



# SWN Management Philosophy





## “HS&E is My Responsibility”



- A SWN priority is to ensure that health, safety and environmental management is integrated into all of our business activities.

# SWN HSE Culture “Tools”



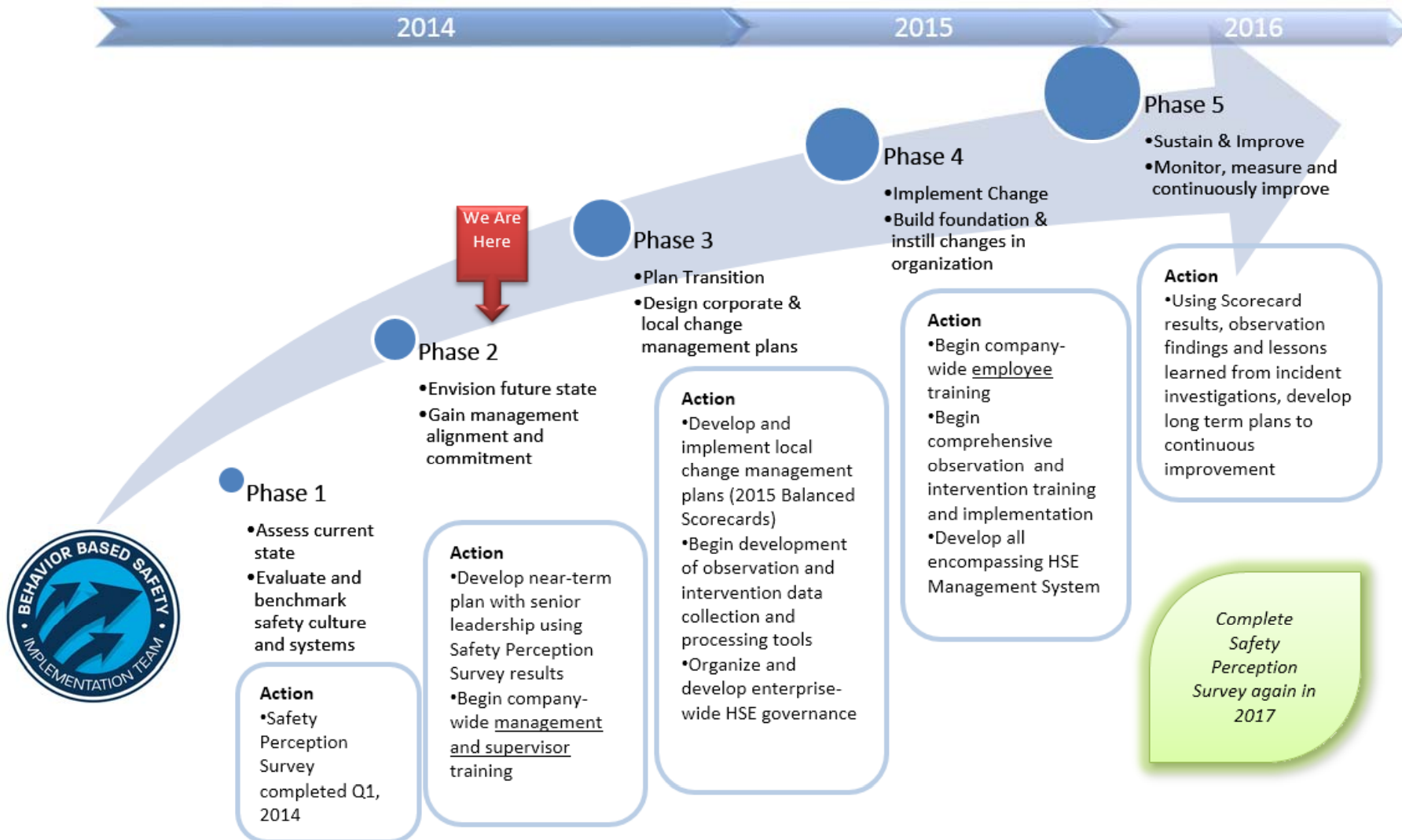
- HSE “Training”
  - New Hire Orientation
  - HS&E Leadership Training
  - “R2 Training”
- HSE Handbook
- HSE Programs
- HSE Goals
  - Balanced Scorecard
  - Industry Peer Group Comparisons
- HSE Steering Committees
- HSE Awards/Recognition

