

Revenge of the Powder River Basin

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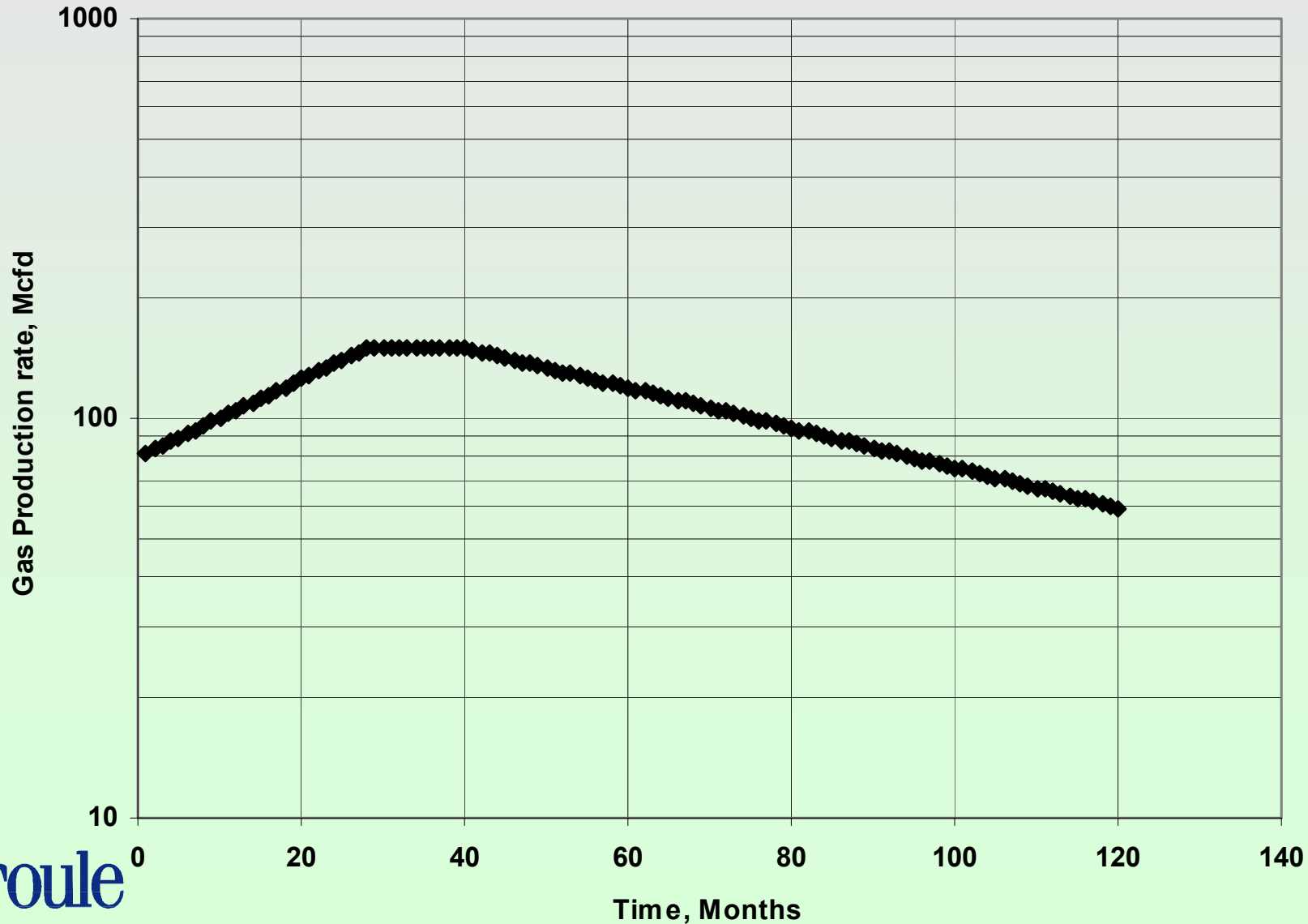
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Sproule Associates Inc.

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Wyodak Gas Profile – 1999

T 44-49 N R 72 W



Wyodak Gas Profile – 1999

Initial Economic Inputs

- Well cost = \$80,000
- LOE = \$1000/well-mon
- GCT = \$1.00/mcf
- Gas price = \$2/mcf
- Assumed net gas price - differential incorporated into price

