Shale Gas Industry’s Role in Sustainable Community Development

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Presenter: James R. Daley, PMP, Greenhorne & O’Mara, Inc.
Presentation Overview

- Speaker Introductions
- Marcellus Shale Coalition & Industry Overview & History
- Recommended Practices for Site Planning, Development and Restoration for Production and Transmission Facilities
- Land Recycling & site Reuse/Redevelopment/Repurposing for Industry Support Operations & Businesses
- Status of the Industry
- Input from Planners – How can we enhance collaboration between Planning Community and Industry?
MSC Guiding Principles

- Provide the **safest possible workplace** for our employees, our contractors, and in the communities in which we operate;
- Implement **state-of-the-art environmental protection** across our operations;
- Continuously **improve our practices and seek transparency** in our operations;
- Strive to attract and retain a **talented and engaged local workforce**;
- Commitment to being **responsible members of the communities** in which we work;
- Encourage spirited **public dialogue and fact-based education** about responsible shale gas development;
- Conduct our business in a manner that will **provide sustainable and broad-based economic and energy security benefits** for all.
MSC & Industry Overview & History

MSC Land Affairs Committee

- Engages a variety of stakeholders regarding environmentally-responsible land use
- Committee members include exploration companies, pipeline companies and service providers
- Provides Outreach to the Outdoors and Agricultural Communities
- Dedicated to improving our valuable air, water, soil and wildlife resources
- Recommended practices include site planning, development and restoration
- Created the Sustainable Use Working Group
We implement state-of-the-art environmental protection across our operations.
Highly regulated. Highly sophisticated.

- Transparency in permitting
- Staffing, permit fee increases
- Advances in water recycling and reuse
- Protective well casing standards
- Focus on best practices
Regulatory Framework

Site Construction
- 12 PA Regulations

Drilling Phase
- 18 PA Regulations

Hydraulic Fracturing
- 18 PA Regulations

Midstream
- 11 PA Regulations

Reclaimed/Completed Site
- 10 PA Regulations
Natural Gas Job Phase

**Pre-drilling (Exploration)**
- Geologic studies, permitting, water management, engineering/design, site preparation, environmental and safety compliance

**Drilling (Extraction)**
- Pipeline, compressor, well facilities construction, Hydraulic Fracturing & completions, water management, environmental and safety compliance

**Production/Reclamation**
- Engineering, site reclamation, environmental and safety compliance

**Delivery to Market (transport, storage, marketing)**
- NG Marketers, commodity traders, logistics, storage, accounting, risk management
Recommended Practices

RECOMMENDED PRACTICES:
Site Planning, Development and Restoration

Applies to Full Range of Production and Midstream (Gathering) Facilities

MSC RP 2012-1
April 26, 2012
Recommended Practices
Why Recommended Practices?

- Implement state-of-the-art environmental protection across our operations;
- Continuously improve our practices;
- Ensure we are being responsible members of the communities in which we work; and
- Support sustainable and broad-based economic benefits for all.
What are **Best (Recommended)** Management Practices (BMPs)?

Best management practices (BMPs) are state-of-the-art **procedures and mitigation measures** applied to oil and natural gas drilling and production to help ensure that energy development is conducted in a **safe and environmentally responsible** manner. BMPs protect **people**, wildlife, air quality, and landscapes as we work to develop vitally needed domestic energy sources.

- **With additions in bold – good description of MSC’s Recommended Practices**
Defining “Restoration”

Restoration means both **interim** restoration – following site construction and reflecting site conditions that will exist through the operational life of the well pad or pipeline and **final** restoration – at the end of the operational life, following site closure and removal of facilities.
Interim Restoration
Importance of Site Development and Restoration Recommended Practices

- Guide for infrastructure development vital to obtaining a valuable natural resource;
- Minimize impacts to environment and communities;
- Apply practices intended to mimic pre-disturbance conditions and improve the sites for desired end-users/uses.
- Protection of vital environmental resources for generations to come
Recommended Practices

