



VCS VALIDATION REPORT

Southern Ute Indian Tribe Westside CBM Seep Capture & Use Project

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Summary:

Det Norske Veritas (U.S.A.) (DNV) has performed a validation of the project activity “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project” to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. The validation was performed on the basis of VCSA requirements for the VCS project, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation was conducted by means of document review, follow-up interviews and site inspection, and the resolution of outstanding issues. The review of the project design documentation and the subsequent follow-up interviews and site inspection have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project activity is to capture and use methane seeping from the the point where coal seams intersect with the ground surface. The project has applied the approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps”.

In summary, it is DNV’s opinion that the project activity “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project” as described in the VCS PD, dated 20 December 2011, meets all relevant VCSA requirements for the VCS project and correctly applies the approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps. Hence, DNV recommends the registration of the project as a VCS project activity.

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1 INTRODUCTION

The Southern Ute Indian Tribe (SUIT) has commissioned Det Norske Veritas (U.S.A.), Inc. (DNV) to perform a validation of the “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project” (the project). This report summarizes the findings of the validation of the project, performed on the basis of VCSA criteria for the VCS project, as well as criteria given to provide for consistent project operations, monitoring and reporting. VCSA criteria refer to VCS program documents and policy announcements.

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and compliance with relevant VCSA criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is necessary to provide assurance to stakeholders of the quality of the project and its intended generation of the Verified Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the VCS project document (VCS PD)/1/. The VCS PD is reviewed against the criteria stated in the VCS Version 3.1 and the relevant documents and policy announcements made by the VCSA, including the approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps”/31/32/.

The validation does not include project consulting. However, requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Level of assurance

DNV provides reasonable assurance that the “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project” meets VCSA criteria. To ensure complete transparency, a validation protocol check list is included in Appendix A. The validation protocol check list addresses all of the criteria that must be met for the VCS project. Any clarification or corrective actions raised have been included in the validation protocol.

In addition, DNV applies materiality of 5 per cent in accordance with the requirements in VCS Version 3.1. /33/

1.4 Summary Description of the Project

The project captures and uses seeping coal bed methane (CBM) that would otherwise be emitted into the atmosphere using nine wells to capture the methane over approximately 877 acres /1/. The project will achieve emission reductions because methane which would otherwise continue to travel up the coal seam

to the outcropping and be emitted to the atmosphere will be intercepted. The methane intercepted by the vent wells will be collected, pressurized, treated for hydrogen sulfide, water and CO₂ removal and injected into a natural gas transmission pipeline at the site. From there, it will be distributed to end users and combusted.

The project initially includes nine wells and planned a future expansion to include 11 wells. The 11 wells will be located within the same geographic extent as the initial project instance of nine wells. The project is proposed as a grouped project under the definition in VCS Standard p. 8, “Grouped project are projects structured to allow the expansion of a project activity subsequent to project validation. Validation is based upon initial project activity instances identified in the project description.” /33/, and includes a review of the location, crediting period, and emissions reduction estimates.

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation consisted of the following three phases:

- A desk review of the project documents.
- Follow-up interviews with project stakeholders and a site inspection
- The resolution of outstanding issues and the issuance of the validation report and opinion.

The following sections outline each step in more detail.

Validation Team

Role	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit	Reporting	Supervision of work	Technical review	Sector competence
Team leader and VCS validator	Toole O’Neil	Barbara	USA	✓	✓	✓	✓		✓
VCS validator	Poonacha	Shruthi	USA				✓		
VCS Technical reviewer	Yang	Weidong	USA					✓	
Financial Sector Expert	Burns	Scott	USA	✓					✓

2.2 Document Review

The following tables list the documentation that was reviewed during the validation.