Wyodak Gas Profile – 1999

Initial Economic Results

- EUR = 307 mmcf
- PV10 = -\$63,445
- Payout = 7.0 years

Methodology

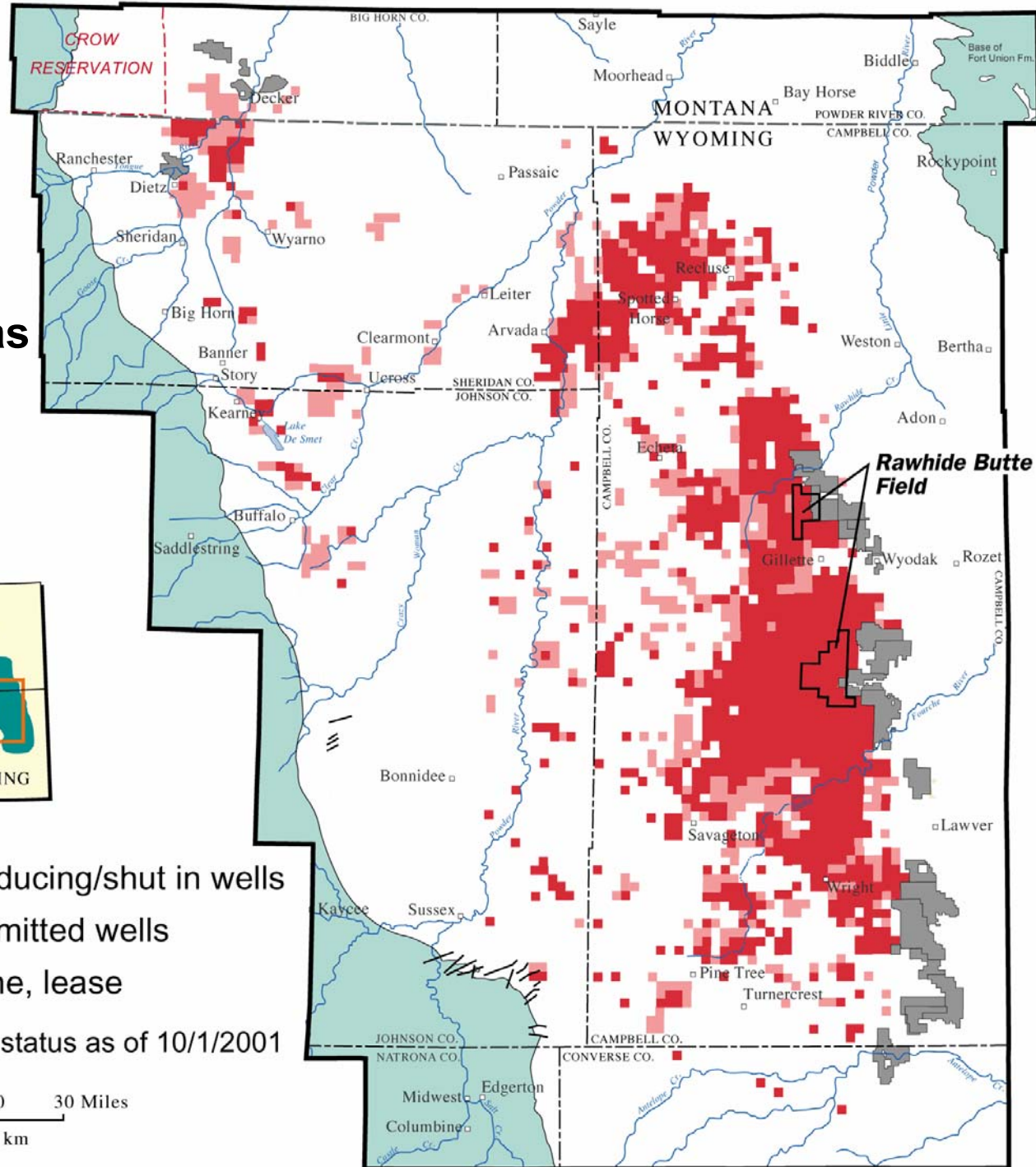
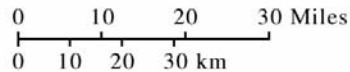
- Construct gas profiles for selected areas each with approximately 2 dozen wells
- Perform economics with current well costs, LOE's, and gathering/compression/transport fees
- Assume Sproule price forecast is net gas price

Powder River Basin – Current Producing Areas

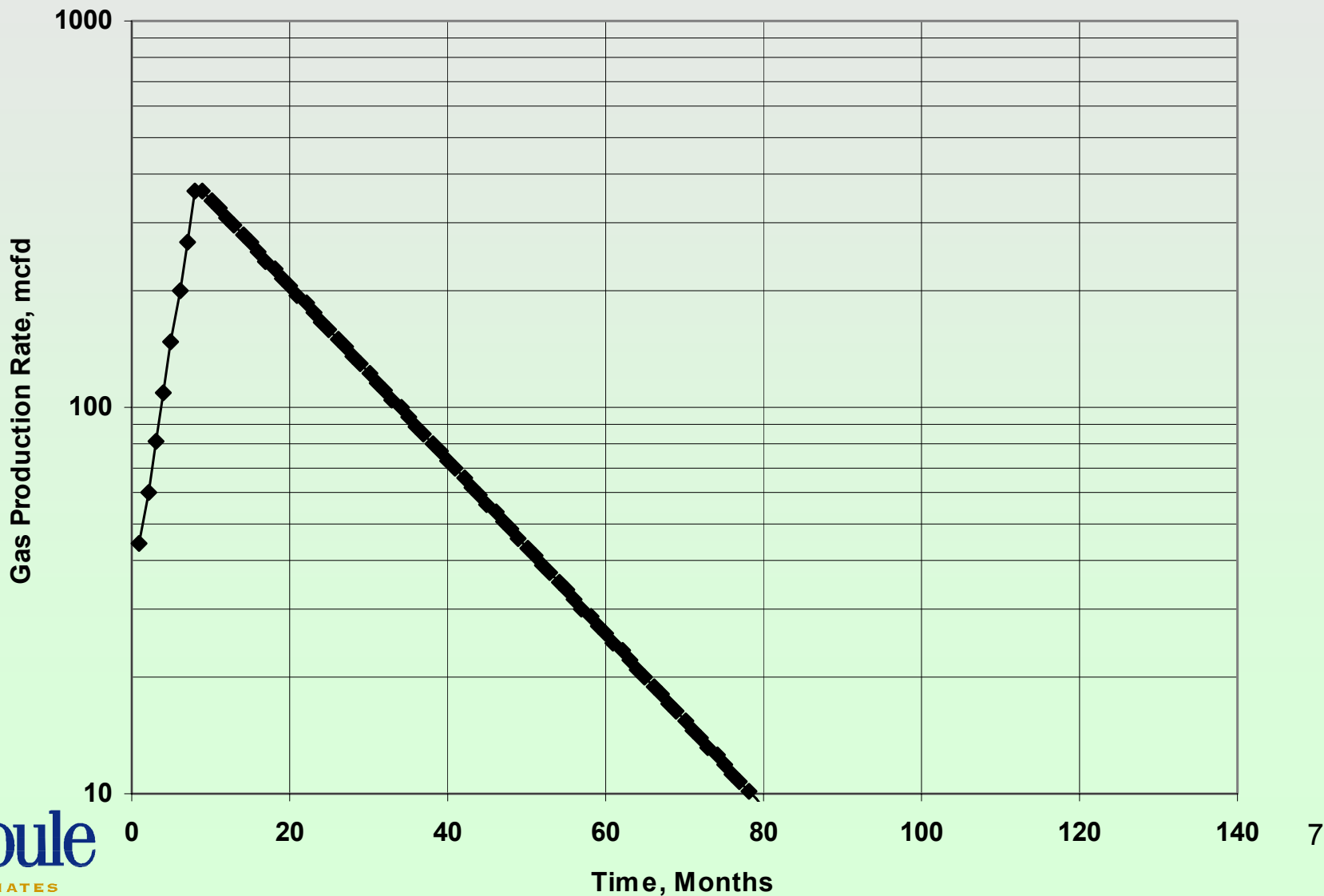


- Section with producing/shut in wells
- Section with permitted wells
- Surface coal mine, lease