1. Identify Need for Site/Facility in Locality
2. Develop Unconstrained Conceptual Site Plan
3. Conduct a Constraints Analysis
4. Refine Concept to Account for Constraints
5. Discuss Refined Concept with Surface Owner
6. Alter Concept to Retain or Protect Features
7. Prepare Final Site Plan in Context with Other Planned O&G Operations
8. Fully Implement E&S Controls per Permit(s)
9. Partial Site Restoration During Operational Life
10. Final Site Restoration Conducive to Surface Owner Plans
11. Site Monitoring, Maintenance & Repair

Practice Sets Forth a Repeatable, Scalable Cycle
Recommended Practices

RPs directly reference other recommendations:

- Federal and State Regulatory & Conservation Agencies
- Published Restoration Recommendations by Governmental Agencies and Universities
Pipelines are Included in the RP
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Many of the RP’s draw from successful implementation at the Gaw Farm

- Landowner involvement in planning
- Vision of what site will look like
- Retaining features that enhance future use
- Selection of plant species to meet restoration objectives
- Involving resource agencies and professionals
- Low compaction grading
- High degree of company/landowner cooperation
Recommended Practices

PA Game Commission & Phillips (XTO) hosted Well Site Reclamation Field Day on September 10, 2010
Recommended Practices

Well Pad Development Phase
Recommended Practices
Recommended Practices
Keys to Successful Restoration

- Landowner vision, planning, involvement
- Getting advice from experts
- Having a plan before moving any earth
- Good practices – low compaction grading, good selection of species, retaining site materials and features, aligning vision and restoration practices
- Cooperative driller willing to innovate
Land Recycling & Site Reuse/Redevelopment/Repurposing for Industry Support Operations and Businesses

Recycling/Reuse Objective:

- The members of the Marcellus Shale Coalition (MSC) recognize that new stimulus in regions that have been economically depressed affords opportunities for sustainable redevelopment, including the reuse of brownfields.
Sustainable Community Development

The purpose of the proposed Recommended Practice for Sustainable Community Development is to:

- Promote and encourage the re-use or re-purposing of underutilized properties, including brownfields, by the oil and gas industry;

- Encourage member companies to identify and consider using underutilized properties in the local communities in which they intend to do business; and

- Provide opportunity to communicate with stakeholders engaged in land planning and development.
Land Recycling & Site Reuse Examples

Case Studies

- Lycoming County
- Clearfield County
- Susquehanna County
- Washington County

Note: MSC staff is coordinating with other Counties to obtain a master list of projects.
**Lycoming County**

**Case Studies**
- TARM (TerrAqua Resource Management)
- Kennedy King Site

**County Contacts**
- Vince Matteo, Williamsport/Lycoming Chamber of Commerce, [www.williamsport.org](http://www.williamsport.org)
- Bill Kelly, Deputy Director, Planning & Community Development, [www.lyco.org](http://www.lyco.org)
Lycoming County

• Former Use/Status: Abandoned Industrial Complex
• Current Use: Mixed-Use Complex in Williamsport
• Impacts/Benefits:
  ➢ C.A. Reed paper products site ~ 70 yrs. – left in ‘93
  ➢ Centura Development acquired July ‘95
  ➢ Buildings vacant ~ 6 years w/design & renovations
  ➢ Larson Design part owner, original tenant, now largest tenant w/ 34,714 SF office & TARM @ 78,746 SF
  ➢ Large warehouses constructed 40’s thru 60’s – remained vacant as other uses filled.
  ➢ LDG’s TerrAqua Resource Management now fully occupies warehouse bldgs. 10, 11, 12 (nearly 80,000 SF)
  ➢ TARM has processed 180 M gallons of frac/generated water for reuse
Land Recycling & Site Reuse Examples

