# Appendix 2. Input Data Form for the Rio Escondido Basin Olmos Coalbed Gas Assessment Unit (53000281)

The input data form in this appendix was used for evaluating the Rio Escondido Basin Olmos Coalbed Gas Assessment Unit (53000281). The form was prepared for the U.S. Geological Survey National Oil and Gas Assessment (NOGA) so that geologists would have a consistent format to use in assessing continuous accumulations of gas. Some spaces on the form are blank because the information is not applicable to this assessment unit. To estimate the potential additions to reserves of continuous accumulations, the USGS has developed a model called "FORSPAN" (acronym for FORecast SPAN; Schmoker, 1999). The FORSPAN model treats a continuous accumulation as a collection of petroleum-containing cells for assessment purposes. A cell is a subdivision or area within a continuous accumulation having dimensions related to the drainage areas of wells.

Some abbreviations used in the input form are lowercase, and that style differs from the uppercase abbreviations used in the body of this report. The meaning of the terms is the same: bcfg=BCFG; bliq/mmcfg=BLIQ/MMCFG. Definitions of the abbreviations follow: AU, assessment unit; bcfg, billion cubic

feet of gas; bliq/mmcfg, barrels of liquid per million cubic feet of gas; bngl/mmcfg, barrels of natural gas liquids per million cubic feet of gas; BTU, British thermal unit; CBM, coalbed methane; cfg/bo, cubic feet of gas per barrel of oil; CO<sub>2</sub>, carbon dioxide; disc., discovered; frac, fracture; incl., including; m, meter; min., minimum; mmbo, million barrels of oil; NGL, natural gas liquids; NO., no., number; pot., potential.

The input data form for appendix 2 is available at https://doi.org/10.3133/ofr20171167.

#### **Reference Cited**

Schmoker, J.W., 1999, U.S. Geological Survey assessment model for continuous (unconventional) oil and gas accumulations—The "FORSPAN" model: U.S. Geological Survey Bulletin 2168, 9 p., accessed September 23, 2009, at https://pubs.er.usgs.gov/publication/b2168.

#### FORSPAN ASSESSMENT MODEL FOR CONTINUOUS ACCUMULATIONS--BASIC INPUT DATA FORM (NOGA, Version 9, 2-10-03)

## IDENTIFICATION INFORMATION

Assessment Geolog	gist: <u>P.D. Warwic</u> l	K		Date:	1/26/2007			
Region:	North Americ			Number:	5			
Province:	Western Gul	f		Number:	5300			
Total Petroleum Sy	stem: Olmos Coalb	ed Gas		Number:	530002			
Assessment Unit:	Rio Escondio	lo Basin Olmos Coalbed (	Gas	Number:	53000281			
Based on Data as o	of:							
Notes from Assess		taceous Olmos Coalbed ( River Basin (50330182)	Gas (50470281), Raton	Basin (504	10181),			
	CHAR	ACTERISTICS OF ASSE	ESSMENT UNIT					
Assessment-unit t	sype: Oil (<20,000 cfg	g/bo) <u>or</u> Gas ( <u>&gt;</u> 20,000 cfg	g/bo), incl. disc. & pot. a	additions	Gas			
	um total recovery pe		nmbo for oil A.U.; bcfg					
Number of tested c	ells: 0							
	ells with total recovery	· ·	0					
Established (discover		ypothetical (no cells):	X					
Median total recove		min.): (mmbo for oil AU; l						
	1st 3rd disc	covered	2nd 3rd	3rd 3rd	d			
Attribute 1. CHARGE: Adequa 2. ROCKS: Adequa 3. TIMING: Favoral	Assessment-Unit Probabilities:  Attribute  1. CHARGE: Adequate petroleum charge for an untested cell with total recovery ≥ minimum.  2. ROCKS: Adequate reservoirs, traps, seals for an untested cell with total recovery ≥ minimum.  3. TIMING: Favorable geologic timing for an untested cell with total recovery ≥ minimum.  4.0  Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3):  1.0							
		LLS WITH POTENTIAL		RESERVES				
	(3.2.2.2.9).	,	,					
calculate	d mean 1,113,000	minimum 1,002,000	mode 1,113,000	maximun	n 1,224,000			
2. Area per cell of	untested cells having	potential for additions to	reserves (acres): (valu	es are inher	ently variable)			
calculate	d mean 43	minimum 10	mode 40	maximun	n <u>80</u>			
uncertainty o	f mean: minimum	30 maximum	57					
<ol><li>Percentage of t</li></ol>	otal assessment-unit	area that is untested (%):	(uncertainty of a fixed	value)				
calculate	d mean 100	minimum 100	mode 100	maximun	ո 100			
Calculate	u mean 100	111111111111111111111111111111111111111	mode 100	IIIaxIIIIUII	1 100			