Well locations and status as of 10/1/2001



Bonepile - Wyodak Gas Profile T 48 & 49 N R 73 W



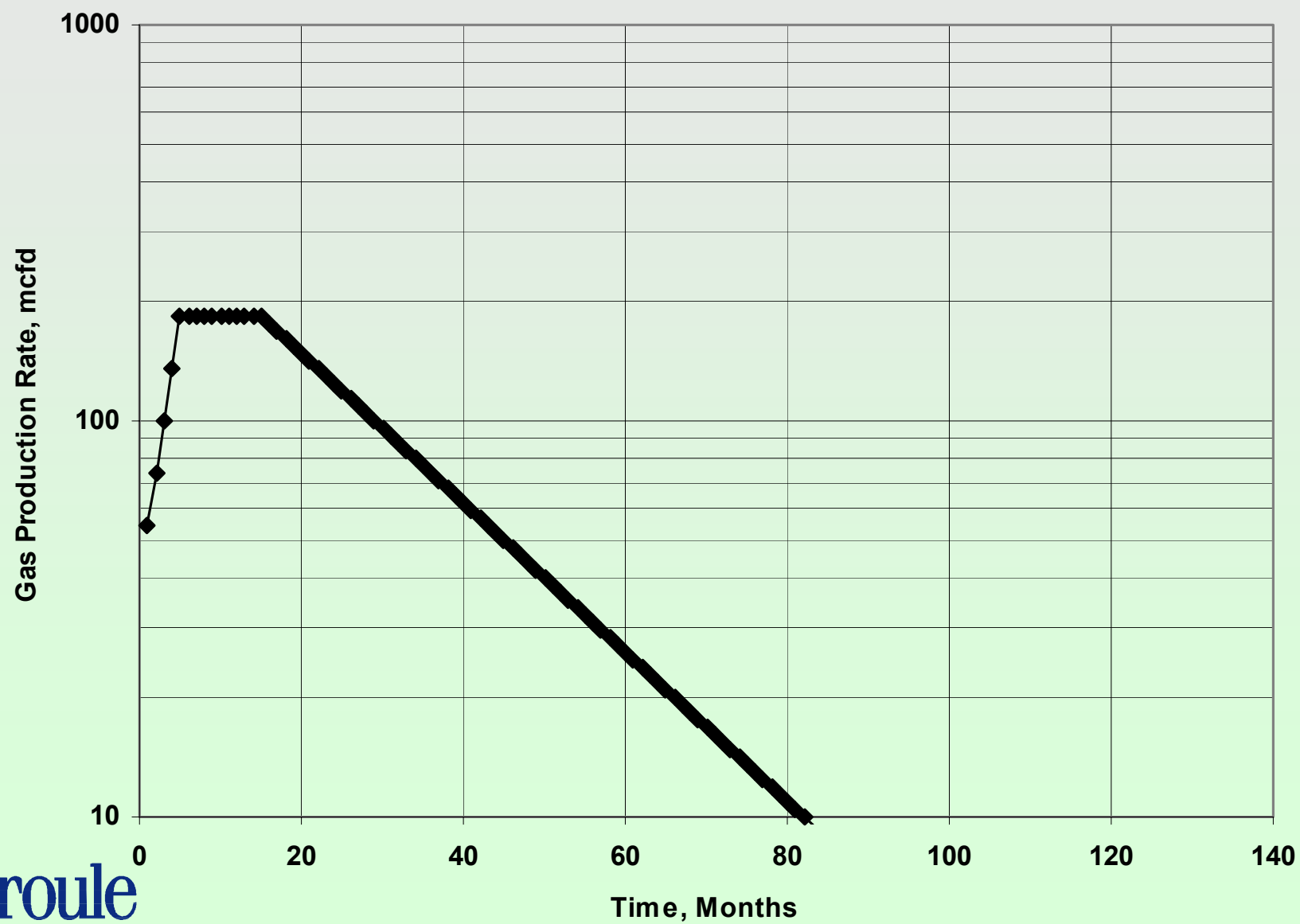
Bonepile - Wyodak Economic Inputs

- Well cost = \$110,000
- LOE = \$1500/well-mon
- GCT = \$1.00/mcf
- Gas price = \$6.259/mcf – Sproule forecast

Bonepile - Wyodak Economic Results

- EUR = 243 mmcf
- PV10 = \$349,638
- Payout = 0.50 years

NE PRB - Canyon Gas Profile



NE PRB - Canyon Economic Inputs

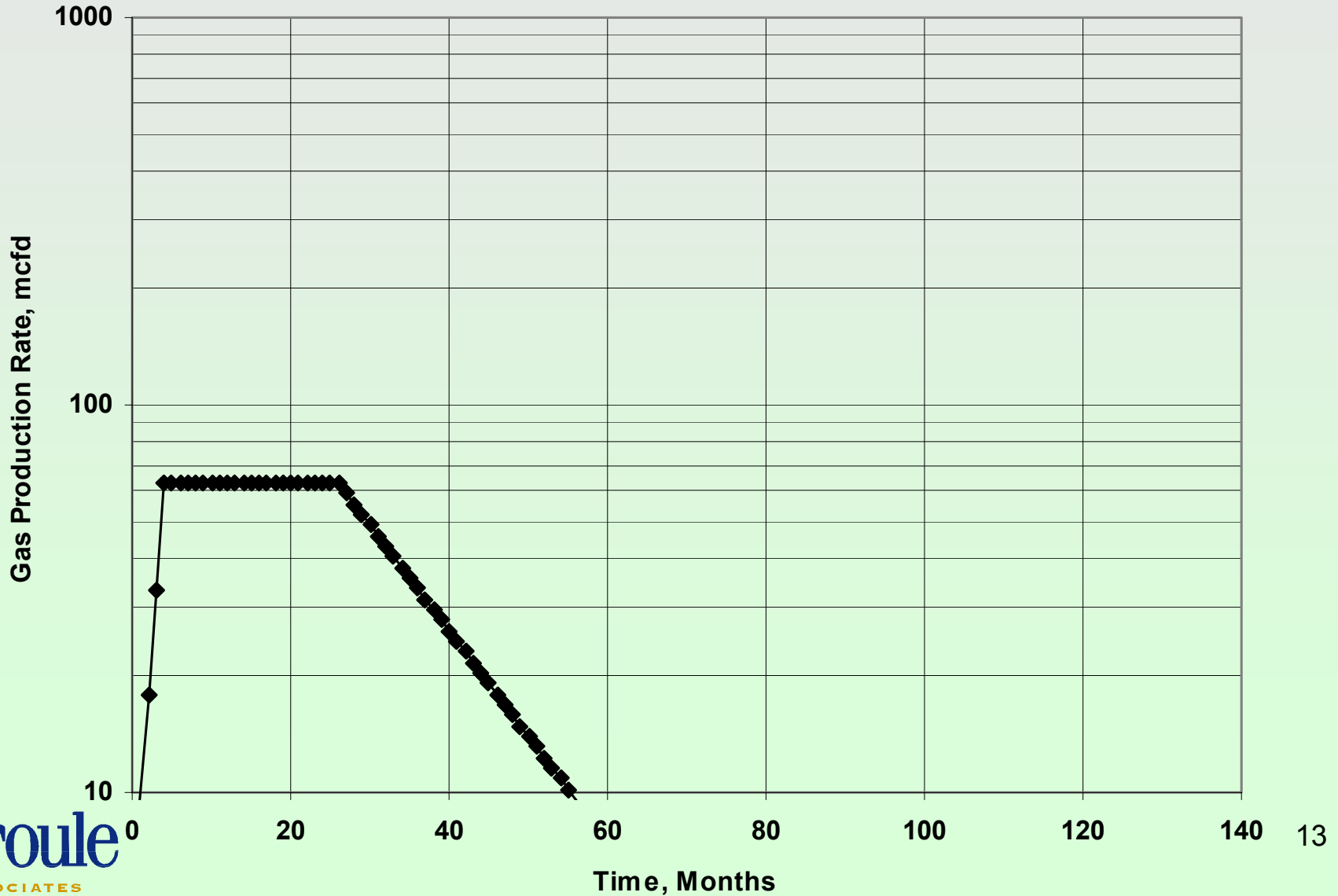
- Well cost = \$80,000
- LOE = \$1000/well-mon
- GCT = \$1.00/mcf
- Gas price = \$6.259/mcf – Sproule forecast