Using former C.A. Reed Site for Office and Water Processing

Photo Circa 1940’s
Sustainable Community Development

Credit - Google Earth Image
Water Tower Square

✓ Mixed-use complex in Williamsport, PA (Lycoming Co.)
✓ Property was an abandoned industrial complex; eventually became Water Tower Square
✓ Approx. 350,000 SF mixed use facility w/many local businesses
✓ TARM started operations in April 2010 and was the 1\textsuperscript{st} enterprise in PA to recycle flowback/generated waters
✓ WTS was under-utilized pre-Marcellus (warehouses)
✓ PP&L sought low energy HVAC. Developer’s idea (Keith Eck) to use treated municipal wastewater effluent (1.5 MMGPD) as heat source/sink, partially funded as demo project by Geothermal Heat Pump Consortium
## Sustainable Community Development

<table>
<thead>
<tr>
<th>Bldg</th>
<th>SF</th>
<th>Vacant</th>
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<td>WTS Bldg</td>
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### WTS 7 & 8

- Bldg: WTS 7 & 8
- SF: 82,832
- Vacant: 29,935

### WTS Bldg

- Bldg: WTS Bldg
- SF: 138,508
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### WTS 10, 11, 12

- Bldg: WTS 10, 11, 12
- SF: 78,746
- Vacant: None (TARM)
Sustainable Community Development

Falls at Water Tower Square
Sustainable Community Development

TARM at Water Tower Square
Sustainable Community Development

TARM Treatment Process at Water Tower Square

1. Influent water
2. Large solids screening
3. Pre-equalization
4. React tanks
5. Solids settling & filtration
6. Waste solids management
7. Post-equalization
8. Processed water loaded onto same tanker truck
9. Processed water returned to staging area for next beneficial reuse
Lycoming County

- Former Use/Status: Kennedy King Site – Blighted/Abandoned Public Housing Complex
- Current Use: MiSwaco Corporation manufacturing specialty drilling muds
- Impacts/Benefits:
  - Redevelopment of site – 50,000 sq.ft. facility and 27,500 sq.ft. facility
  - Transport of chemicals by rail instead of truck
  - Local production of natural gas products
  - Employees 75-100 persons
- Partnerships: Williamsport Housing Authority, Lycoming County Housing Authority, City of Williamsport & Property Owner
- Investment: $50M
Clearfield County

Case Studies

- Fort Worth Pipe
- Carrizo Oil & Gas Office
- Forum Energy Technologies
- AES Drilling
- Calfrac Well Services

County Contacts

- Paul McCloskey, Clearfield County Economic Development Corporation (CCEDC) – www.clearlyahead.com
- Stanley LaFuria, Moshannon Valley Economic Development Partnership (MVEDP) – www.mvedp.org
Land Recycling & Site Reuse Examples

RigMonkeyApp.com

• 70+ commercial and industrial properties
• Search by type, building size and location.
• Contact information for seller.
• Interactive google map.
• iPhone and Android platforms
Susquehanna County

- Former Use/Status: Wooden Pallet Manufacturing Facility
- Current Use: GasSearch Drilling Services (GDS)/Cabot Oil & Gas
- Impacts/Benefits:
  - Adaptive Reuse of Site—Green Design
  - 120 employees (108 from Pennsylvania)
  - Install a system to recycle used engine oil as a fuel source
  - Truck wash—water recycling system
  - Skylights were installed in main garage area
- Partnerships:
- Investment: $1.7 M Private Investment
Land Recycling & Site Reuse Examples

Susquehanna County
Washington County

- Former Use/Status: Abandoned Rail Right-of-Way
- Current Use: Trail with Rails/Westland Branch of Montour Trail
- Impacts/Benefits:
  - Lease and construction of 3+ miles of Westland Brach of Montour Trail by MarkWest Energy Partners – Annual lease payments
  - Railroad connecting Southview to Westland
  - Rail yard on site of the old Westland Mine for storage
  - Service to MarkWest Liberty’s gas processing plant south of Westland
- Partnerships: MarkWest Energy Partners, Montour Trail Council, Host Communities, Cecil Township and Wheeling & Lake Erie Railroad
Land Recycling & Site Reuse Examples

Washington County

Westland Branch of Montour Trail
Washington County
How can the planning community collaborate with the industry to foster reuse/redevelopment/repurposing of abandoned, vacant and underutilized sites?