

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

ENVIRONMENTAL
PROTECTION

START FILE

BUREAU/PROGRAM: oil & Gas

DIVISION: 007 BEAVER

COUNTY/MUNICIPALITY: 04951

PROGRAM: oil & gas

CASE NAME: 007-20027

FILE: P

PERMIT # _____

COUNTY BEAVER TWP. S. Beaver

FARM GALEY, John RESULT Gas Storage

OPER. Columbia Gas of Pa. 1184 gal. ELEV. 607-2027 SCOUT NO. BEA-27-R

DATE 5-1-70 COMPL. 9-3-70 WHERE DESCRIBED ROTARY AIR TOTAL DEPTH 4840 LOGGED INT.

COMMENTS Is now a storage well redrilled. See "M. Weigel Heirs" key-sort card.

SHOWS OF WATER QUAD New Castle NINTH G WELL NO. 9

LOCATION 28,100' S 40° 50' 7,550' W 80° 20'

Table with columns: OIL OR GAS SYMBL., MARKERS, DEPTH (TOP, BOTTOM), THICKNESS, ELEVATION (TOP), NOTES: TESTS, SHOWS, PRODUCTION, ETC.

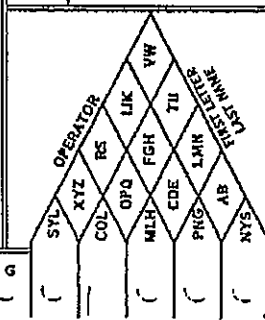


Table with columns: PRODUCTION AND SHOWS OF OIL AND GAS (OIL - OUTER ROW HOLES, GAS - INNER ROW HOLES), WELL DEPTH, FAULTED.

PA. N.Y. W.VA. OHIO OTHER QUADRANGLE SECTION QUADRANGLE NUMBER YEAR COMPLETED

Dt Dhm Don Dor Dh Sk Slw Ss Sl Scl Sa Oq Oo Or Ot-br Och Ob Eq Me PLAT. DR. LOG LOG (E. G.) SAMPLES SAMP. EX WILDCAT FIELD/DUT GAS. PROD. OIL PROD. ABN. PROD. P. & A. P. & A. (S.O.) P. & A. (S.G.) SHOT/FRAC. FAULTED

South Beaver Township, Beaver County, Pa.

Operator: Jas. H. Duff and John T. Galey.

Located: 0.8 mi. S. 85° E. of No. 1 Charlotte R. Calvin.

Contractor: G. L. Sample.

Drillers: Clyde Ramsey, Carl Marburger, C. A. Smith.

Tool dressers: Chas. Hager, Ray Turner, Geo. Riolt.

Commenced March 22, 1937; completed, July 26, 1937.

Record from drillers as drilling progressed.

Production: Gas, 4819-4824'.

Elevation, 1188.84' L.

Total depth, 4824'.

Location: 1.42 mi. W. of 80° 25' and 5.38 mi. S. of 40° 50' * SW -
New Castle Quadrangle.13" casing, 19'; 10", 596' (pulled); 8½", 1161'; 5½", 4790',
cemented, 60 sacks (Halliburton); 2" E.U.B., 4820', B.H.C.
set at 4770'; 2" - 6' pup with 40 - 3/8" perforations from
8" above bull plugged end.

Record to RCT from Martens from Galey March 23, 1943.

	Top.	Bottom.
Gravel (surface)	0	19
Slate	19	82
Coal (Lower Freeport)	82	85
Sand (water, 90')	85	90
Slate	90	143
Slate and shells	143	433
Gray sand	433	459
Blue mud	459	460
Shale	460	470
Sand (water, 502')	470	519
Slate	519	550
Sand	550	570
Slate	570	598
Slate and shells	598	797
Sand	797	863
Black slate	863	870
Sand, Berea (show oil, 890-896')	870	927
Slate	927	966
Sand, Butler City Gas Sand (1½ bailers water per hour)	966	999
Broken sand	999	1019
Lime	1019	1027
Red rock and shells	1027	1119
Sand	1119	1127
Slate and shells	1127	1439
Lime shells	1439	1668
Light shale	1668	1993
Brown shells and sand	1993	2077
Brown shale	2077	2224
Slate and shale	2224	2297
Hard lime shells	2297	2407
Gray slate	2407	2697
Light-brown shale	2697	3415
Light-gray shale	3415	3465
White slate	3465	3823
Brown shale	3823	3859
Light shale and shells	3859	4072
Gray shale	4072	4110

(OVER)

JOHN T. GALEY, TRUSTEE, NO. 1 WELL (Continued).
 (FORMERLY MINNIE WEIGLE HEIRS NO. 1)

	Top.	Bottom.
Brown shale	4110	- 4354
Light shale	4354	- 4371
Brown shale	4371	- 4421
Lime	4421	- 4427
Black shale (gas pocket, 4437')	4427	- 4437
Lime (corrected measuring string over derrick, 163.8' instead of 164')	4437	- 4454
Black shale (gas pocket, 4451 and 4457')	4454	- 4478
Black shale and shells (12 sacks cement, 4478')	4478	- 4490
Black shale (gas pocket, 4601, 4603') (caving)	4490	- 4606
Lime, Onondaga (checked measurement on drilling line)	4606	- 4817
Sand, Oriskany (checked measurement on drilling line) (gas, 4819-4824')	4817	- 4824
Total depth		4824