2.3.1 Documentation provided by the project participants

1. Huisenga, M., SUIT Westside CBM Seep Capture and Use Project Version 9 of 21 December 2011 and previous versions, first dated 22 July 2011
2. Seisser, K, Baseline and project schematics 24 June 2011
3. Huisenga, M, SUIT ER Calculations 02012010.xls
4. Huisenga, M , Coyote LPEA 2010-2009-2008-2007.xls 24 June 2011
5. Kinder Morgan, Kinder Morgan Sales Gas Composition 27 June 2011
6. Red Willow Gathering, Vent Gas CDP Flow Meter Calibration Reports 27 June 2011
7. Red Willow Gathering, Cumulative Red Willow Invoices 01292009 to 01152011, 27 June 2011
8. Huisenga, M, Project Schematic 08042011, 4 Aug 2011
9. SUIT CBM Project Boundaries.kml, 4 Aug 2011
10. Flint, W. Pictures from SUIT Site visit
11. Eng, Draft Project Identification Note 23 May 2008 from Ruby Canyon Engineering
12. Flint, W., Presentation on CBM project including history of the project at the Four Corners Regional Geologists meeting June 2010
13. ITT, Case Study by ITT – “Airborne Natural Gas Emission Lidar (ANGEL) Services, 2009
14. Simmons, R.E., Brake, D. & Flint, W., “Airborne Differential Absorption Lidar Application to Coalbed Methane Seep Detection for Exploration and Environmental Monitoring” Paper 930 at 2009 International Coalbed and Shale Gas Symposium, 2009
15. LT Env., Fruitland Outcrop Monitoring Report – Southern Ute Indian Tribe Reservation, LaPlata County, Colorado, LT Environmental, Inc. Feb. 2007
16. Seisser, K, 2007 Gas Seep Survey Report – Southern Ute Indian Tribe Reservation, LaPlata County, Colorado, LT Environmental, Inc. Feb. 2008
17. Reid, A. Surface Ownership Southern Ute Indian Reservation, Ignacio, Colorado January 24, 2011
18. Reid, A. Mineral Ownership and Tribal Leases Southern Ute Indian Reservation, Ignacio, Colorado, January 24, 2011
19. Huisenga, M., Email correspondence with Dr. R. Fassett, USGS (ret), 30 Nov.2011
20. Baldwin, D. Letter from COGCC, 4 December, 2011
21. Interceptor Well Economic Analysis 20111219.xlsx
22. Original PDF of the financial analysis done at time of investment dated 22 May 2008.
23. Pre-Project Gas Flow Rate and Composition Monitoring Results (Pre-Project Monitoring Flows & Composition.xlsx, no date)
24. San Juan Basin Spot Price index Jan 89 to Sept 2011. (INSFERCUPDATED.xls, no date)
25. Red Willow operating agreement of 22 September 2009
26. Red Cedar Gathering Co. contract of 1st July 2008
27. Sagel AFE - project capital cost dated 2 April 2007
28. Tribal Council Resolution showing expected ROR 99-07
29. 2008 Property value Study. Discount Rate Range for Oil and Gas Properties
30. VCS, Deed of Representation, signed by SUIT, 21 Dec. 2011

2.3.2 Standards, methodologies, and other guidance.

31. VCS, VCS Program Guide, VCS Version 3.1 Requirements Document, 19 October 2011, v3.1
32. SUIT, Approved VCS Methodology VM0014, Version 1.0, "Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps"
33. VCS, VCS Standard, VCS Version 3.1 Requirements Document 19 October 2011, v3.1
34. CDM "Combined tool to identify the baseline scenario and demonstration of additionality" Version 3
http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-02-v3.0.pdf/history_view
35. ACM0008 "Consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation" Version 7.0,
<http://cdm.unfccc.int/methodologies/DB/OA37XAW7E19WHJVZ97RGH2EZ5S9E93/view.html>

2.3.3 Documentation used by DNV to validate / cross-check the information provided by the project participants

36. Toole O'Neil, B. "DNV Validation/Verification Plan", 25 July 2011, revised 20 Sept., 2011
37. Toole O'Neil, B. "DNV Sampling Plan", 25 July, 2011, revised 20 Sept. 2011.
38. Toole O'Neil, B. "DNV Site Visit Agenda" 25 July, 2011
39. US Bureau of Indian Affairs, List of Federally Recognized Tribes (accessed 4 Aug. 2011)
<http://www.bia.gov/>
40. HR 4180, Bill Summary and Status, 103rd Congress, 1993-94, <http://thomas.loc.gov/cgi-bin/bdquery/z?d103:H.R.4180>:
41. US Environmental Protection Agency, EPA ECHO Database for facilities in La Plata County accessed: <http://www.epa-echo.gov/cgi-bin/ideaotis.cgi>,
42. US Environmental Protection Agency, EPA ECHO Database for Red Willow facility accessed: <http://www.epa-echo.gov/cgi-bin/get1cReport.cgi?tool=echo&IDNumber=110020496248>
43. EPA OECA, "Profile of the Oil and Gas Extraction Industry", October, 2000, Section VI, p. 81-111.f
<http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/oilgas.pdf>
44. Title V Permit to Operate, Red Cedar Gathering Company, Permit V-SU-0012-05.03, 16 July 2008
45. US Environmental Protection Agency, Envirofacts Warehouse, Multisystem search, <http://www.epa.gov/enviro/facts/multisystem.html>
46. The Climate Action Reserve, Projects database.
<https://thereserve1.apx.com/myModule/rpt/myrpt.asp?r=111>
47. US Environmental Protection Agency, The Clean Air Act (CFR 40, Title V), <http://www.epa.gov/air/caa/>
48. US Environmental Protection Agency Climate Leaders Stationary Combustion Guidance, <http://www.epa.gov/climateleaders/>
49. US Environmental Protection Agency, E-Grid, 2010 <http://www.epa.gov/egrid>

2.3 Interviews

On 27-29 July 2011 DNV visited the Southern Ute lands and performed interviews with project stakeholders.