PROACTIVE INDICATORS: DRIVING IMPROVEMENT				REACTIVE INDICATORS: MEASURING PERFORMANCE			
LEADERSHIP EVALUATION OF INCIDENTS (Weight Factor - 10%)				LOSS INCID (Weight Factor - 10%)			
Develop a plan or set of actions where management, at all levels, displays its commitment and overall risk performance.	% Complete	Target		Traditional 3-Score system	Actual	Target	
% of Managers (two or more levels of direct reports) visit field operation sites outside of their BU; observe HSE processes for improvement opportunities and communicate findings back to the site owner.	25%	100%		TIR (Total Reportable Incident Rate) monthly, quarterly and annual actual vs. target	0.40	0.25	
% of Leaders receiving and conducting HSE Training	Not Started	100%		TSCA (Total Safety Citation Rate) monthly, quarterly and annual vs. target	0	0	
% of all team meetings that begin with a risk message/topic	100%	100%					
HSE ENVIRONMENTAL PLAN (Weight Factor - 10%)				SAFETY BEHAVIOR (Weight Factor - 10%)			
Develop specific plans to either improve areas of weakness or share lessons across the enterprise to highlight things done to accomplish a high level of achievement and performance.	% Complete	Target		Three 3-Score system implemented in 2014... all incidents to count	Actual	Target	
Using 2013 risk performance gaps, develop and implement two plans to achieve measurable improvements in those identified performance gaps.	150%	2		TRV (Preventable Vehicle Incidents Rate) monthly, quarterly and annual actual vs. target	0.15	0.16	
1. Ensure all employees are current with initial and refresher training	90%	100%		Recognize all safe drivers of 100,000 miles or greater.	100%	100%	
2. Implement Southwest 360 system per corporate plan/schedule	Not Started	100%					
CONTRACTOR RISK MANAGEMENT (Weight Factor - 10%)				ENVIRONMENTAL COMPLIANCE (Weight Factor - 10%)			
Develop an action plan to improve contractor risk performance, ensure their compliance with SWN standards and continue to screen and select high quality vendors.	% Complete	Target		Traditional 3-Score system	Actual	Target	
Using data from team site audits, obtain 100% contractor compliance with TAP and SSE expectations	100%	100%		TRE (Total Reportable Environmental Rate), monthly, quarterly and annual actual vs. target	0	0.34	
Identify the 5 highest risk contractors and work with same for risk reduction	50/40	5		NOV's resulting from OSHA/NEPA violations	0	0	
Invite and participate in contractor risk audits/visits	10%	5					
LEADERSHIP AND WORKERS' LESSONS (Weight Factor - 10%)				INCIDENT RESPONSE (Weight Factor - 10%)			
Build an inter and intra business process with HSE that leverages the value of lessons learned throughout the SWN enterprise.	% Complete	Target		Respond in compliance with legal, regulatory or internal requirements.	Actual	Target	
Write/develop summaries and implement corrective actions on all high potential incidents (injuries, vehicular and environmental incidents) within 30 days. Communicate these enterprise-wide via the HSE portal under "Shared Lessons Learned" and discuss at monthly business unit safety meetings.	Not Started	100%		Annual Crisis Management Exercise action items completed within 30 days	Not Started	100%	
Develop and publish HSE alerts for Midstream specific concerns or incidents	20%	0		Updates, train and drill on all elements of Single Integrated Emergency Plan	Not Started	100%	
Publish "Lessons of the Quarter" to all Midstream staff and contractors	25%	4					

R<sup>2</sup>  
A → V<sup>+</sup>



# The Path Forward – “HSE Next Generation”



# SWN Health & Safety Collaboration



- SWN's commitment to the health and safety of our employees, contractors and to our neighbors begins with collaboration – **A ONE Team Approach**
- Agency Engagement
  - NIOSH Flowback and Silica Studies
  - OSHA STEPS Program
- Contractor Engagement
- Community Benefits

# SWN Health & Safety Collaborative Programs



Short Service Employee program.



Continuous development of the TAP initiative (business unit specific modules).



ISNetworld company wide re-launch.



Contractor Assessment process which includes desktop reviews, onsite visits, and field observations.



Continuation of Street Smart, TEAMworks, eLearning, vendor forums, and SWNlink communications.