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF MINES AND MINERAL INDUSTRIES
 OIL AND GAS DIVISION
 PITTSBURGH, PENNSYLVANIA

Office Use Only

J. H. C. (D)

001 20027-R

PERMIT NO. - BEA-27-R

WELL RECORD

TYPE OF WELL Storage

2,250' N 40°45'
 7,450' W 80°20'
 (H)

DEEP

WELL OPERATOR Columbia Gas of Pennsylvania, Inc.
 ADDRESS 800 Union Trust Building, Pittsburgh, Pa. ZIP 15219
 FARM NAME: John Galey (The Manufacturers Light & Heat Co.) FARM NO. 1 SERIAL NO. CGPA-5 ACRES 150
 TOWNSHIP: South Beaver COUNTY: Beaver
 REDRILLING COMMENCED 5-1-70 REDRILLING COMPLETED 9-3-70
 ELEVATION 1184.06 G. L. New Galilee S 13,000 of 40°47'30" QUADRANGLE W 7,550' of 80°25' 7 1/2' 15'

Casing and Tubing Record

Pipe Size	Amt. In Well	Material Behind Pipe		Casing			Date Run
		Cement (Sks.)	Gal (Sks.)	Type	Size	Depth	
8 5/8"	1157.03'	525	---	Float Shoe	8 5/8"	1157.03'	5-4-70
5 1/2"	4897.06'	2000	---	Float Shoe	5 1/2"	4897.06'	6-1-70
2 3/8"	4788'8"	---	---	---	---	---	9-3-70

Perforation Record

Stimulation Record

Date	Interval Perforated		Date	Interval Treated	Amt. Fluid	Amt. Sand	Injection Rate
	From	To					
9-2-70	4825	4830	9-2-70	4825 to 4830	783bbls.	25,000 lbs.	28.9bbls/min

Natural Open Flow: Full of salt water Natural Rock Pressure: Full of salt water
 After Treatment Open Flow: Full of salt water After Treatment Rock Pressure: Full of salt water

REMARKS:
 8 5/8" and 5 1/2" casing cemented to surface
 5 1/2" two-stage cement collar set at 3832.89'
 Formation on Reverse Side

FORMATIONS

Name	Top	Bottom	Gas At	Oil At	WATER AT (Fresh or Salt Water)	Source of Data
Service Company Log--						
Berea Sand--	895	932	---	---	---	
Gas Sand	973	992	---	---	---	
Tully Lime	4460	4468	---	---	---	
Onondaga Lime	4618	4635	---	---	---	
Onondaga Chert	4635	4822	---	---	---	
Oriskany Sand	5822	4884	---	---	salt water	
Redrilled to a depth of 4909' and cemented 5 1/2" casing at 4897' cement left inside 5 1/2" to a depth of 4840'.						
Total Depth		4840				

SEISMIC DIVISION
 OF PENNSYLVANIA
 INDUSTRIAL SERVICES

Date April 16, 19 71

Approved COLUMBIA GAS OF PENNSYLVANIA, INC Operator

By D. M. Ellington, D. M. Ellington
 Title

Supervisor, Storage

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

FILE

007-20027

STATEMENT OF BASIS
FOR

U. S. EPA's UNDERGROUND INJECTION CONTROL (UIC) PROGRAM
DRAFT CLASS IID PERMIT NUMBER PAS2D041BBEA

FOR

Columbia Gas of Pennsylvania, Inc.
Southpointe Industrial Park
501 Technology Drive
Cannonsburg, Pennsylvania 15317

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FOR

A project consisting of one Class II-D injection well, located in the Blackhawk Storage Field, used for the disposal of fluids produced in association with oil and gas production operations. The well is located in:

Beaver County
Beaver Falls, Pennsylvania
Latitude 40°47'30", Longitude -80°25'00"

In September, 1984, Columbia Gas of Pennsylvania, Inc. submitted a UIC permit application to the U.S. Environmental Protection Agency, Region III ("EPA") for an existing brine disposal well which they operated in the Blackhawk Gas Storage Field located in Beaver Falls, Pennsylvania. A UIC permit for the operation of this well was subsequently granted by EPA on March 25, 1985. This initial permit was effective for ten years and after being public noticed on two separate occasions, was subsequently reissued for another ten years on March 20, 1995 and on March 20, 2005. Since Columbia Gas of Pennsylvania, Inc.'s permit will expire on March 20, 2015, they have again requested that EPA reissue this permit. All submissions received from Columbia Gas of Pennsylvania for permit issuance are collectively referred to in this Statement of Basis as the "permit application." EPA has deemed the request for permit reissuance complete.

Review of the permit application by EPA as well as review of the historical operation of this injection well indicates that no impact to Underground Sources of Drinking Water ("USDWs") should result from continued injection operations. EPA intends to issue a permit for this well, with conditions and terms as stated in the draft permit, unless modifications are needed

based on any new information that may be introduced during the public comment period. Under the authority of Title 40 of the Code of Federal Regulations, 40 C.F.R. Parts 144 and 146, EPA permits must specify conditions for construction, operation, monitoring, reporting and plugging and abandonment of injection wells in order to prevent the movement of fluid into any USDW. The Permittee's UIC project and the draft permit conditions specific to the project are described below:

Area of Review: Pursuant to the applicable regulation, 40 C.F.R. §§ 144.3 and 146.6(b), the "Area of Review" ("AOR") is an area surrounding the project or a well which the applicant must, first research, and then develop a program for corrective action to address any unplugged or abandoned production and injection wells which penetrate the injection zone and which may provide conduits for fluid migration. Columbia Gas of Pennsylvania proposed a one-quarter mile fixed-radius as the AOR around the injection well. Based on the chemistry of the injection and formation fluids, hydrogeology, population and ground water use and dependence and historical practices in the area, EPA believes the one-quarter mile AOR is adequate. In addition, the Blackhawk Field was converted into a gas storage field in 1970 due to the Field's ability to confine natural gas. The produced fluid being injected is the fluid within this gas storage field that Columbia Gas of Pennsylvania produces during gas production out of the field. Therefore, the produced fluid is simply being returned to the confined storage field.