	Date	Name	Title	Organization	Role	Topic
50.	28-29 July	Kyle Siesser	Geologist	SUIT, Dept. of Energy	Project Developer	Project implementation
51.	28-29 July	Bill Flint	Sr. Petroleum Engineer	SUIT, Dept. of Energy	Project Developer	Project History, implementation
52.	28 July	Mike Huisengua	Project Engineer	WSP	Contractor	Project implementation
53.	28 July	Davis Dunagan	Supervisor of Gas Measurement	SUIT-Red Cedar	Operations/monitoring	Monitoring
54.	28 July	Thomas Phare	Vice President Energy Operations	Southern Ute Alternative Energy	Project Developer	Project development
55.	8 Dec	Debbie Baldwin	Environmental Manager	Colorado Oil & Gas Conservation Commission	Sector Expert	Project implementation, national issues.

2.4 Site Inspections

A site visit was conducted on 27-29 July on SUIT lands near Ignacio, Colorado. Using the planning documents as a guide, a site agenda was prepared identifying key staff, emissions sources to be visited, and project validation requirements to be reviewed on site/36/37/38/50/51/52/53/54/. The staff listed above were interviewed concerning the initial validation findings during the site assessment /1/10/. The following sites were visited.

- Outcropping where the coal seam intercepts the surface. The formations showing the up-dip of the coal seam were observed, as well as the extent of the northern San Juan Basin because of the elevation of the land.
- CBM gathering wells. Four of nine operating wells were inspected including wells, pumps, and power equipment. DNV's confirmed the location of the projects as described in the PD. These sites are remote and without access to electricity. Small generators with a separate fuel supply to operate the equipment (compressor and pumps) are maintained at each well.
- Coyote Gulch Compression Station. This station includes four large compressors that compress gas from the area before being treated at the gas clean-up treating plant. The site was inspected from input of the gas, through compression operations and output.
- Red Cedar Coyote Gulch Treating Plant. This plant processes raw CBM, removing other gases via an amine process, removes water and compresses the gas before sale to Kinder Morgan. The operations were observed, including a detailed review of the control and testing areas for the methane before sale.

The project start date is 1 January 2009, date when the project became fully operational, and began sale of gas. The site consisted of remotely located wells, nine wells were operational. This is the initial project activity. /1/

2.5 Resolution of Any Material Discrepancy

The objective of this phase of the validation was to resolve any outstanding issues that needed be clarified prior to DNV’s positive conclusion on the project design. In order to ensure transparency, a validation protocol was customized for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a VCS project is expected to meet.
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol check list for the project “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project” is enclosed in Appendix A to this report.

A corrective action request (CAR) is issued if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS requirements have not been met.
- There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs do not relate to the VCS requirements for registration.

3 VALIDATION FINDINGS

3.1 Project Design

3.3.1 Project Proponent

The Southern Ute Indian Tribe Growth Fund (SUGF) is the project proponent. Southern Ute Indian Tribe – Growth Fund (SUGF) is a division of the Southern Ute Indian Tribe (SUIT) and is responsible for developing and operating energy producing assets on the reservation. /39/40/50/51/54/.

3.3.2 Project Activity and Eligibility of the Project

As described in section 1.4, the project proposes to capture methane which would otherwise continue to be emitted to the atmosphere. The methane intercepted by the vent wells will be collected, pressurized, treated for hydrogen sulfide, water and CO₂ removal and injected into a natural gas transmission pipeline at the site. From there, it will be distributed to end users and combusted.

The gas collection system consists of steel piping drilled into the coal seam and gas fired compressors. A large gas engine driven compressor is used to boost the gas pressure in order to treat it at the processing.

The captured gas is upgraded to pipeline quality methane at a gas treatment plant. This plant uses the amine scrubbing process to remove carbon dioxide from the CBM. In addition, the plant also removes water and hydrogen sulfide. The product gas is compressed to pipeline pressures and injected into Kinder Morgan's Trans Colorado gas transmission pipeline.