# SWN Methane Emission Reduction Activities



- EPA Natural Gas Star – member since 2005
  - Cumulative reductions = 37 BCF
  - 2011 Production Partner of the Year
- SWN SMART LDAR Program – voluntary program to survey and repair emission leaks from facilities.
  - Midstream initiated program in 2012
  - Production initiated program in 4<sup>th</sup> Quarter, 2013.
- SWN Dual fuel drilling rigs – replacing fleet (2014 / 2015)
- Fuel cell field test
  - Pneumatic controller conversion from gas to air



# Environmental Collaboration



- Collaborative effort with industry, academia and environmental community to solve issues such as air emissions, water protection and community impact.

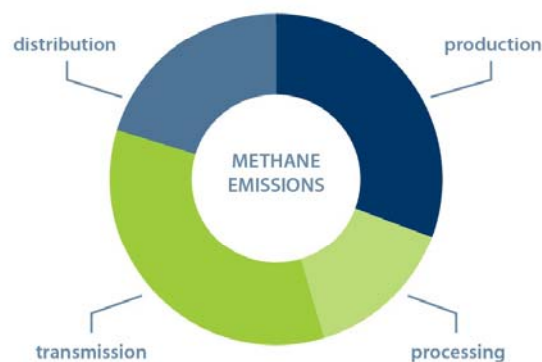






## OUR GOAL

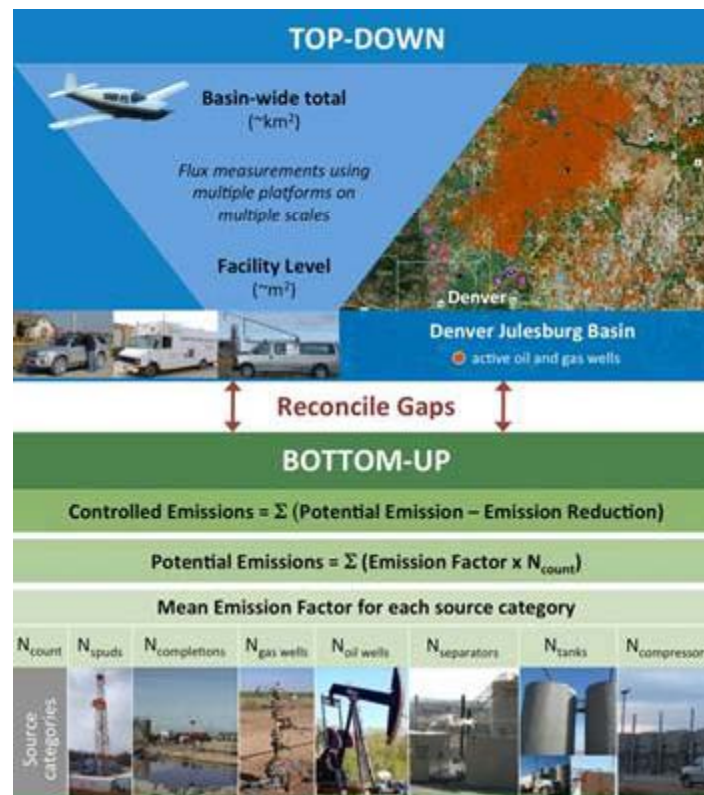
Enhance the energy delivery efficiency of the natural gas supply chain by limiting energy waste and by achieving a methane "leak/loss rate" of no more than one percent.



# SWN Methane Research - Collaboration



- Top-Down Methane Emissions Studies
  - DOE/Penn State Marcellus Study
    - SWN's participation includes funding additional tower and study participation
- “Bottom-Up” Methane Emissions Studies
  - Production Sector Phase 1 and Phase 2
    - University of Texas
      - URS
      - Aerodyne
    - EDF and 9 Industry Participants
  - Gathering & Processing Sector
    - Colorado State University
      - Carnegie Mellon University
      - Aerodyne
    - EDF and 4 Industry Participants
- “Top-down” and “bottom-up” methane measurements
  - D-J Basin Reconciliation Study
    - Research Partnership to Secure Energy for America
- New Measurement Technology Partnerships
  - EDF “Methane Detectors Challenge”
  - Picarro “Surveyor” field trial
  - Rebellion Photonics “gas cloud imaging camera” field trial