Underground Sources of Drinking Water (USDWs): A USDW is defined by the UIC regulations as an aquifer or its portion which, among other things, contains a sufficient quantity of ground water to supply a public water system and which also contains fewer than 10,000 mg/l (milligrams per liter) Total Dissolved Solids, and which is also not an exempted aquifer. The Permittee has identified the depth of the lowermost USDW, in the vicinity of the Injection Well, to be approximately 300 feet below surface elevation. The construction of the injection well, as provided in the permit application, complies with the regulatory criteria of 40 C.F.R. §§ 146.22 and 147.1955. This well has an 8 5/8 inch surface casing which extends from the surface to a depth of approximately 1157 feet and is cemented back to the surface. In addition, the Well has 5 1/2 inch long string casing to a depth of approximately 4897 feet and is cemented back to the surface. Injection occurs through a 2 3/8 inch tubing string set on a packer, installed above the perforations in the long string casing and located at a depth of approximately 4825.

Injection and Confining Zones: Injection of fluids for disposal is limited by the permit to the Oriskany Sandstone Formation in the subsurface interval between approximately 4822 feet to 4884. This injection zone is separated from the lowermost USDW by an interval of approximately 4522 feet, while the confining zone, immediately adjacent to the injection zone, is comprised of approximately 204 feet of limestone. In addition, gamma ray logging information from this well shows additional confining units of shale and or limestone between the lowermost USDW and the confining units adjacent to the injection zone.

Maximum Injection Pressure: The maximum allowable surface injection pressure for the permitted operation will be 1832 pounds per square inch (psi). The maximum pressure of 1832 psi was developed using a specific gravity for the injection fluid of 1.20, a fracture gradient for

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the Oriskany Sandstone of 0.90 psi/ft. and an injection formation depth of 4822 feet. In the permit application, the Permittee had submitted information from a step-rate test indicating a fracture gradient of 1.31 for the Oriskany Sandstone. However, the Region went with the more conservative value of 0.90 psi/ft. to calculate the maximum injection pressure. The 0.90 psi/ft. gradient had been established from a consultant study. If the specific gravity is ever found to be greater than 1.20, the Permittee shall dilute the injection fluid so that the specific gravity is no greater than 1.20. Both injection pressure and annular pressure will be continuously monitored. Fluids have been injected through this well into the Oriskany Sandstone prior to the issuance of EPA's UIC permitting regulations and EPA sees no evidence to indicate that there has been any fracturing of the injection or confining zone. The maximum injection pressure of 1832 psi was calculated to prevent the initiation of new fractures or the propagation of existing fractures in the injection zone during operation of the Injection Well.

Geologic and Seismic Review: The SDWA regulations for Class II wells do not require consideration of seismicity, unlike the SDWA regulations for Class I wells used for the injection of hazardous waste. See regulations for Class I hazardous waste injection wells at 40 C.F.R. §§ 146.62(b)(1) and 146.68(f). Nevertheless, EPA evaluated factors relevant to seismic activity such as the existence of any known faults and/or fractures and any history of, or potential for, seismic events in the area of the Injection Well as discussed below and addressed more fully in "*Region 3 framework for evaluating seismic potential associated with UIC Class II permits, September, 2013.*" EPA also established a maximum injection pressure in the draft permit designed to limit the potential for seismic events.

The permit provides that the Permittee shall inject through the Injection Well only into a formation which is free of known open faults or fractures within the AOR as required in 40 C.F.R. § 146.22. The Permittee submitted geologic information that indicates the presence of sealing or non-transmissive faults in the injection zone within the AOR that created a structural trap for natural gas. Natural gas was produced in the past out of the Oriskany Sandstone in this location and the Permittee found this location to be ideal for the development of a natural gas storage field. The maximum pressure and injection rate allowable under this permit will not result in any appreciable pressure increase at the location of the sealing faults since the Blackhawk Storage Field must be managed to store natural gas. This entails that operational gas storage field pressures cannot be exceeded.

Earthquake activity in Pennsylvania has been associated with the Precambrian, crystalline, igneous/metamorphic bedrock, sometimes referred to as "basement rock", which is located below sedimentary bedrock, either from basement faulting or faulting at a shallower depth caused by tectonic stresses that originated from the basement rock. The available geophysical and seismic information researched by the Permittee, as well as through EPA's review of published information of seismicity in Pennsylvania (refer to information referenced below), shows no evidence of faults that reach the land's surface from basement rock. Basement rock, in the area of the proposed permit, is located at depths approximately 6500 feet below the proposed injection zone.