NE PRB - Canyon Economic Results

- **EUR = 188 mmcf**
- **PV10 = \$262,285**
- **Payout = 0.51 years**

Recluse - Cook Gas Profile

T 55 & 56 N R 74 W



Recluse - Cook Economic Inputs

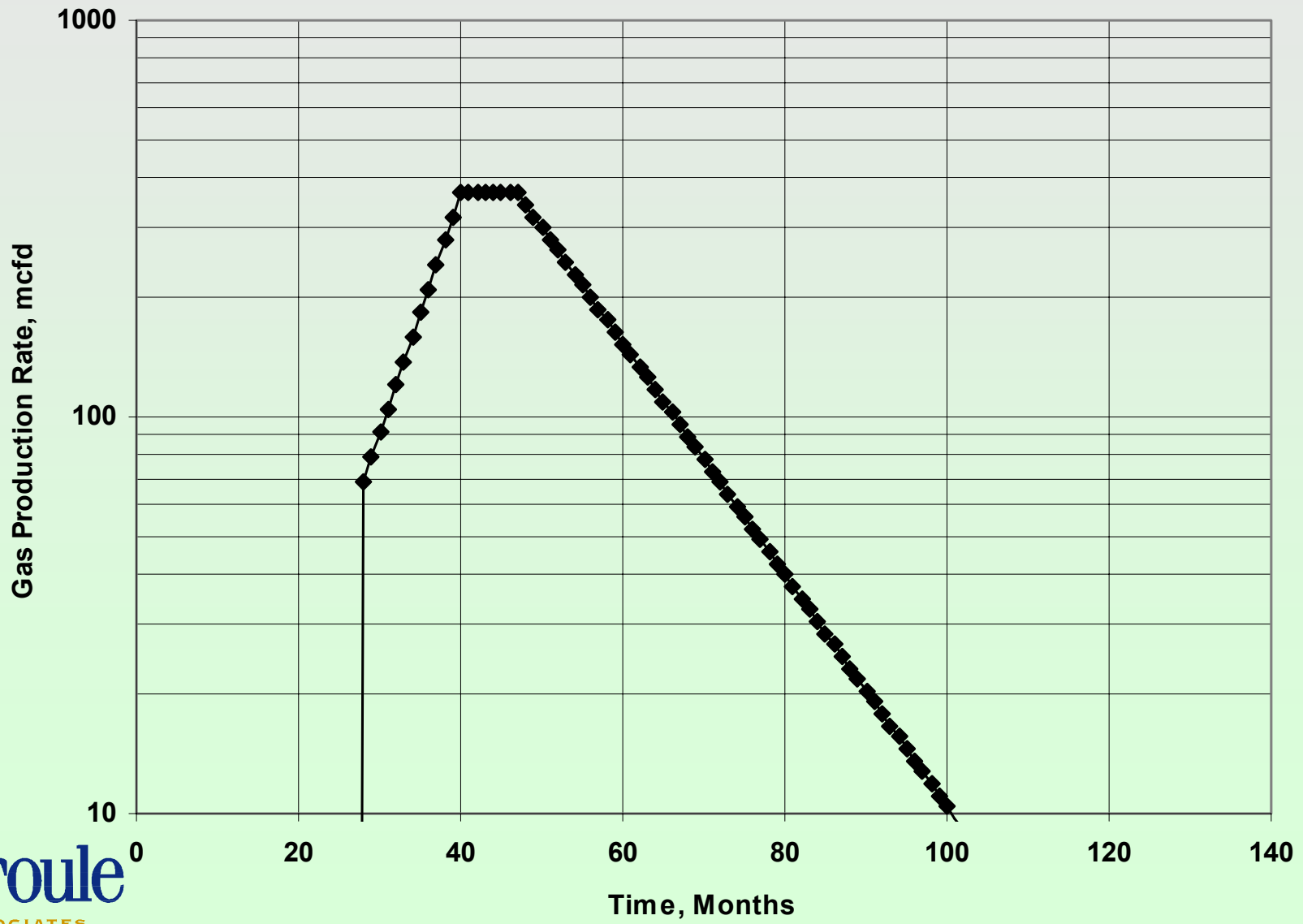
- Well cost = \$110,000
- LOE = \$1500/well-mon
- GCT = \$1.00/mcf
- Gas price = \$6.259/mcf – Sproule forecast

