

WATER PERMIT NO. 2607A-2

Name of Applicant: **Colonial Pine Hills Sanitary District**

Address: **8251 Dunsmore Rd, Rapid City SD 57702** Phone: **605 348-8950**

Amount of Water Claimed: **no add'l** Total Acres: **NA**

Source of Water Supply: **groundwater (one well)**

Water to be used for: **suburban housing development** County: **Pennington**

Type of Waste Disposal System:

Location:

PRIORITY Date Received: **5-29-08** Application/License Fee: **\$50**

Corrected Application Received: Period of Annual Use: **January 1 – December 31**

Remarks: **Change the location of the well authorized by Water Permit No. 2607A-2**

Diversion Point: **N ½ NE ¼ Sec 32-T1N-R7E**

Land to be Irrigated: **NA**

Depth of Well: **1200 feet deep**

Well Driller:

Remarks:

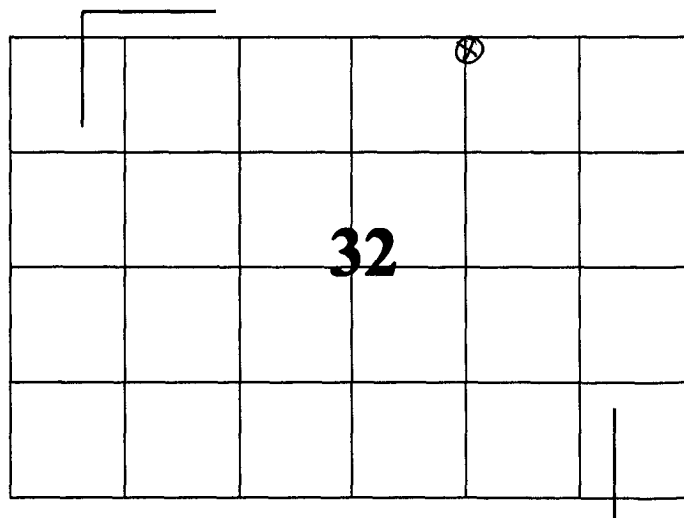
Type of Map: **topo**

Prepared by: **Theodore F Schulz, PE**

Reviewed and the Number Assigned on: **6-6-08**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



FORM 2: Application for uses other than irrigation
(type or print)

Mail to:
Water Rights Program
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3181
(605) 773-3352

No. 2607A-2 (office use only)
Hydrologic Unit 10/20109
Basin Upper Cheyenne
Newspaper Rapid City Journal PO Box 450
605-394-8300 57709

RECEIVED
MAY 29 2008
WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☐ Municipal ☒ Suburban Housing ☐ Recreational ☐ Institutional
☐ Rural Water System ☐ Commercial ☐ Fish & Wildlife ☐ Geothermal Heat
☐ Domestic (over 18 gpm) ☐ Industrial ☐ Other _____

Type of Application:
(check one)

☒ New ☐ Vested Right (Use predates Mar. 2, 1955) ☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
☐ Amendment/Correction to Permit No. _____

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

1. Name of Applicant Colonial Pine Hills Sanitary District Phone 605-348-3113
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 8251 Dunsmore Road, Rapid City State SD 57702-8950
(Street, RR, or Box and City) (Zip Code)
2. Amount of water claimed 0.66 *CFS or 300 **GPM 150 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
3. Source of water supply Madison Aquifer
4. Location of point of diversion (example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W) County Pennington
New well located in the NE 1/4 of Section 32, T1N, R7E, BHM, Pennington County.
See attached map. N 1/2
5. County or counties where water will be used Pennington
6. Annual period during which water is to be used January to December
7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

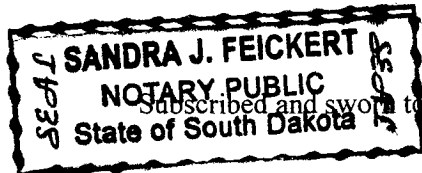
Project includes construction of new Madison well 1000 ft. south of the intersection of Sheridan Lake Road/Croyle Avenue in Pennington County. The new well is necessary to provide quality drinking water to the residents of Colonial Pine Hills Sanitary District. The well will replace unreliable, poor-quality Deadwood aquifer wells and will reduce eater sources containing Radium 226-228. Refer to attached information.