The project produces pipeline quality natural gas which is distributed throughout the southwest United States and used by a variety of end users. This gas displaces natural gas that otherwise would have been used by different end users.

The project meets VCS eligibility criteria by capturing and using seeping CBM. The project activity has not created or attempted to create another form of environmental or carbon credit. The project was not previously rejected under other GHG programs either. This was confirmed by review of Climate Action Reserve projects, the only other registry available /46/.

The CBM seep capture project is located on Southern Ute Indian land within La Plata County, Colorado, in the United States. The project site is situated approximately 25 miles west of Ignacio, Colorado which is the headquarters of the SUIT. The PD includes the general location of the wells included in Phase I and Phase II of the project and DNV checked that during the site visit.

The project start date is defined as the day when the project began full operation on 1 January 2009. DNV confirmed that the equipment was installed and began operation in late 2008, start-up of operations was in Nov. and Dec. 2008. Contracts for operation were dated in 2008 in advance of the first sale. The first sale of gas was 1 January 2009. /1/26/50/

3.3.3 Project Scale and Crediting Period

Projects are categorized by size according to their estimated annual average emissions reductions. This project is estimated to produce less than one million tonnes CO₂ per year /1/3/. It is classified as a project and not a mega-project per VCS /33/. The projected emissions reductions are estimated at 28,818 tonnes CO₂e per year/1/3/

The crediting period is from 1 January 2009 until 31 December 2018 for a total of ten years.

3.3.4 Project compliance with applicable laws, statutes and other regulatory frameworks

Permits for the interceptor well system are not required. The EPA Sector notebook on the industry was reviewed to confirm the assertion in the VCS PD/43/. The Red Cedar Gathering Co. owns and operates the Title V permitted gas treatment plant. The Title V permit was provided/44/. In addition, relevant US EPA databases were searched including ECHO and Envirofacts Warehouse/41/42/45/. In addition relevant sections of the CAAA were reviewed to determine applicable laws, statutes or regulatory frameworks/47/. The project is in compliance with current regulations/47/

3.3.5 Ownership and other programs

Proper proof of title has been provided showing ownership through legislative right. The Southern Ute Indian Tribe is a federally recognized tribal nation under Public Law (103-454) of 1994 and listed in the Federal Registers at “Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs”./17/18/39/40/. Since the project activity is located on lands owned by a federally recognized Indian tribe, the Southern Ute Indian Tribe rightfully owns the emission reductions produced by the project activity. DNV has confirmed this proof of title based a review of federal documents /39/40/ and maps generated from Federal Bureau of Indian Affairs information /17/18/.

The Southern Ute Indian Tribe – Growth Fund is a division of Southern Ute Indian Tribe and is responsible for oil and gas production on tribal lands and is the entity responsible for the implementation of the project. The Southern Ute Indian Tribe – Growth Fund is the division of SUIT that will own the carbon credits/12/30/50/.

The captured gas is sold to Red Willow at the central delivery point for processing and is ultimately sold and delivered to the Kinder Morgan pipeline. A representative of Southern Ute Indian Tribe – Growth Fund has confirmed in the deed of representation the ownership of credits/12/30/50/.

The project is not eligible for other programs such as Renewable Energy Credits (RECs). The project has not applied nor will it apply to other GHG emission reduction project registries/12/50/54/. The project has not applied for nor been rejected by other GHG programs/46/50/54/. This was verified through discussions with the SUIT, and review of the other eligible registry, The Climate Action Reserve/46/

3.3.6 Additional information relevant to the project – grouped projects.

The project meets the VCS eligibility criteria for grouped projects and new instances of the project. The inclusion criteria for new instances of the project activity are defined in the PD /1/ and are in DNV’s opinion correct. The inclusion criteria are:

- The new instance is located within the same geographic region as the initial instance, and collects fugitive methane from the same methane gas seep area
- The new gas interceptor wells are connected to the gas collection system which has been constructed for the initial instance of the project

- The gas collected by the new project instance will utilize all of the same project infrastructure and monitoring systems in place for the initial project instance
- The new instance will only be used to produce the same end product as the initial project instance, namely pipeline quality natural gas
- The new instances meet the requirements for all VCs projects as defined in 3.4.1 “General Requirements” of the VCS Standard/33/.

Baseline and additionality discussions are established at the time of validation of this Project Document and will remain fixed for the inclusions of instances in the future given that each instance complies with the inclusion criteria and that additional instances demonstrate additionality based on an investment analysis developed at the time of planning those additional instances. The initial project activity instance will contain nine individual methane capture wells and complies with the criteria described above.