#### NO OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES

	No. of GRIEGIED GE	(Continued)		LOCITYCO					
4.	Percentage of untested assessment (a necessary criterion is that total re								
	calculated mean 12.3	minimum 1	mode11	maximum 25					
	Geologic evidence for estimates: At the mode, 45% of the AU has greater	atest potential for CBM a	nd 25% of that would ha	ve recoveries > 0.01 bcfg.					
	TOTAL RECOVERY PER CELL  Total recovery per cell for untested cells having potential for additions to reserves: values are inherently variable; mmbo for oil AU; bcfg for gas AU)								
	calculated mean 0.039	minimum 0.01	median 0.03	maximum 0.3					
(	AVERAGE COPRODUCT R (unassessment unit: Gas/oil ratio (cfg/bo) NGL/gas ratio (bngl/mmcfg)	RATIOS FOR UNTESTEI ncertainty of fixed but unl minimum	-	COPRODUCTS  maximum					
	s assessment unit: .iquids/gas ratio (bliq/mmcfg)	0	0	13					

	LARY DATA FOR UNI		
Oil assessment unit:  API gravity of oil (degrees)  Sulfur content of oil (%)  Depth (m) of water (if applicable)	minimum	mode	maximum 
Drilling depth (m)			
minimum F75	mode	F25	maximum
Gas assessment unit: Inert-gas content (%) CO <sub>2</sub> content (%) Hydrogen sulfide content (%) Heating value (BTU) Depth (m) of water (if applicable)	minimum 0.30 0.10 0.00 1000	mode 0.63 0.20 0.00 1075	maximum 1.00 0.50 0.00 1200
Drilling depth (m)			
minimum F75 60 310	mode 490	F25 800	maximum 1060
Success ratios: calculated mean Future success ratio (%)  Historic success ratio, tested cells (%)	minimum 10	mode 25	maximum 50
, , , <u></u>			
<ol> <li>Completion practices:</li> <li>Typical well-completion practices (convention</li> <li>Fraction of wells drilled that are typically stimulation</li> <li>Predominant type of stimulation (none, frac, at</li> <li>Fraction of wells drilled that are horizontal</li> </ol>	ulated	vity, other)  conventio  frac & ac  0	

#### ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO STATES Surface Allocations (uncertainty of a fixed value)

1. Mexico		_represents_	100.00	_area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity			100		
2		_represents_		_area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity					
3		_represents_		_area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity					
4		_represents_		_area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity					
5		_represents_		_area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity					
6		_represents_		area % of th	ne AU
Oil in oil assessment unit: Volume % in entity	minimum		mode		maximum
Gas in gas assessment unit: Volume % in entity					

		represents		area % of the AU
n oil assessment unit: Volume % in entity	minimum		mode	maximum 
•		ranrasants		
		Tehresems		_ area // or tile AO
n oil assessment unit: Volume % in entity	minimum		mode	maximum 
volume % in entity		<u> </u>		<del></del>
		represents		area % of the AU
n oil assessment unit: Volume % in entity	minimum		mode	maximum 
in das assessment unit				
Volume % in entity				
		represents		_area % of the AU
	minimum		mode	maximum
				<u> </u>
•		-		
		represents		_area % of the AU
n oil assessment unit: Volume % in entity	minimum 		mode	maximum 
Volume % in entity				<del>-</del>
		represents		_area % of the AU
n oil assessment unit: Volume % in entity	minimum		mode	maximum 
Volume % in entity				
	n oil assessment unit: Volume % in entity  s in gas assessment unit: Volume % in entity  n oil assessment unit: Volume % in entity  in gas assessment unit: Volume % in entity  n oil assessment unit: Volume % in entity	n oil assessment unit: Volume % in entity  minimum  minimum	n oil assessment unit: Volume % in entity  sin gas assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  sin gas assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents  n oil assessment unit: Volume % in entity  represents	Volume % in entity  sin gas assessment unit: Volume % in entity  noil assessment unit: Volume % in entity  sin gas assessment unit: Volume % in entity  represents  noil assessment unit: volume % in entity  represents

#### ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO GENERAL LAND OWNERSHIPS Surface Allocations (uncertainty of a fixed value)

1	Federal lands		_represents_		_area % of t	he AU
<u>Oil ii</u>	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity				_	
2	Private lands		_represents_		_area % of t	he AU
Oil iı	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity				_	
3.	Tribal lands		represents_		_area % of t	he AU
<u>Oil iı</u>	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity				_	
4. <u>(</u>	Other lands		_represents_	100.00	_area % of t	he AU
Oil ii	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity			100	_	
5. <u>:</u>	State 1 lands		_represents_		area % of t	he AU
Oil ii	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity				_	
6			represents_		_area % of t	he AU
Oil iı	n oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Gas</u>	in gas assessment unit: Volume % in entity				_	

7		represents		area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum	_	mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				
8		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				
9		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				_
10		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				_
11		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum —
Gas in gas assessment unit:				
Volume % in entity				<u> </u>
12		_represents_		area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum — —
Gas in gas assessment unit: Volume % in entity				

#### ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO FEDERAL LAND SUBDIVISIONS Surface Allocations (uncertainty of a fixed value)

1.	Bureau of Land Management (BLM)		_represents_		area % of t	he AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity					
2.	BLM wilderness areas (BLMW)		_represents_		area % of t	he AU
<u>Oil</u>	in oil assessment unit:  Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity					
3.	BLM roadless areas (BLMR)		_represents_		_area % of t	he AU
<u>Oil</u>	in oil assessment unit:  Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity					
4.	National Park Service (NPS)		_represents_		_area % of t	he AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity					
5.	NPS wilderness areas (NPSW)		_represents_		_area % of t	he AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit:  Volume % in entity					
6.	NPS protected withdrawals (NPSP)		_represents_		area % of t	he AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode		maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity					

7.	United States (U.S.) Forest Service	(FS)	_represents_		area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity				_	
8.	U.S.FS wilderness areas (FSW)		_represents_		_area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity				_	
9.	U.S.FS roadless areas (FSR)		_represents_		_area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity				_	
10.	U.S.FS protected withdrawals (FSF	')	_represents_		_area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity				_	
11.	U.S. Fish and Wildlife Service (FW	S)	_represents_		_area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
<u>Ga</u>	s in gas assessment unit: Volume % in entity				_	
12.	U.S.FWS wilderness areas (FWSW	/)	_represents_		area % of t	the AU
<u>Oil</u>	in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Ga	s in gas assessment unit: Volume % in entity					

13. U.S.FWS protected withdrawals (FV	VSP)	_represents_		_area % of	the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity				_	
14. Wilderness study areas (WS)		_represents_		_area % of	the AU
Oil in oil assessment unit:  Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity				_	
15. U.S. Department of Energy (DOE)		_represents_		_area % of	the AU
Oil in oil assessment unit:  Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity				_	
16. U.S. Department of Defense (DOD)		_represents_		_area % of	the AU
Oil in oil assessment unit:  Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity				_	
17. Bureau of Reclamation (BOR)		_represents_		_area % of	the AU
Oil in oil assessment unit:  Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity				_	
18. Tennessee Valley Authority (TVA)		_represents_		_area % of	the AU
Oil in oil assessment unit:  Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit:  Volume % in entity		_		_	

19. Other Federal	represents		area % of the AU	
Oil in oil assessment unit:  Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:  Volume % in entity				
20		represents_		area % of the AU
Oil in oil assessment unit:  Volume % in entity	minimum	_	mode	maximum

#### ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO ECOSYSTEMS Surface Allocations (uncertainty of a fixed value)

1		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity					
2		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity				_	
3		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity				_	
4		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity				_	
5		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity				_	
6		_represents_		_area % of t	he AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	_	maximum
Gas in gas assessment unit: Volume % in entity				_	

7		_represents_		area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum	_	mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				
8		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				
9		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				_
10		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				_
11		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum 
Gas in gas assessment unit:				
Volume % in entity				_
12		_represents_		_area % of the AU
Oil in oil assessment unit: Volume % in entity	minimum		mode	maximum — ———
Gas in gas assessment unit:				