STATE OF SOUTH DAKOTA)

County of Pennington)

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Attach map and any other technical information. (see instructions)

I, Jim Martin, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.



Applicant's signature Jim Martin

Subscribed and sworn to before me this 6th day of May 20 08

Notary Public signature Sandra J. Feickert

SOUTH DAKOTA
WATER PERMIT NO. 2607A-2

Date of first receipt of application May 29, 2008.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2607A-2 to Colonial Pine Hills Sanitary District, 8251 Dunsmore Road, Rapid City SD 57002-8950 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2607A-2 authorizes changing the location of a well authorized by Water Permit No. 2607-2. Water Permit No. 2607-2 appropriates 150 acre-feet of water annually at a diversion rate of 0.66 cubic feet of water per second from one well completed into the Madison Aquifer located in NW ¼ NW ¼ Section 33-T1N-R7E for suburban housing development use. This permit authorizes moving the well location to the N ½ NE ¼ Section 32-T1N-R7E. No increase in the diversion rate is authorized by this permit.
2. The water appropriated shall be used for the purpose of suburban housing development use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 2607A-2 is August 18, 2008.
5. The date from which applicant may claim right is December 18, 2006.
6. One-fifth of the construction is to be completed on or before August 12, 2009.
7. All construction is to be completed on or before February 12, 2012.
8. Water is to be put to beneficial use on or before February 12, 2016.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2607A-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2607A-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.

(continued)

Water Permit No. 2607A-2
Colonial Pine Hills Sanitary District
Page 2

3. The well authorized by Permit Nos. 2607-2 and 2607A-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. Colonial Pine Hills Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.

WATER MANAGEMENT BOARD

By: Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

OCT 31 2000
date



Form 2A **Supplemental Information**

(Complete applicable portions only)

(type or print in ink)

1. Well Information – Proposed Construction

- a) Drill Hole Diameter 12- $\frac{1}{4}$ " Depth 1,200 feet
- b) Casing Type Steel Diameter 9- $\frac{5}{8}$ " Thickness 0.28" min.
- c) Screen Type Open Hole Diameter 8- $\frac{3}{4}$ " Thickness
- d) Gravel Pack N/A Length of Gravel Pack
- e) Depth to Top of Water Bearing Material 750 feet
- f) Depth to Water (ground surface to water level) 450 feet
- g) Distance to nearest existing domestic well:
- On applicant's property 1,500 feet On property owned by others 1,400 approx.

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) Drainfield located over 50 ft. from well.
- b) System Capacity (gallons) Abandoned Year Constructed 1988
- c) Connected to the City of Sanitary System

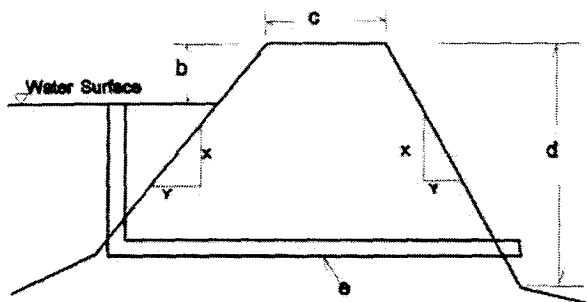
3. Dugout Information

- a) Surface Dimensions Depth
- b) Depth to water (ground surface to water level)