Recluse - Cook Economic Results

- **EUR = 59 mmcf**
- **PV10 = -\$23,553**
- **Payout = 3.0 years**

County Line – Big George

T 48 N R 77 W



County Line – Big George Economic Inputs

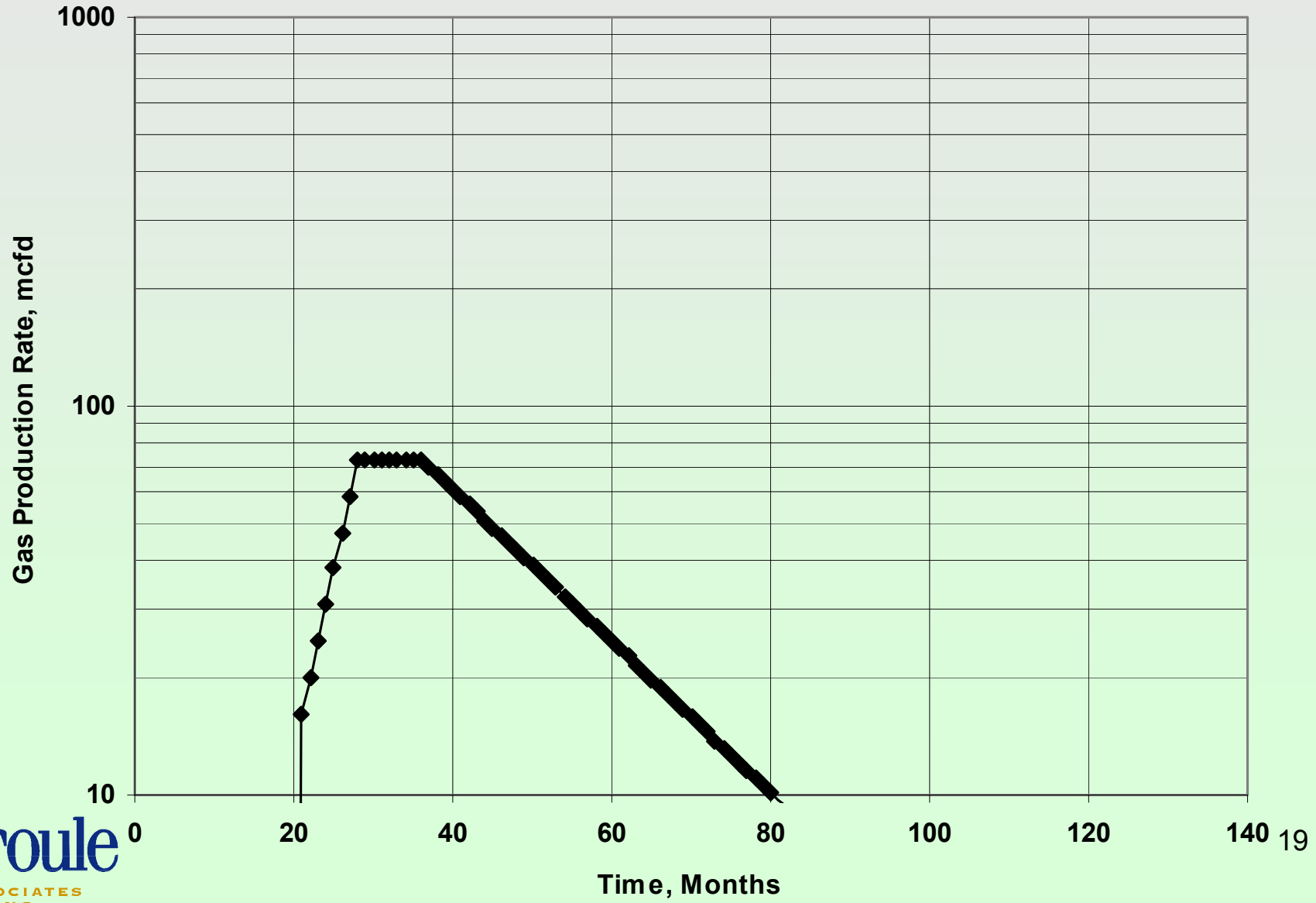
- Well cost = \$220,000
- LOE = \$3500/well-mon
- GCT = \$1.20/mcf
- Gas price = \$6.259/mcf – Sproule forecast

County Line – Big George Economic Results

- EUR = 280 mmcf
- PV10 = -\$71,469
- Payout = 5.33 years

House Creek – Big George

T 46 N R 74 W



House Creek – Big George Economic Inputs

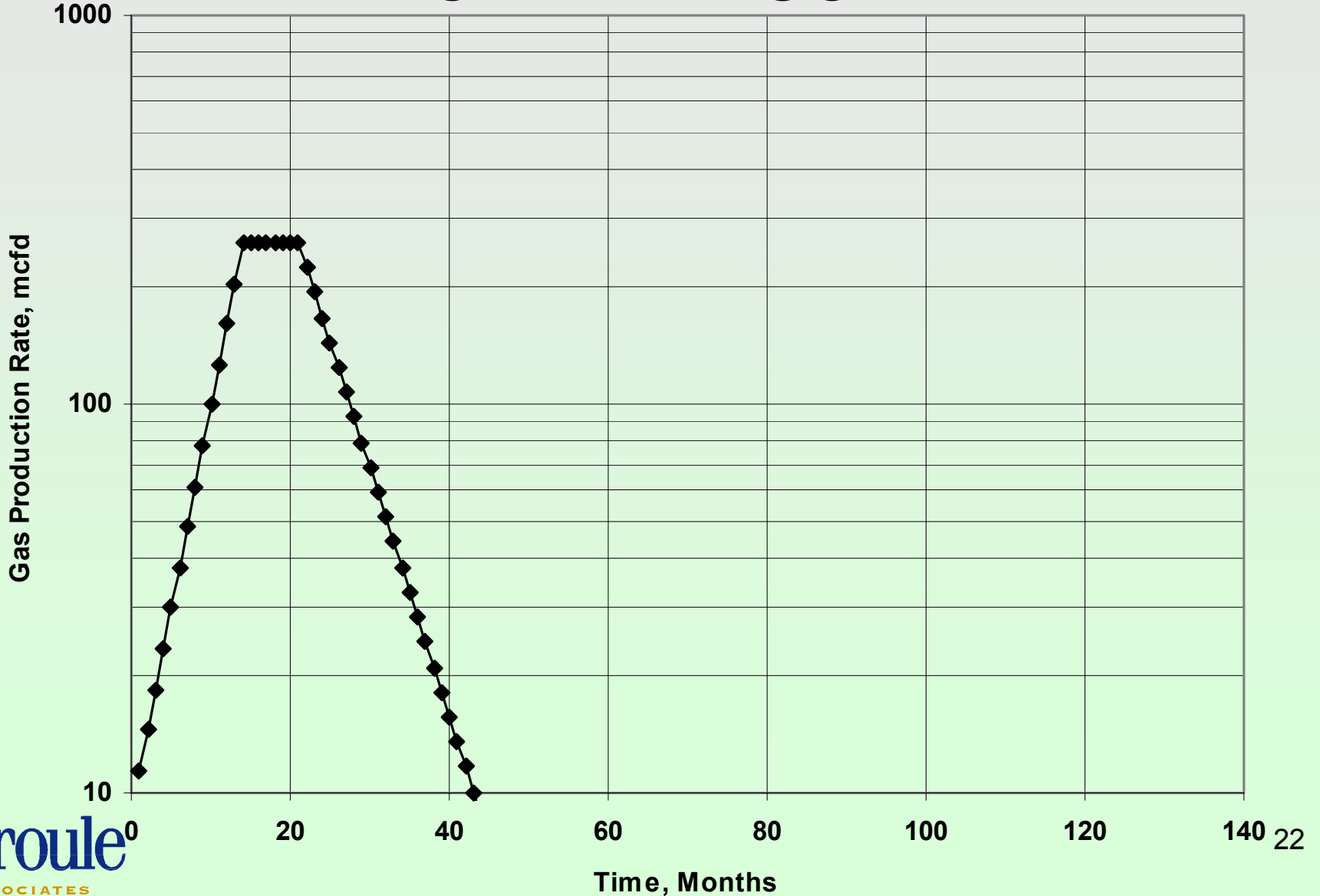
- Well cost = \$110,000
- LOE = \$1500/well-mon
- GCT = \$1.00/mcf
- Gas price = \$6.259/mcf – Sproule forecast