3.2 Application of Methodology

3.3.1 Title and Reference

The project has applied approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps”./32/

3.3.2 Applicability.

This methodology was developed for capturing CBM that would otherwise have seeped into the atmosphere. This project applies this methodology to the west side of the Fruitland formation. DNV confirms that the project complies with the applicability criteria of the methodology:

- the project captures and destroys methane which would otherwise be released to the atmosphere from coalbed outcroppings.
- It is implemented at a coal seam where the hogback ridge of the Fruitland formation is exposed to the atmosphere.
- It has documented CBM seeps. The CBM seeps are located on SUIT lands within La Plata County where the coal seams intercept the ground level. The CBM seeps have been documented since 2006 and were observed during the site visit/10/15/16/17/.
- The project is located adjacent to conventional CBM wells and gas production
- The project utilizes monitoring wells which act as gas drainage wells and intercept up-dip migrating fugitive methane at the location of the gas seeps
- The baseline is the total atmospheric release of the methane and the captured methane is destroyed off-site through utilization by end users following injection into natural gas distribution grids.

3.3.3 Project Boundary

The specific extent of the project encompasses all equipment installed and used as part of the project activity for the extraction, compression, storage, and treatment of intercepted fugitive methane at the project site, and transport to an off-site user, including transport through natural gas distribution grids.

More specifically the project includes:

- Interception Wells and collection system. The first instance of the project includes nine wells used to intercept and collect CH₄.
- Central delivery point.
- Red Willow Coyote Gulch Compressor Station. Dehydration and pressurization of gas prior to gas treatment
- Red Cedar Coyote Gulch Treating Plant. Gas upgrading for pipeline injection; includes H₂S removal, CO₂ removal by amine scrubbers
- Kinder Morgan gas transmission line.
- The physical boundaries of the CBM seep area are bounded by the coordinates in the table below

Boundary	Latitude (degrees)	Longitude (degrees)
Northwest	37.052700	-108.089304
Northeast	37.051590	-108.082516
Southeast	37.003004	-108.103487
Southwest	37.005952	-108.109783

The sources of emissions included are within the area above and also include the equipment and facilities that are described in the PD specifically the Red Willow Coyote Gulch Compressor station and the Red Cedar Coyote Gulch Treating Plant. DNV has conclude they are properly justified:

Baseline emissions:

- Emissions of methane from surface gas seeps at coal outcroppings
- CO₂ emissions from natural gas usage replaced by the project. The project involves pipeline injection of recovered methane which replaces natural gas usage

Project emissions:

- CO₂ emissions from on-site fuel (CBM) and electricity consumption due to the project activity required to transport, compress, clean and upgrade the gas
- CO₂ emissions from methane destruction, both from the combustion of methane in mechanical power generation on-site and by heat and power generation equipment by end users delivered by pipeline
- Emissions from NMHC destruction

Leakage:

- No source of leakage is included as per the methodology

The project boundary was assessed by observation and interview during the site visit/10//11/50/51/ and are in DNV’s opinion correct./1/

3.3.4 Baseline Scenario

The baseline scenario followed the requirements of VM0014, options for extracting and treating the seeping CBM were formulated along with options for equivalent energy generation. All options are in compliance with current regulations. DNV confirmed the assertion by review of federal regulation./45/. Next the possible baseline scenarios were formulated. They included:

- i. Continued release of methane to the atmosphere and natural gas supplied to pipeline from other sources
- ii. Interception, removal and flaring of fugitive CBM
- iii. Interception and removal of fugitive CBM and use for additional grid power generation
- iv. Interception and removal of fugitive CBM and use for captive power generation
- v. Interception and removal of fugitive CBM and use for additional heat generation
- vi. Interception and removal of fugitive CBM and feed into gas pipelines
- vii. Any combination of (ii) through (vi) at various shares.

A barrier and investment analysis described in the section below demonstrates that the capture and use of fugitive CBM is not a common practice and faces different barriers. Alternative ii is not viable based on the lack of regulation mandating controls or implementation of such an activity to flare fugitive emissions and the lack of revenue of this activity. Alternatives iii, iv, v, vii are not viable as there is no need for captive power or heat and the volume of gas does not justify the generation of grid power. Alternative vi faces barriers and is not financially attractive as described in the section below. The only scenario that does not face any of those barriers is alternative i, the continue release of methane to the atmosphere and natural gas supplied to pipeline from other sources, and therefore it is in DNV’s opinion properly justified that it is the baseline scenario.

The baseline scenario then is continued release of methane from the seeps into the atmosphere and natural gas supplied to the pipeline from other sources.