4. Water Storage Dams

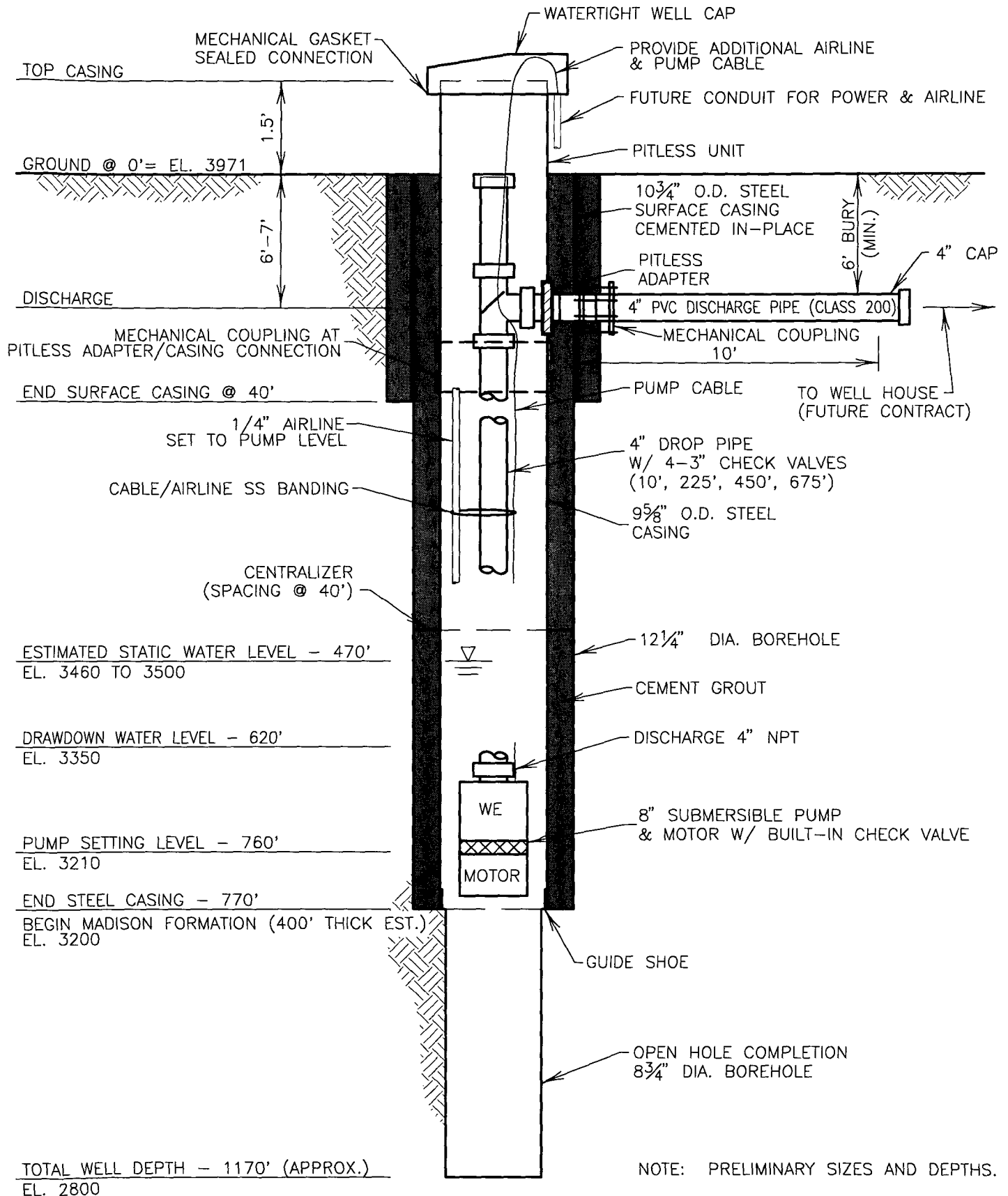
If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:



- b) Freeboard
- c) Crest Width
- d) Height
- e) Primary Outlet Capacity
- f) Secondary Spillway Capacity
- g) X & Y Slope
- Upstream
- Downstream
- h) Surface Area of Impoundment
- i) Storage Acre Feet
- j) Drainage Area Above Dam Acres

CSS TANK HWL EL. 4221



NOTE: PRELIMINARY SIZES AND DEPTHS.