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EPA's review of historic seismic events, from 1938 to the present, from seismometers located in Clearfield and Venango Counties, Pennsylvania, the United States Geologic Survey (USGS) and the Pennsylvania Bureau of Topographic and Geologic Survey have not recorded any seismic activity that originated in Clearfield County, Pennsylvania. See "Earthquake Epicenters in Pennsylvania", Pennsylvania Department of Conservation and Natural Resources website; and "Earthquakes Hazards Program, Pennsylvania Seismicity Map 1973 to Present", United States Geological Survey website.

Finally, a number of factors help to prevent injection wells from failing in a seismic event and contributing to the contamination of a USDW. Most deep injection wells, those that are classified as Class I or Class II injection wells, such as the Columbia Gas of Pennsylvania Injection Well, are constructed to withstand significant amounts of pressure. The Columbia Gas of Pennsylvania Injection Well is constructed with multiple steel strings of casing that are cemented in place. Furthermore, the draft permit requires the Permittee to mechanically test the Injection Well to ensure integrity every five years and to continuously monitor the Injection Well during operations to detect any potential mechanical integrity concerns. The Injection Well has also been designed to automatically shut in and cease operation in the event that the mechanical integrity of the well is compromised, including if the mechanical integrity is compromised by a seismic event.

Injection fluid: The draft permit limits this Injection Well to the disposal of produced fluids associated with gas extraction from the operation of the Blackhawk Gas Storage Field. The maximum injection volume is limited to 21,000 barrels per month. Analyses of injection fluid will be conducted as stated in Part II, paragraph B.3 of the draft permit. The parameters chosen for sampling reflect not only the typical constituents found in the injection fluid, but also shallow ground water. Should a ground water contamination incident occur during the operation of the Injection Well, EPA will be able to compare samples collected from ground water with the injection fluid analysis to help determine whether operation of the Injection Well may be the cause for the contamination.

Testing, Monitoring and Reporting Requirements: The Permittee is required to conduct a two part mechanical integrity test (MIT) once every five years. The two part MIT consists of a pressure test to make sure the casing, tubing and packer in the well do not leak and a fluid movement test to make sure that any movement of fluid does not occur outside the injection zone. In addition to the monitoring described above, additional pressure testing of the casing, tubing and packer will occur whenever a rework on the well requires the tubing and packer to be released and reset. The Permittee will be responsible for monitoring injection pressure, annular pressure, flow rate and cumulative volume on a continuous basis and reporting this data to EPA on an annual basis. These tests as well as the monitoring will help to provide documentation as to the absence of fluid movement into or between USDWs.

Plugging and Abandonment: The Permittee has submitted a plugging and abandonment plan that will result in an environmentally protective well closure at the time of cessation of operations. The Permittee has also made a demonstration of financial responsibility that

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indicates adequate resources will be maintained for well closure. These provisions should preclude the possibility of abandonment without proper closure.

Expiration Date: Pursuant to 40 C.F.R. § 144.36, a final permit, when issued, will be in effect for ten years from the date of permit issuance. Annual review of the permittee's operation will be conducted. This proposed draft permit contains essentially the same conditions as the final permit will unless information is supplied to EPA which would warrant alternative conditions or actions on this permit application.

Additional Information: Questions, comments and requests for additional information may be directed to:

S. Stephen Platt
Ground Water & Enforcement Branch (3WP22)
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103
platt.steve@epa.gov
215-814-5464

A public hearing has been tentatively scheduled for Wednesday, April 1, 2015 at 7:00 PM, at the Patterson Township Volunteer Fire Department located on 319 Darlington Road in Beaver Falls, PA 15010. Requests to hold a public hearing must be received in the office listed above by Monday, March 23, 2015. When requesting a public hearing, please state the nature of issues proposed to be raised. EPA expressly reserves the right to cancel this hearing unless a significant degree of public interest, specific to the proposed UIC brine disposal injection operation, is evidenced by the above date. The Administrative Record for this action will remain open for public comment until Wednesday, April 1, 2015.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

INJECTION CONTROL PERMIT NUMBER PAS2D041BBEA
AUTHORIZATION TO OPERATE CLASS II-D INJECTION WELL

In compliance with provisions of the Safe Drinking Water Act, as amended, 42 U. S. C. §§ 300f et seq (SDWA) and the SDWA implementing regulations promulgated by the U. S. Environmental Protection Agency at Parts 144 -147 of Title 40 of the Code of Federal Regulations, this permit authorizes

Columbia Gas of Pennsylvania, Inc.
Southpointe Industrial Park
501 Technology Drive
Cannonsburg, Pennsylvania 15317

to operate the Blackhawk Storage Field Class II-D brine disposal Injection Well (hereinafter, "Injection Well or Facility") for the purpose of injecting fluids produced in association with Blackhawk Storage Field gas production operations into the Oriskany Sandstone Formation, in accordance with the provisions of this permit. The Injection Well is located in Beaver Falls, Beaver County, Pennsylvania. The coordinates for the Injection Well are: Latitude 40° 47' 30" and Longitude -80° 25' 00".

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This permit shall become effective on _____, 2015.

This permit shall remain in effect until midnight _____, 2025.

Signed this _____ day of _____, 2015.