The next step is an analysis of the barriers to implementation of the project. The following barriers were discussed. The table below shows the barrier and the DNV review comments.

3.3.5 Additionality

The PP applied the VM0014 and the “Combined tool to identify the baseline scenario and demonstration of additionality” V 3.0. The tests for additionality are listed below with narrative. The project developer claims the existence of the following barriers

Barrier	Comment
Non-financial Barriers	
<ul style="list-style-type: none"> • Legal liability 	DNV confirmed the issues with legal liability of new projects through interviews /54/

• Low production volumes	DNV confirmed the low production volumes through interviews, and the reports on the seeping CBM prior to the project/13/14/15/16/54/
• Added costs and liability	DNV confirmed this project is not near local residents reducing possible implementation costs on site/10/. DNV also confirmed the air monitoring requirements in the PD through review of the CAA/47/
• Variable volumes	DNV confirmed the variable volumes through review of the reports prior to implementation/1//13/14/15/16/54/
Prevailing practice barriers	DNV was able to confirm there are no other projects that capture and use seeping CBM in North America through interviews and review of registries/46/55/. This is the first application of VM00014

DNV confirmed the existence of the following barriers:

- Perceived risk of legal liability associated with CBM seeps. Operators have the impression that regulators or local people would interpret their involvement with a CBM seep mitigation activity as an admission that the fugitives are caused by their CBM drilling activities. DNV confirmed with independent sector experts /19/55/ that the perceived legal liability and potential added regulatory burden are barriers to CBM seep mitigation projects implementation.
- Low production volumes compared to traditional CBM exploitation. The volumes for fugitive CBM capture are much lower than those of traditional CBM making this a non-attractive activity for large operators. This has been confirmed analyzing reports on the seeping CBM prior to the project and by independent experts /19/20/55/. This relates to the economics of the project and the expected return on investment. The Investment analysis provided, as described below, shows that this project is not an economically attractive project.
- Variable methane volume and methane concentration. In DNV’s opinion and also confirmed with external sector experts /19/20/55/ the CBM seeps are a relatively new phenomenon and the mechanics and causes of CBM seeps are not well understood. The uncertainty related to possible variable volume and methane concentration make this unattractive.

The project developer claims that the prevailing practice is not to capture and use fugitive CBM. Based on DNV’s expertise and as confirmed by local experts /19/20/55/ the other existing CBM projects in the areas are traditional CBM projects with high production volumes which cannot be compared to this project. A similar pilot project was implemented by Colorado Oil and Gas Conservation Commission (COGCC) after the SUIT project started. Staff from this other project was interviewed and confirmed the barriers claimed in the PD /55/.

It is DNV’s opinion that the project activity faces barriers that prevent its implementation and that are not faced by the baseline scenario. These barriers will be also faced by the Phase II of the project (new instance). Moreover, the project developer has presented an investment analysis based on data and information available at the time of the decision to implement the project in 2007-2008 /21/ /22/. The additional instances will have to demonstrate additionality based on the financial analysis at the time of inclusion.

The data source for the initial investment of 2,273,712 USD /27/, the estimated volumes, price of gas and the agreements with the operator Red Willow Production Company and the gas sales agreement with Red Cedar Gathering Company have been provided to DNV and assessed to be accurate /25/26/. The cost for operation and maintenance of this project only included in the initial investment analysis /22/ uses values that are aligned with the contracts signed later on with the different operators and are in DNV's opinion reasonable for the operation of this type of projects /25/ /26/. The gas price used for the analysis is the 5 year average for the San Juan Basin Spot Price Index (2002-2007) /24/. The gas volume was estimated based on the monitoring data for the years previous to the implementation of the project/14/15/16/. The gas price used is 6.93 USD/MCF. DNV confirms this is a conservative value as gas prices has decreased after the investment analysis was done /24/

The investment analysis spreadsheet /22/ shows the 10 year and 20 year NPV and IRR for return on equity for the project and presents sensitivity analysis for variations in the base case sales price against changes in production volumes of natural gas at ($\pm 10\%$), heating value (BTU) and capital investment. A ten year analysis is for DNV reasonable for the operational life of this project. The analysis shows a 10 year NPV on equity of -1M USD and a NEGATIVE IRR of -2%.

The investment analysis spreadsheet/22/ used a benchmark of 17.08%. This is the 2007 average discount rate for non-integrated oil and gas producers in the United States published by the Texas Comptroller's Property Tax Division /29/. This is in DNV's opinion a reasonable benchmark for this project. The investment analysis and the sensitive analysis shows that it is very unlikely that the project will reach this level of return.