CPHSD
NEW CROYLE WELL CONSTRUCTION SCHEMATIC

cetec

159.46 AC.

30 29
31 32

29 28
32 33

NEW CPHSD LOT 1
OF WHISPERING
PINES SUBDIVISION.

PROPOSED NEW
CROYLE WELL
TRANSFER
2607-2 TO THIS
SITE.

CURRENT WATER RIGHT
LOCATION TRANSFER TO
NEW CROYLE WELL SITE
2607-2
(300 GPM. MADISON)

PROPOSED 8" PVC
WATER MAIN (1700 LF)

COUNTRYSIDE
SOUTH

WHISPERING
PINES

2295-2
CSS MAIN WELL
(DEADWOOD)
(STANDBY)

2708-2
CLARKSON WELL
(MADISON)

2295-2
CONIFER WELL
(DEADWOOD)

2451-2
NONANNA WELL
(MADISON)
170 GPM

1726-2 (WELL 2)
NAYLOR WELL
(MADISON)
(STANDBY)

HIGHLAND
HILLS

1726-2 (WELL 1)
WP MAIN
(DEADWOOD)



RECEIVED
JUN - 6 2008
WATER RIGHTS
PROGRAM

NEW CROYLE WELL WATER SYSTEM IMPROVEMENTS
COLONIAL PINE HILLS SANITARY DISTRICT

cetec
ENGINEERING SERVICES, INC.

NOT TO SCALE. THIS MAP IS FOR INFORMATION ONLY. IT DOES NOT REPRESENT A GUARANTEE OF THE ACCURACY OF THE INFORMATION. THE USER OF THIS MAP ASSUMES ALL LIABILITY FOR ANY AND ALL DAMAGES, INCLUDING REASONABLE ATTORNEY'S FEES, ARISING OUT OF OR IN CONNECTION WITH THE USE OF THIS MAP.



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 5/29, 20 08

RECEIVED OF Colonial Pine Hills Sanitary Dist 8251 Dunsmore RD Rapid City SD 57702

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>2607A-2</u> to Appropriate Water, to construct and to put water to beneficial use	50	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	50 00

No.

03669

By

Paul Schulte
Chief Engineer

March 17, 2008

RECEIVED
MAR 19 2008
WATER RIGHTS
PROGRAM

Mr. Ken Buhler, P.E.
S.D. Dept. of Environment & Natural Resources
Water Rights
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: **Change of Diversion Point for Water Right Permit No. 2607-2**
Colonial Pine Hills Sanitary District

Dear Mr. Buhler:

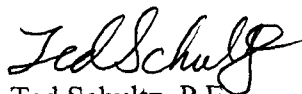
An application for change of water right diversion point is enclosed. Included with this letter are two (2) copies of the following:

- Form 2
- Form 2A
- Project Summary
- Anticipated Well Construction Schematic
- Well Site Drawings and Vicinity Map

The proposed well is located on Colonial Pine Hills Sanitary District property as shown on the attached drawings. Please review the application and contact me with any questions.

Sincerely,

CETEC Engineering Services, Inc.


Ted Schultz, P.E.
Project Manager

TS/mlr

Enclosures

cc: Jim Martin, Colonial Pine Hills Sanitary District

1830 West Fulton St.
PO Box 9014
Rapid City, SD
57709-9014

www.cetecengineering.com

cetec

Dunsmore Well Project Summary Colonial Pine Hills Sanitary District

RECEIVED
MAR 19 2008
WATER RIGHTS
PROGRAM

System Background

The Colonial Pine Hills Sanitary District water system is currently composed of approximately 420 customers located south of Sheridan Lake Road, west of Dunsmore Road, east of Spring Canyon Trail, and north of Spring Creek in Pennington County. The current system supply from all sources is approximately 415 gpm and is lower than the recommended 563 gpm. The District enforces water conservation restrictions throughout the summer months and has a sliding rate scale for increased water usage to deter water consumption. There are also water quality and reliability issues with some of the existing wells, but the system has been enhanced by the addition of the Nonanna Well in 2003 and the new Whispering Pines PRV & Booster Station in 2005.