Jon M. Capacasa, Director
Water Protection Division

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PART I

A. Effect of a Permit

Columbia Gas of Pennsylvania, Inc. (the "Permittee") is allowed to engage in underground injection at the Injection Well in accordance with the conditions of this permit. The Permittee shall not allow the underground injection activity, otherwise authorized by this permit, to cause or contribute to the movement of fluid containing any contaminant into any underground source(s) of drinking water (USDW), if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 141 or if it may otherwise adversely affect the health of persons. Any underground injection activity not authorized in this permit or otherwise authorized by permit or rule is prohibited. Issuance of this permit does not convey property rights or mineral rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Part C or the imminent and substantial endangerment provisions in Part D of the SDWA, 42 U.S.C. §§ 300f-300j-11, or any other common or statutory law for any breach of any other applicable legal duty.

B. Permit Actions

This permit can be modified, revoked and reissued, or terminated for cause or upon request as specified in 40 C.F.R. §§ 144.12, 144.39 and 144.40. Also, the permit is subject to minor modifications as specified in 40 C.F.R. § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee shall not stay the applicability or enforceability of any permit condition.

C. Severability

The provisions of this permit are severable, and if any provision of this permit or the Permittee's application, dated August 29, 1984, as well as subsequent information submitted for permit reissuance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

D. General Requirements

1. Duty to Comply. The Permittee shall comply with all applicable UIC regulations, including 40 C.F.R. Parts 124, and 144-147, and with the conditions of this permit, except to the extent and for the duration that EPA authorizes any noncompliance in an emergency permit issued under 40 C.F.R. §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance or modification, or for denial of a permit renewal application.

2. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate. The Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

4. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, adequate security to prevent unauthorized access and operation of the Injection Well and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

5. Duty to Provide Information. The Permittee shall furnish to the Director of the Water Protection Division ("Director"), within a time specified by the Director, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit. If the Permittee becomes aware of any incomplete or incorrect information in the Permit Application or subsequent reports, the Permittee shall promptly submit information addressing these deficiencies. For purposes of this permit, reports that are required to be submitted "in writing" or in "written" format may be submitted electronically through email or facsimile, unless otherwise specified herein.

6. Inspection and Entry. The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:

a. Enter upon the Permittee's premises where the Facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by the SDWA.

7. Penalties. Any person who violates a requirement of this permit is subject to administrative or civil penalties, fines and other enforcement actions under the SDWA. Any person who willfully violates conditions of this permit is subject to criminal prosecution.

8. Transfer of Permits. This permit is not transferable to any person except after notice is sent on EPA Form 7520-7, approval is received from the Director, and the requirements of 40 C.F.R. § 144.38 are satisfied. The Director may require modification or revocation of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA or its implementing regulations. The transferee is not authorized to inject under this Permit unless and until the Director notifies the transferee that the transferee is so authorized through issuance of a revised permit identifying the transferee as the permittee.

9. Signatory Requirements.

a. The Permittee shall sign all reports required by this permit and other information requested by the Director as follows:

- (1) for a corporation, by a responsible corporate officer of at least the level of vice-president;
- (2) for a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- (3) for a Municipality, State, Federal, or other public agency by either a principal executive officer or a ranking elected official.

b. A duly-authorized representative of the person designated in paragraph a. above may also sign only if:

- (1) the authorization is made in writing by a person described in paragraph a. above;
- (2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated Facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or a position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and
- (3) the written authorization is submitted to the Director.

c. If an authorization under paragraph b. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the

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Facility, a new authorization satisfying the requirements of paragraph b. of this section must be submitted to the Director prior to or together with any reports, information or applications to be signed by an authorized representative.

d. Any person signing a document under paragraph a. or b. of this section shall make the following certification:

"I certify under the penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

10. Confidentiality of Information.

a. In accordance with 40 CFR Parts 2 (Public Information), and § 144.5, any information submitted to the Director pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2.

b. EPA will deny any claims of confidentiality for the following information:

- (1) The name and address of any permit applicant or permittee.
- (2) Information which deals with the existence, absence, or level of contaminants in drinking water.

11. Reapplication. If the permittee wishes to continue an activity regulated by this permit after the expiration date of the permit, the permittee must submit a complete application for a new permit at least 100 days before this permit expires.

12. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.

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PART II

A. General

The Permittee shall sign and certify copies of all reports and notifications required by this permit in accordance with the requirements of paragraph I.D.9. of this Permit and shall submit such information to the Director at the following address:

Ground Water & Enforcement Branch (3WP22)
Office of Drinking Water and Source Water Protection
U. S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

B. Monitoring Requirements

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The Permittee shall obtain representative sample(s) of the fluid to be analyzed and conduct analysis(es) of the sample(s) in accordance with the approved methods and test procedures provided in 40 CFR § 136.3, or methods and test procedures otherwise approved by the Director. The Permittee shall identify in its monitoring records the types of tests and methods used to generate the monitoring data.

2. The Permittee shall continuously monitor and record surface injection pressure, annular pressure, flow rate and cumulative volume in the Injection Well beginning on the date the Injection Well commences operation and concluding when the Injection Well is plugged and abandoned. The Injection Well shall be equipped with an automatic shut-off device which would be activated in the event of a mechanical integrity failure. The Permittee shall also periodically measure the specific gravity of the injection fluid in accordance with condition II.B.3 of the permit. If the specific gravity of the injection fluid is found to be greater than 1.20, it shall be adjusted by diluting the fluid so that the resulting specific gravity is 1.20 or less. The Permittee shall compile all monitoring data monthly and submit the results with the Annual Report referenced in paragraph II.D.8 of this permit.

3. The Permittee shall monitor the nature and composition of the injected fluid by sampling, analyzing and recording the injected fluid for the parameters listed below, at the initiation of the injection operation and every two years thereafter, and whenever the operator anticipates a change in the injection fluid.