In conclusion, it is DNV's opinion that based on the barriers presented and the investment analysis the project is additional. As noted in the VCS Standard/33/, given that the new instances are not fully developed, new instances of the project will require another investment analysis.

3.3.6 Quantification of GHG Emission Reductions and Removals

Fugitive CBM was not captured and flared or used before the project implementation. Therefore baseline emissions are calculated as the sum of the baseline emissions from release of methane into the atmosphere every year that is avoided by the project activity and the baseline emissions related to the supply of gas to the gas grid replacing the use of natural gas.

For the calculation of emissions from release of methane into the atmosphere (BE_{MR} , estimated as 30,382 tCO₂/year) it is correctly assumed that the methane not captured in the project would not be captured in the baseline either. The methane captured by the project that would be released to the atmosphere is the sum of the upgraded gas injected in the gas grid (63,725 MMBtu/year) plus the small amount of gas that the project used to generate mechanical energy at the gas compression station (8,364 MMBtu/year) and the gas treating plant (4,229 MMBtu/year). The baseline emissions related to the supply of gas to the gas grid replacing the use of natural gas are estimated as the amount of gas delivered to the grid time an emission factor for the natural gas. The emission factor 53.06 kgCO₂/MMBtu is sourced from the EPA Climate Leaders Technical Guidance for combustion of natural gas and is found to be correct/48/. Baseline emissions due to the replacement of natural gas are estimated to be 3,381 tCO₂/year. Baseline emissions are to be calculated ex-post based on the gas captured and used and are estimated to be 33,964 tCO₂/year.

Project emissions for the SUTE project are to be calculated as the sum of the projects from energy use to capture and use methane and the project emissions from the methane destroyed and are estimated to be 5,146 tCO₂/year.

Emissions from the additional energy used for the capture, transport, compression and use or destruction of methane are those from the use of electricity at the Red Cedar Coyote Gulch Treating Plant and the use of CBM bought from CBM nearby. The electricity used is based on invoices and is prorated to the amount of gas delivered from the project to the treatment plant. The grid emission factor is 0.854 t CO₂/MWh from E-GRID for grid electricity in the WECC Rockies region /49/. The CBM emission factor has been determined ex ante to be 58.86 kg CO₂e per MMBtu and it is in DNV's opinion reasonable /3/

The project emissions from the use of the methane are those related to the use of methane to produce mechanical power and those from the use of methane by end users and are estimated to be 4,005 tCO₂/year. The ex-ante estimation of non-methane hydrocarbons (NMHC) content in the gas is below 1%, the combustion of NMHCs in captured methane is neglected for ex-ante calculations./1/

Leakage is estimated to be zero as per the methodology.

DNV has reviewed the calculations and the values determined ex-ante and found them to be correct. The volume of gas captured is assumed to be constant over the crediting period and is based on monitoring from previous years /1/13/14/15/16/. The methane content in the gas was calculated ex-ante to be 0.019 tCH₄/MMBtu using a gas composition analysis /1/3/. Emissions reduction are estimated to be 28,818 tCO₂/year.

3.3.7 Methodology Deviations

There were no methodology deviations identified.

3.3.8 Monitoring Plan

The monitoring plan is in line with the requirements of VM0014 and appropriate for the project.

Data and parameters available at validation are listed in the table below with validation comments: Additional electricity consumption $CONS_{ELEC,PJ,Specific}$ is a parameter to be monitored during the project. For purposes of validation, this parameter needed to be estimated. The PP used two years of data to estimate the parameter. The proposed method for estimation was determined to be appropriate.

<i>Data / Parameter:</i>	<i>Value</i>	<i>Source</i>	<i>DNV</i>
CEF _{ELEC}	0.854 tCO ₂ / MWh	The EPA's eGRID database, values for the WECC Rockies sub-region will be used. This will be updated	This is appropriate. E-Grid WECC is the correct region and is updated every five years.

		periodically when eGRID is updated.	
EF_{GAS}	53.06 kgCO ₂ /MMBtu	US EPA Climate Leaders Stationary Combustion Guidance/35/	This is appropriate.
$CEF_{FossilFuel}$	58.86 kgCO ₂ /MMBtu	Calculated from gas composition analysis and used for crediting period	Method confirmed and calculations checked on site. Seven months of data was representative and appropriate/7/
CEF_{CH4}	2.75 tCO ₂ /tCH ₄	VM0014	As per the methodology
CBM_{CH4}	0.019 tCH ₄ /MMBtu of CBM	For CBM used to run equipment. Calculated from gas composition and known gas properties	Method confirmed gas composition reviewed for consistency and representativeness. The composition is representative for pipeline quality gas/5/