The system is currently comprised of two pressure zones with 500,000 gallons of storage constructed in 2005 and 90,000 gallons of storage for the booster system pumping. The system weakness point is an adequate quality water supply. The system currently has two Madison aquifer wells and three Deadwood aquifer wells. The Madison wells produce high quality drinking water and the addition of a third Madison well will reduce reliance on the Deadwood aquifer wells. The Deadwood aquifer wells in this region have high levels of radon, radionuclides, and iron. The CSS Main and Conifer Deadwood wells require chemical treatment for iron and the CSS Main well has been moved to standby status due to the radionuclide levels and low production rate. Recent Radium 226-228 levels have exceeded the MCL.

Project Description

The District proposes to drill a new 300 gpm Madison well located just east of Croyle Avenue and 1000 ft. south of Sheridan Lake as shown on the attached drawings. The District pumped approximately 66 million gallons or 202 acre-ft. in 2005 (64 MG in 2006-2007) and the new well is anticipated to produce 100 to 150 acre-ft. per year. The District has purchased Lot 1 of Whispering Pines Subdivision to construct a well house and new well on the property.

The project also includes the construction of approximately 1,550 linear ft. of 8" water main along Croyle Avenue to Nonanna Street to connect to the existing high level water main. The Croyle Avenue water main project provides a transmission main and also replaces an aging 4" line with inferior water service materials. The District has repaired many leaks in this part of the system due to poor materials. The proposed project layout is shown on the attached exhibit.

CPHSD WELL PRODUCTION

Source	Reliable Quality Production	Non-Reliable or Poor Quality Production	Recommendations or Issues
Nonanna Well	145 gpm		High Quality/Reliable Madison Well
Conifer Well:		118 gpm	Deadwood Well with Radon/Iron/High Electrical Costs
Clarkson Well:	22 gpm		Madison Well with Limited Production/New Well House Needed
CSS Main Well:		40 gpm	Deadwood Well with high Radon/Iron/Maintenance Issues (Abandon)
WP Main Well:		90 gpm	Deadwood Well with low Radon/Iron Issues
Current Net System Supply:	167 gpm	248 gpm	
Proposed Croyle Avenue Well	<u>300</u> gpm		New Madison Well near Dunsmore Rd/Kelly Ave
Total Firm Quality Well Production	467 gpm		
Add Back-up Production from WP/Conifer	<u>90-118</u> gpm		
Future Well Production	557-585 gpm	Meets recommended production of 563 gpm.	



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

April 28, 2008

Jim Martin
Colonial Pine Hills Sanitary District
8251 Dunsmore Road
Rapid City SD 57702-8950

Dear Mr. Martin:

Colonial Pine Hills Sanitary District has requested to change the location of the well authorized by Water Permit No. 2607-2. This permit appropriates 150 acre feet of water annually at a maximum diversion rate of 300 gallons per minute from one well completed into the Madison Aquifer. The well location as permitted is to be in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 33, T1N, R7E.

The District has requested to move the well 1,300 feet west to the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 32, T1N, R7E. The Water Rights Program has determined that this request to change the diversion point location must follow the formal water permitting process including public notice to amend this permit. Please provide the \$50 application filing fee made payable to the "Water Rights Program" in the enclosed self addressed stamped envelope. Water Rights will then proceed with the process to amend the well location.

If you have any questions, please feel free to contact me.