- | | |
|------------------------|--------------------------|
| - pH | - Manganese |
| - Specific Gravity | - Total Dissolved Solids |
| - Specific Conductance | - Barium |
| - Sodium | - Hydrogen Sulfide |
| - Chloride | - Alkalinity |

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- Iron
- Magnesium
- Total Organic Carbon (TOC)

- Dissolved Oxygen
- Hardness

4. The Permittee shall make a demonstration of mechanical integrity in accordance with 40 CFR § 146.8 at least once every five years. In addition to the above requirement, the Permittee shall conduct a mechanical integrity test demonstration on the Injection Well when the protective casing or tubing is removed from the well, the packer is reseated, or a well failure is likely, or as requested by the Director. The Permittee may continue operation of the Injection Well only if the Permittee has demonstrated the mechanical integrity of the Injection Well to the Director's satisfaction. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity.

5. The Permittee shall perform all environmental measurements required by the permit, including, but not limited to; measurements of pressure, temperature, mechanical integrity (as applicable) and chemical analyses in accordance with EPA guidance on quality assurance.

C. Record Retention

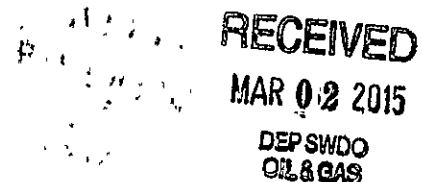
1. The Permittee shall retain records of all monitoring and other information required by this permit, including the following (if applicable), for a period of at least five years from the date of the sample, measurement, report or application, unless such records are required to be retained for a longer period of time under paragraph II.C.2 below. This period may be extended by the Director at any time. If the period is extended, the Permittee shall comply with the new period.

a. All data required to complete the Permit Application form for this permit and any supplemental information submitted under 40 CFR § 144.31;

b. Calibrations and maintenance records and all original strip chart recordings for continuous monitoring instrumentation;

c. Copies of all reports required by this permit; and

2. The Permittee shall retain records concerning the nature and composition of all injected fluids, as listed in paragraph II.B.3 of this permit, until at least three years after the plugging and abandonment procedures are complete. At the end of the three year record retention period, the Permittee shall either continue to retain these records, or deliver the records to the Director, or obtain written approval from the Director to discard such records.



3. Records of monitoring information shall include:
 - a. The date, exact place, and the time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. A precise description of both sampling methodology and the handling (custody) of samples;
 - d. The date(s) analyses were performed;
 - e. The individual(s) who performed the analyses;
 - f. The analytical techniques or methods used;
 - g. The results of such analyses.

D. Reporting and Notification Requirements

1. Report on Permit Review. Within 30 days of receipt of this permit, the Permittee shall ensure the person designated pursuant to paragraph I.D.9 of this permit reports to the Director that he or she has read and is personally familiar with all terms and conditions of this permit.

2. Commencing Injection. The Permittee shall not commence injection until construction or well rework is complete and all of the following conditions have been satisfied:

a. The Permittee has submitted notice of completion of construction (EPA Form 7520-10) to the Director;

b. The Permittee has demonstrated to EPA that the Injection Well has mechanical integrity in accordance with 40 CFR § 146.8 and the Permittee has received written notice from the Director that such demonstration is satisfactory;

c.(i) The Director has inspected or otherwise reviewed the Injection Well and finds it is in compliance with the conditions of this permit; or

d.(ii) The Permittee has not received notice from the Director of his or her intent to inspect or otherwise review the Injection Well within 13 days of the date of the notice in paragraph II.D.2(a) of this permit, in which case, prior inspection or review is waived and the Permittee may commence injection.

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3. Twenty-four Hour Reporting.

a. The Permittee shall report to the Director any noncompliance which may endanger, or has endangered, health or the environment. The Permittee shall provide such report orally (phone numbers: (215) 814-5445 or (215) 814-5464) within 24 hours from the time the Permittee becomes aware of the circumstances. The Permittee shall include the following information in the oral report:

(1) Any monitoring or other information which indicates that any contaminant may endanger, or has endangered an underground source of drinking water.

(2) Any noncompliance with a permit condition, malfunction of the injection system which may cause, or has caused, fluid migration into or between underground sources of drinking water, or failure of mechanical integrity test demonstrations.

b. The Permittee shall provide a written submission within five days of the time the Permittee becomes aware of the circumstances described above. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

4. Anticipated Noncompliance. The Permittee shall give advance notice to the Director of any planned changes in the permitted Facility or activity which may result in noncompliance with permit requirements.

5. Other Noncompliance. The Permittee shall report all other instances of noncompliance to the Director in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The report shall contain the information listed in paragraph II.D.3 of this permit.

6. Planned Changes. The Permittee shall provide written notice to the Director as soon as possible of any planned physical alterations or additions to the permitted Facility.

7. Conversion. The Permittee shall provide written notice to the Director 30 days prior to the any conversion of the Injection Well to an operating status other than an injection well.

8. Annual Report. The Permittee shall submit a written Annual Report to the Director summarizing the results of the monitoring required in Permit Condition B of Part II of this permit. This report shall include monthly monitoring records of injected fluids, the results of any mechanical integrity test(s) and any major changes in characteristics or sources of injected fluids. The Permittee shall complete and submit this information with its Annual Report EPA Form 7520-11 (Annual Disposal Injection Well Monitoring Report). The Permittee shall submit

the Annual Report to the Director no later than January 31st of each year, summarizing the activity of the calendar year ending the previous December 31st.