House Creek – Big George Economic Results

- **EUR = 59 mmcf**
- **PV10 = -\$94,259**
- **Payout = 5.0 years**

Prairie Dog Creek – Monarch

T 57 N R 83 W



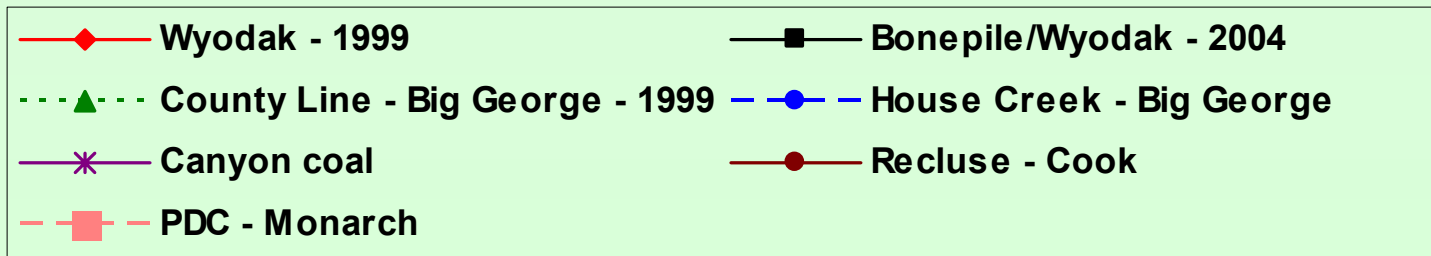
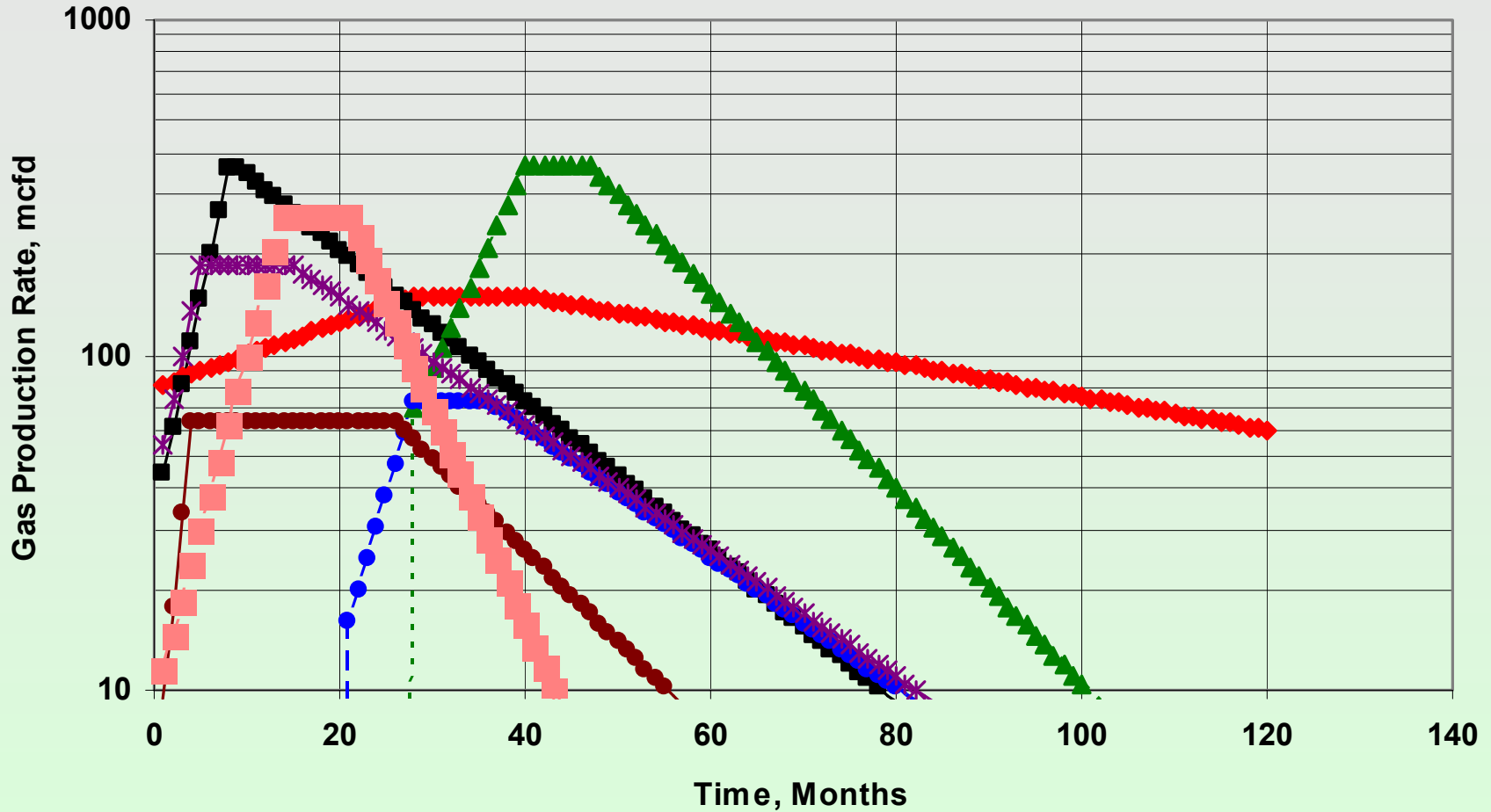
Prairie Dog Creek – Monarch Economic Inputs