Sincerely,

Eric Gronlund
Water Rights Program, DENR
605 773-3352

c: Ted Schulz, CETEC Engineering, PO Box 9014, Rapid City SD 57709-9014

Gronlund, Eric

From: Gronlund, Eric
Sent: Tuesday, May 20, 2008 10:40 AM
To: 'teds@cetecengineering.com'
Subject: RE: Colonial Pine Hills Sanitary District request to change well location under Water Permit No. 2607-2

A letter was send to Mr. Jim Martin on April 28th requesting the application filing fee to change the diversion point of the well authorized by Permit No. 2607-2. I have attached the letter and request for your information. I believe this is the well known as the Dunsmore Well Project. I have also seen it referred to as the Croyle Avenue Well. To date, Water Rights has not received the \$50 application filing fee necessary to proceed with processing the application. I am writing in the event the submittal of the fee got misdirected. Please advise if it is not your client's intention to pursue this change in diversion point location.

Thanks

Eric Gronlund
Water Rights Program, DENR
605 773-3352

-----Original Message-----

From: Gronlund, Eric
Sent: Monday, April 28, 2008 1:14 PM
To: 'teds@cetecengineering.com'
Subject: Colonial Pine Hills Sanitary District request to change well location under Water Permit No. 2607-2

This involves the application the District filed to move the well location approximately 1,300 feet west of original location. The Water Rights Program began processing the request under a statute that allows the Chief Engineer to grant the request for a change in diversion point location without the application filing fee and public notice if he can make a finding that the change does not increase the potential for interference with existing diversion. Upon review, this change will move the wells location closer to the well held by Mr. Cregut. Therefore, we are requiring the more formal water permit process to amend the permit. This includes the application filing fee and public notice. I sent a letter to Mr. Martin requesting the application filing fee. You will also be receiving a copy of this letter.

Eric Gronlund
Water Rights Program, DENR
605 773-3352



Letter of Transmittal

TO: S.D. Dept. of Environment & Natural Resources
PMB 2020
Water Rights Program
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

DATE: 6/5/2008	JOB NO: 07196.00
ATTENTION: Eric Gronlund, P.E.	
RE: New Croyle Well Water System	
Improvements	
Colonial Pine Hills Sanitary District	

RECEIVED

JUN - 6 2008

**WATER RIGHTS
PROGRAM**

WE ARE ☒ SENDING
☐ HAND DELIVERING

☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change Order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6/05/08		Site Plan for New Croyle Well Water System Improvements.

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Reviewed ☐ Revise and resubmit
☐ For your use ☐ Rejected ☐ Resubmit _____ copies for approval
☐ As requested ☐ Make corrections noted ☐ Return _____ corrected prints
☐ For review and comment ☐ Other _____

REMARKS:

COPY TO: File

SIGNED: Ted Schultz, P.E.

New Croyle Well Project Summary Colonial Pine Hills Sanitary District

RECEIVED
MAY 29 2008
WATER RIGHTS
PROGRAM

System Background

The Colonial Pine Hills Sanitary District water system is currently composed of approximately 420 customers located south of Sheridan Lake Road, west of Dunsmore Road, east of Spring Canyon Trail, and north of Spring Creek in Pennington County. The current system supply from all sources is approximately 415 gpm and is lower than the recommended 563 gpm. The District enforces water conservation restrictions throughout the summer months and has a sliding rate scale for increased water usage to deter water consumption. There are also water quality and reliability issues with some of the existing wells, but the system has been enhanced by the addition of the Nonanna Well in 2003 and the new Whispering Pines PRV & Booster Station in 2005.

The system is currently comprised of two pressure zones with 500,000 gallons of storage constructed in 2005 and 90,000 gallons of storage for the booster system pumping. The system weakness point is an adequate quality water supply. The system currently has two Madison aquifer wells and three Deadwood aquifer wells. The Madison wells produce high quality drinking water and the addition of a third Madison well will reduce reliance on the Deadwood aquifer wells. The Deadwood aquifer wells in this region have high levels of radon, radionuclides, and iron.