- Data and parameters monitored

Data / Parameter:	Monitoring Method	Accuracy	Monitoring/record ing Frequency	DNV
$PC_{CH4,CDP}$	Portable gas chromatograph (GC)	Part per million	Half hourly/ monthly. Gas sampled every 30 min into a composite sample cylinder.	Method is appropriate per VM0014
$PC_{NMHC,CDP}$	Portable gas chromatograph (GC)	Part per million	Half hourly/ monthly. Gas sampled every 30 min into a composite sample cylinder.	Method is appropriate per VM0014
$CONS_{FossilFuel,PJ}$	Gas flow meter # 0400501	0.1 SCF	Continuously	Method is appropriate per VM0014
$CM_{MECH,CS,PJ}$	Gas flow meter	0.1 SCF	Continuously	Method is appropriate per VM0014
$CM_{MECH,TP,PJ}$	Gas flow meter	0.1 SCF	Continuously	Method is appropriate per VM0014
CM_{gasPJ}	Gas flow meter #0410501	0.1 SCF	Continuously	Method is appropriate per VM0014
$CONS_{ELEC,PJ}$	LPEA electric meter	Maintained by LPEA	Continuously	Method is appropriate per VM0014

CEF _{NMHC}	GC	Part per million	Annual calculation	Method is appropriate per VM0014
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Red Willow field technicians are trained and recertified annually to maintain their field technician status and qualifications to perform field and laboratory analysis. DNV confirmed the requirement during the site interviews/53/.

Red Willow field technicians calibrate portable gas chromatographs on a daily basis. Calibration is performed using a standard gas cylinder. GC's are baked-out weekly to remove water build-up and each unit is inspected monthly.

Gas flow meters are calibrated four times annually by Red Willow field technicians and monthly gas composition is determined using portable gas chromatographs which are calibrated daily. All data is stored on-site at Red Willow offices in Durango, and is remotely backed up. Gas Btu content determined from volumetric consumption and gas composition using Flow Calc software./6/53/

The electric meter is maintained by the LPEA as required by regulation. The meter is calibrated by the manufacturer and meets US requirements for accuracy. DNV has determined this is acceptable.

The gas flow rates and electricity consumption will be prorated during operations because of their locations. DNV was able to confirm the pro-rating method that was applied during validation and that will be used during future verifications. The method is appropriate.

In conclusion, it is DNV's opinion that the proposed monitoring plan complies with the applied methodology and reflect good practices.

3.3 Environmental Impact.

This project did not require an environmental impact assessment as defined under US EPA regulations or SUIT environmental regulations/47/50/51/.

The property hosting the interceptor wells is owned by the SUIT. The interceptor wellheads are located over a total of approximately 877 acres. The land use impacts include the dirt access roads and the small areas for the wellheads and associated equipment. There are minimal impacts from criteria pollutant emissions from various engines at the wellheads and compression stations. No permits were required for the equipment operated for the project. This was confirmed on site and during a review of EPA databases/45/47/. The Red Cedar Coyote Gulch processing plant processes all of the CH₄ from all of the SUIT lands prior to sale. Because of the size of the plant, permits are required. The Title V permit was reviewed by DNV during the desk review./44/

3.4 Comments by stakeholders

No stakeholder consultation was conducted. This is optional as per VCS. However, the project was presented to and approved by the Southern Ute Indian Tribe decision makers/50/.

4 VALIDATION CONCLUSION

Det Norske Veritas (U.S.A.), Inc. (DNV) has performed a validation of the project activity “Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project”. The validation was performed on the basis of VCSA criteria for the VCS project as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project correctly applies the approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps”.

The project captures and uses seeping CBM that would otherwise be emitted into the atmosphere. As a result, the project results in reductions of CH₄ emissions which are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The project is planned as a grouped project with a first instance included in the validated PD that includes nine wells.

The total emission reductions from the project are estimated to be on the average 28,818 tCO₂e per year over the selected 10 year non-renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.

In summary, it is DNV’s opinion that the project activity Southern Ute Indian Tribe Westside CBM Seep Capture and Use Project”, as described in the VCS PD, version 9 dated 21 December 2011, meets all relevant VCSA requirements for the VCS project and correctly applies the approved VCS methodology VM0014, Version 1.0, “Interception and Destruction of Fugitive Methane from Coal Bed Methane (CBM) Seeps”. Hence, DNV recommends the registration of the project as a VCS project activity.

APPENDIX A

VCS VALIDATION PROTOCOL

Table 3 Forward Action Request

Forward action requests	Reference to Table 1	Response by project participants	Validation conclusion