9. Plugging and Abandonment Reports and Notifications.

a. The Permittee shall notify the Director in writing at least 45 days before plugging and abandonment of the Injection Well as described in Part III.C of this permit. The Director may allow a shorter notice period upon written request.

b. The Permittee shall submit any revisions to the Plugging and Abandonment Plan attached to and incorporated into this permit (Attachment 1) to the Director no less than 45 days prior to plugging and abandonment on EPA Plugging and Abandonment Form 7520-14. The Permittee shall not commence plugging and abandonment until it receives written approval of the revisions to the Plan from the Director.

c. To the extent that any unforeseen circumstances occur during plugging and abandonment of the Injection Well that cause the Permittee to believe the Plugging and Abandonment Plan should be modified, the Permittee shall obtain written approval from EPA of any changes to the Plugging and Abandonment Plan prior to plugging the Injection Well.

d. Within 60 days after plugging the Injection Well, the Permittee shall submit a Plugging and Abandonment Report to the Director which shall consist of either:

(i) A statement that the Injection Well was plugged in accordance with the EPA approved Plugging and Abandonment Plan; or

(ii) Where actual plugging differed from the Plugging and Abandonment Plan previously submitted, the Permittee shall provide to the Director an updated version of form 7520-14, specifying the different procedures used.

e. The Permittee shall ensure that the Plugging and Abandonment Report is certified as accurate by the person who performed the plugging operation.

10. Compliance Schedules. The Permittee shall submit reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit no later than 30 days following each schedule date.

11. Mechanical Integrity Tests. The Permittee shall notify the Director in writing at least 30 days prior to conducting Mechanical Integrity Testing on the Injection Well.

12. Cessation of Injection Activity. After the Permittee has ceased injection into the Injection Well for two years, the Permittee shall plug and abandon the Injection Well in accordance with the Plugging and Abandonment Plan (Attachment 1 hereto) unless the Permittee:

a. Provides written notice to the Director describing actions and/or procedures, necessary to ensure that the Injection Well will not endanger any USDW during the period of temporary abandonment. These actions and procedures shall include compliance with the requirements of this permit applicable to active injection wells unless waived, in writing, by the Director;

b. Receives approval from the Director that the actions and/or procedures described in the notice are satisfactory; and

c. Implements such EPA approved actions and/or procedures.

E. Mechanical Integrity

1. Standards. The Permittee shall maintain the mechanical integrity of the permitted Injection Well pursuant to 40 C.F.R. § 146.8.

2. Request from Director. The Director may by written notice require the Permittee to demonstrate mechanical integrity at any time during the term of this permit and the Permittee shall comply with the Director's request.

Part III

A. Construction Requirements

1. Confining Zone. Notwithstanding any other provision of this permit, the Permittee shall inject through the Injection Well only into a formation which is separated from any Underground Source of Drinking Water by a confining zone, as defined in 40 C.F.R. § 146.3, that is free of known open faults or fractures within the Area of Review as required in 40 C.F.R. § 146.22.

2. Casing and Cementing. The Permittee shall:

a. ensure the Injection Well is cased and cemented to prevent the movement of fluids into or between underground sources of drinking water and in accordance with 40 CFR §§ 146.22 and 147.1955(b);

b. ensure the casing and cement used in the Injection well is designed for the life expectancy of the well;

c. ensure the Injection Well has 8 5/8 inch surface casing installed from the surface to 1157 feet below land surface and cemented back to the surface;

d. ensure the Injection Well has 5 1/2 inch long string casing installed from the surface to 4897 feet below land surface and cemented back to the surface to isolate the injection zone.

e. install in the Injection Well, and inject through, a tubing string set on a packer placed above the injection zone's perforated interval at approximately 4825 feet.

3. Logs and Tests. In accordance with 40 CFR § 146.22(f), the Permittee prepared logs or performed tests during the drilling and construction of the Injection Well: electric, gamma ray and caliper logs in the open hole, a cement bond, temperature or density log on the surface casing (if cement returns are not achieved), and a cement bond log/variable density log on the long string casing. The Permittee shall submit to the Director, for the Injection Well, cement records, a narrative report that interprets the well log(s) and test results, which specifically relate to the results of the cementing operation, and a detailed description of the rationale used to make these interpretations. The narrative report shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director may prescribe additional logs or waive logging requirements in the future should field conditions so warrant

4. Mechanical Integrity. The Permittee is prohibited from conducting injection operations in the Injection Well until it (i) demonstrates the mechanical integrity of the Injection Well in accordance with 40 C.F.R. § 146 and (ii) receives notice from the Director that such a demonstration is satisfactory in accordance with paragraph II.D.2 of this permit.

5. Corrective Action. The Permittee is prohibited from conducting injection operations in the Injection Well until it has plugged all abandoned wells identified within the area of review as provided in Part III.A.7, below.

6. Completion Reports. The Permittee shall prepare a written Completion Report that summarizes the activities and the results of the testing required in Condition A.1 through 5 of Part III of this permit and submit the Completion Report to the Director prior to the commencement of injection operations.

B. Operating Requirements

1. Injection Formations. The Permittee shall inject only into the Oriskany Sandstone Formation located at the subsurface interval between approximately 4822 feet and 4884 feet.