# Water Collaboration



**Offset 100% of the volume of fresh water  
used in SWN operations by 2016:**



**PROTECTION**



**REDUCTION**



**INNOVATION**



**CONSERVATION**



- Protection
  - Protection of existing water sources
    - Model Regulatory Framework – Environmental Defense Fund
    - Marcellus Water Well Monitoring - Install monitoring wells before SWN pad activity. One year of monitoring prior to development activity – Yale University
    - Streamsmart – Erosion/sediment control project - Nature Conservancy
- Reduction
  - Minimize the total quantity of water needed
  - Recycle produced water for future completions
  - Replace fresh water with alternate sources
  - Minimize the use of potable water
- Innovation
  - Develop compact, low cost water treatment technologies
  - Research / Develop approaches to economic low water stimulation.
- Conservation
  - Increase water availability or improve water quality.

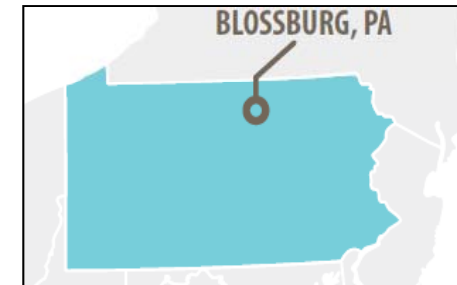
# Fall Brook Acid Mine Drainage

## Completion - 2016



- **Location:** Tioga River Watershed, Tioga Co, PA
- **Description:** AMD Remediation Project
- **Conservation Type:** Stream and River Restoration
- **Benefits:**
  - Place 325 million gallons (10.7 million barrels) a year of clean water into Susquehanna River for PA and NY
  - Increase recreational and aesthetic value of river
  - Decrease bridge maintenance cost
- **Partners:**

- PA Fish and Boat Commission	- Tioga Co. Concerned Citizens Committee
- PA Dept. of Env. Protection	- Tioga Co. Conservation District
- SRBC	- Tioga Co. Commissioners
- Trout Unlimited	
- **Timeline:**
  - 2014 – Survey and Design
  - 2015 – Construction

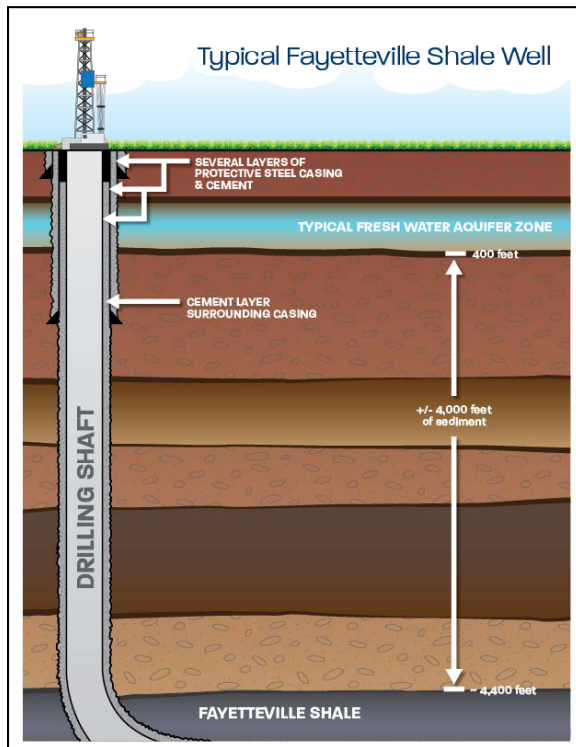




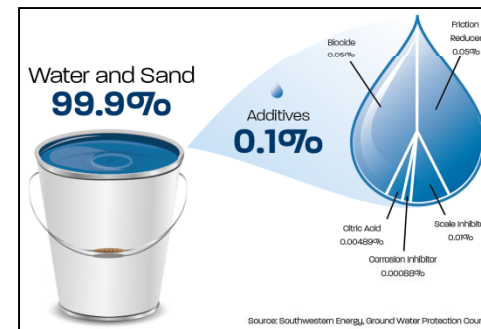
# Environmental Protection Collaboration



## Well Bore Integrity



## Right Products Program



	MSDS# _____
	Chemical _____
	Mfr. _____

Systematic approach to evaluating chemicals that SWN may use in its operations.



## Stream Smart

Erosion Control Training

# SWN Formula



The Right People Doing The Right Thing

$$\frac{R^2}{A} \rightarrow V^+ \text{®}$$

Will create Value+

Wisely investing the cash flow from the underlying assets