- Well cost = \$80,000
- LOE = \$1000/well-mon
- GCT = \$1.20/mcf
- Gas price = \$6.259/mcf – Sproule forecast

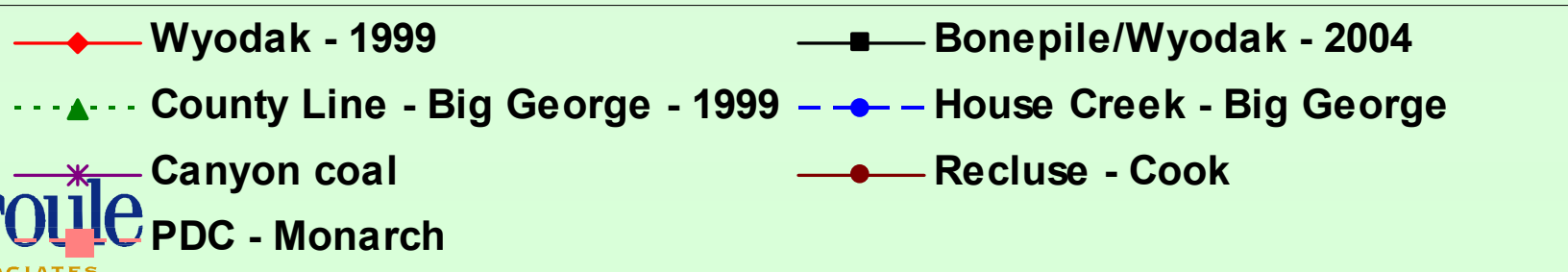
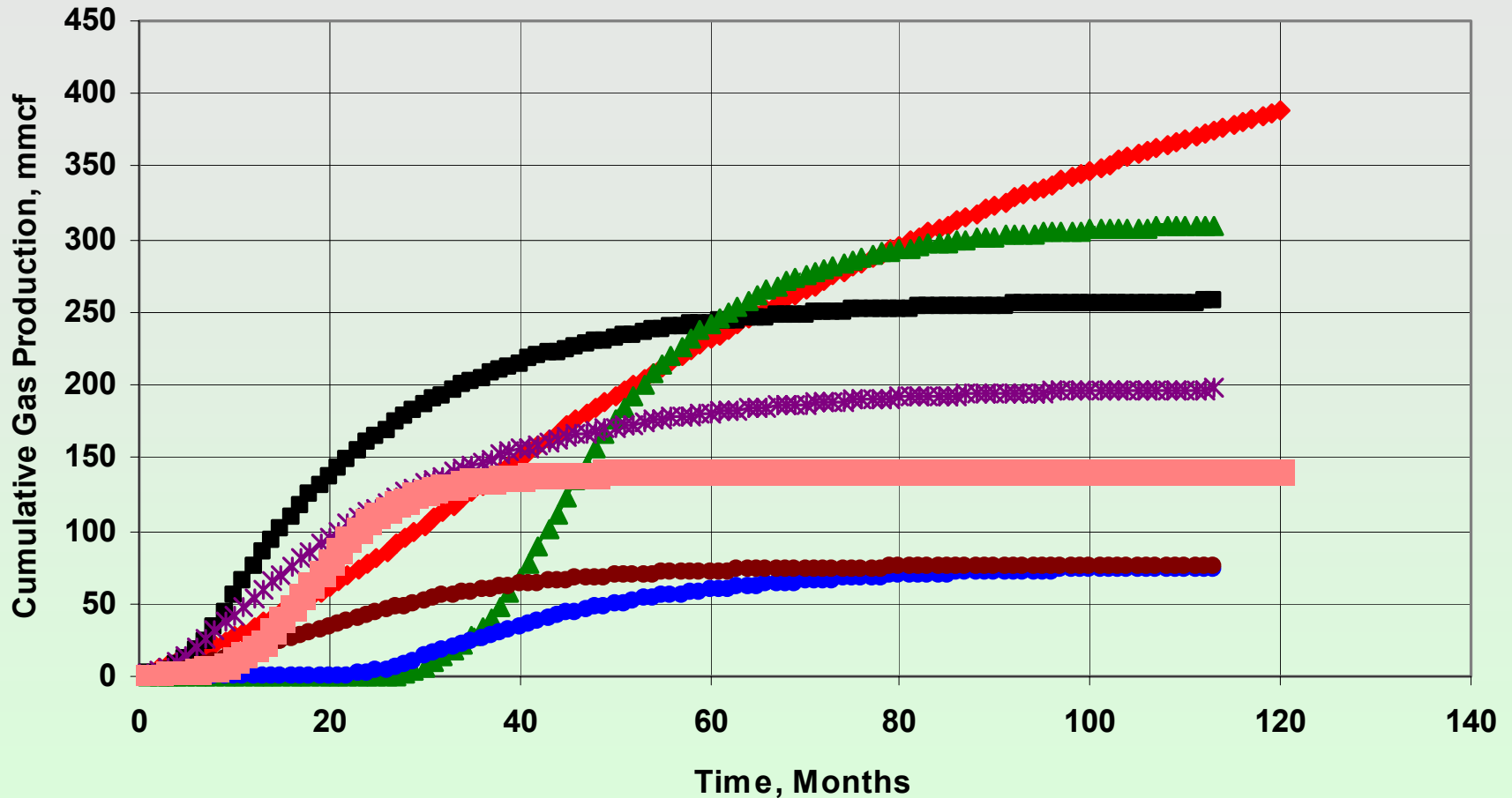
Prairie Dog Creek – Monarch Economic Results