2. Injection Fluid. The Permittee shall not inject any hazardous waste as defined in 40 C.F.R. Part 261 or any fluid, other than the produced fluids solely from oil and gas production activity.

3. Injection Volume Limitation. Injection volume shall not exceed 21,000 barrels per month. A barrel consists of 42 gallons.

4. Injection Pressure Limitation. The Permittee shall not exceed the surface injection pressure maximum of 1832 psi. This pressure was calculated based on an injection fluid specific gravity of 1.20 and a fracture gradient of 0.90 psi/ft. If the specific gravity of the injection fluid exceeds 1.20, then the Permittee shall reduce the specific gravity by blending the injection fluid with less dense produced fluid or fresh water until the specific gravity is less than or equal to 1.20. The Permittee shall not inject fluid at a pressure which initiates fractures in the confining zone, as defined in 40 C.F.R. § 146.3, adjacent to underground sources of drinking water or causes the movement of injection or formation fluids into an underground source of drinking water.

5. The Permittee is prohibited from injecting between the outermost casing protecting USDW and the well bore, and also from injecting into any USDW.

C. Plugging and Abandonment.

1. Plugging and Abandonment. The Permittee shall plug and abandon the Injection Well as provided in the EPA approved Plugging and Abandonment Plan (EPA Form 7520-14) (Attachment 1).

2. The Permittee shall plug and abandon the Injection Well in such a manner that fluids shall not move into or between USDWs.

D. Financial Responsibility

1. The Permittee shall maintain continuous compliance with the requirement to maintain financial responsibility and resources to close, plug and abandon the underground Injection Well in accordance with 40 C.F.R. § 144.52(a)(7) in the amount of at least \$25,000. A well may not be constructed, reworked or operated if the financial responsibility for that well has not been established. The Permittee shall not substitute an alternative demonstration of financial responsibility from that which the Director has approved, unless it has previously submitted evidence of that alternative demonstration to the Director and the Director notifies him or her that the alternative demonstration of financial responsibility is acceptable. The Director may require the Permittee to submit a revised demonstration of Financial Responsibility if the Director has reason to believe that the original demonstration is no longer adequate to cover the costs of plugging and abandonment.

2. Insolvency of Financial Institution. In the event of the bankruptcy of the trustee or issuing institution of the financial mechanism, or a suspension or revocation of the authority of the trustee institution to act as a trustee or the institution issuing the financial mechanism to issue such an instrument, the Permittee must immediately notify the Director and submit an alternative demonstration of financial responsibility acceptable to the Director within sixty days after such an event.

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Attachment 1

Columbia Gas of Pennsylvania Injection Well
Plugging and Abandonment Plan

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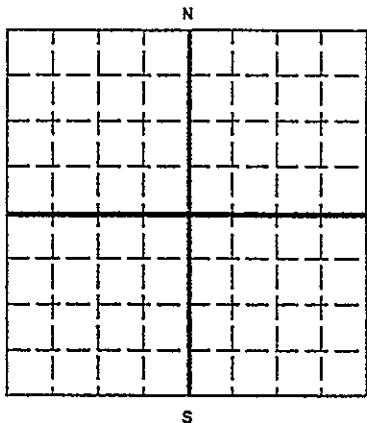
United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Blackhawk Storage Field
R.D. #1, Box 446, Route 251
Beaver Falls, PA 15010

Name and Address of Owner/Operator
Columbia Gas of Pennsylvania, Inc.
650 Washington Road
Pittsburgh, PA 15228

Locate Well and Outline Unit on
Section Plat - 640 Acres



State PA County Beaver Permit Number PAS2DO41BBEA

Surface Location Descriptor
___ 1/4 of ___ 1/4 of ___ 1/4 of ___ 1/4 of Section ___ Township ___ Range ___

Locate well in two directions from nearest lines of quarter section and drilling unit
13,000 ft. South of Latitude 40° 47' 30"

Location ___ ft. from (N/S) ___ Line of quarter section
and 7,500 ft. from (E/W) West Line of Longitude 80° 25' 00"

TYPE OF AUTHORIZATION
 Individual Permit
 Area Permit
 Rule
Number of Wells 1

WELL ACTIVITY
 CLASS I
 CLASS II
 Brine Disposal
 Enhanced Recovery
 Hydrocarbon Storage
 CLASS III

Lease Name John Galey Well Number C-5

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8 5/8	24	1157	1157	9 5/8"
5 1/2	17	4897	4897	7 7/8"

METHOD OF EMPLACEMENT OF CEMENT PLUGS

The Balance Method
 The Dump Bailer Method
 The Two-Plug Method
 Other
Solid Cement from TD to Surface

CEMENTING TO PLUG AND ABANDON DATA:

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (Inches)	5 1/2"						
Depth to Bottom of Tubing or Drill Pipe (ft)	4789'						
Sacks of Cement To Be Used (each plug)	600						
Slurry Volume To Be Pumped (cu. ft.)	624						
Calculated Top of Plug (ft.)	4788'						
Measured Top of Plug (if tagged ft.)	4788'						
Slurry Wt. (Lb./Gal.)	14.7						
Type Cement or Other Material (Class III)	T						

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To
NONE	NONE	NONE	NONE

Estimated Cost to Plug Wells

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title (Please type or print)
David A. Schwarzwaelder
FHS Team Leader, Distribution

Signature
[Handwritten Signature]

Date Signed
4/16/02