- **EUR = 135 mmcf**
- **PV10 = \$164,585**
- **Payout = 0.92 years**

Comparison of Gas Profiles



CUM Production Comparison



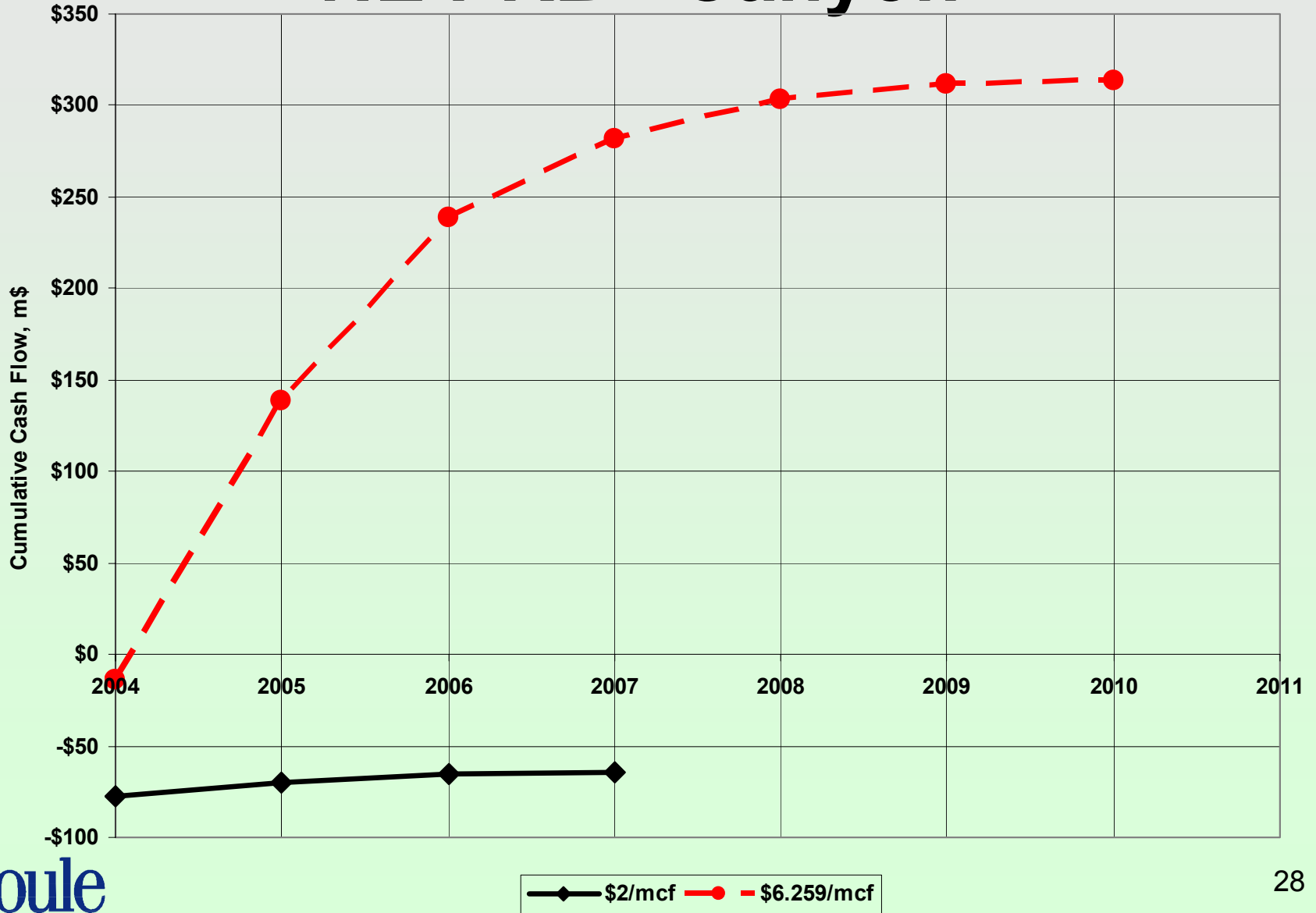
Effect of Gas Price on PV10

area =	Wyodak	Bonepile	NE PRB
coal =	1999	Wyodak	Canyon
\$2.00/mcf	-\$63.4	-\$92.4	-\$66.3
\$6.259/mcf	\$420.8	\$349.6	\$262.3

area =	Recluse	Co. Line	House Crk	PDC
coal =	Cook	Big Geo	Big Geo	Monarch
\$2.00/mcf	-\$111.0	-\$223.5	-\$111.5	-\$86.1
\$6.259/mcf	-\$23.6	-\$71.5	-\$94.3	\$164.6

Effect of Gas Price on CUM Cash Flow

NE PRB - Canyon



Summary – EUR's, mmcf

area =	Wyodak	Bonepile	NE PRB	
coal =	1999	Wyodak	Canyon	
<hr/>				
eur, mmcf	307	243	188	
area =	Recluse	Co. Line	House Crk	PDC
coal =	Cook	Big Geo	Big Geo	Monarch
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eur, mmcf	59	280	59	135

Summary – PV10, m\$

area =	Wyodak	Bonepile	NE PRB	
coal =	1999	Wyodak	Canyon	
<hr/>				
pv10 - \$6.259/mcf	\$420.8	\$349.6	\$262.3	
area =	Recluse	Co. Line	House Crk	PDC
coal =	Cook	Big Geo	Big Geo	Monarch
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pv10 - \$6.259/mcf	-\$23.6	-\$71.5	-\$94.3	\$164.6

Summary – Payout, years

area =	Wyodak	Bonepile	NE PRB	
coal =	1999	Wyodak	Canyon	
<hr/>				
payout, yrs	7.0	0.5	0.5	
area =	Recluse	Co. Line	House Crk	PDC
coal =	Cook	Big Geo	Big Geo	Monarch
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payout, yrs	3.0	5.3	5.0	0.9

Conclusions

- **Initial Powder River coal gas economics marginal**
- **Rising gas prices made wells commercial**
- **Development across basin has identified unique areas**

Conclusions - 2

- **Economic parameters may vary from area to area by a factor of 3**
- **Development economics are generally better than initial estimates with current prices**
- **Development economics are generally worse than initial estimates with \$2.00 gas and lower than expected EUR's**