The CSS Main and Conifer Deadwood wells require chemical treatment for iron and the CSS Main well has been moved to standby status due to the radionuclide levels and low production rate. **Recent Radium 226-228 levels have exceeded the MCL and a new successful well will allow the District to move these wells to a standby status.**

Project Description

The District proposes to drill a new 300 gpm Madison well located just east of Croyle Avenue and 1000 ft. south of Sheridan Lake as shown on the attached drawings. The District pumped approximately 66 million gallons or 202 acre-ft. in 2005 (64 MG in 2006-2007) and the new well is anticipated to produce 100 to 150 acre-ft. per year. The District has purchased Lot 1 of Whispering Pines Subdivision to construct a well house and new well on the property.

The project also includes the construction of approximately 1,650 linear ft. of 8" water main along Croyle Avenue to Nonanna Street to connect to the existing high level water main. The Croyle Avenue water main project provides a transmission main and also replaces an aging 4" line with inferior water service materials. The District has repaired many leaks in this part of the system due to poor materials. The proposed project layout is shown on the attached exhibit.

CPHSD WELL PRODUCTION

RECEIVED

MAY 29 2008

WATER RIGHTS
PROGRAM

Source	Reliable Quality Production	Non-Reliable or Poor Quality Production	Recommendations or Issues
Nonanna Well	145 gpm		High Quality/Reliable Madison Well
Conifer Well:		118 gpm	Deadwood Well with Radionuclides/ Radon/Iron/High Electrical Costs
Clarkson Well:	22 gpm		Madison Well with Limited Production/New Well House Needed
Naylor Well:		25 gpm	Well mechanical and casing problems. (Recommend abandonment)
Old Croyle Well:		25 gpm	Well mechanical and casing problems. (Recommend abandonment)
CSS Main Well:		40 gpm	Deadwood Well with high Radionuclide/ Radon/Iron/Maintenance Issues (Standby or Abandon)
WP Main Well:		90 gpm	Deadwood Well with Radionuclide/Radon/Iron Issues (Standby)
Current Net System Supply:	167 gpm	298 gpm	
Proposed Croyle Avenue Well	300 gpm		New Madison Well near Croyle Ave/South of Sheridan Lake Road
Total Firm Quality Well Production	467 gpm		
Add Back-up Production from WP/Conifer	<u>90-118</u> gpm		
Future Well Production	557-585 gpm	Meets recommended production of 563 gpm.	

Note: A new successful Croyle Madison well will allow the District to move the WP Main Well to backup status and the existing Naylor and Croyle well Madison water rights can be abandoned.

May 20, 2008

Mr. Eric Gronlund, P.E.
S.D. Dept. of Environment & Natural Resources
Water Rights
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

RECEIVED

MAY 29 2008

WATER RIGHTS
PROGRAM

Re: **New Croyle Well Permit Application**
Colonial Pine Hills Sanitary District

Dear Mr. Gronlund:

An application for a new Madison drinking water well is enclosed. Included with this letter are two (2) copies of the following:

- Form 2
- Form 2A
- Project Summary
- Anticipated Well Construction Schematic
- Well Site Drawings and Vicinity Map
- \$50 Application Fee

The proposed well is located on Colonial Pine Hills Sanitary District property as shown on the attached drawings. The proposed well will allow the District to place some of their Deadwood Aquifer wells on standby mode. Some of the Deadwood wells within the system have severe problems with radium, radionuclides, radon, and iron.

The District requests the transfer of Water Right No. 2607-2 (0.66 cfs) to the new site. The District is currently utilizing approximately 90 gpm of the permitted 171 gpm on Water Right Permit No. 1726-2. The District is willing to reduce the Water Right Permit No. 1726-2 if necessary during this permitting process. The proposed well replaces the existing Croyle Well (Well No. 3) under Permit No. 1726-2 located 350 ft. north of the new well location. This project replaces wells that have been in service since the 1960's and also allows the District to reduce their reliance on wells high in contaminants exceeding MCL standards. Please review the application and contact me with any questions.

Sincerely,
CETEC Engineering Services, Inc.



Ted Schultz, P.E.
Project Manager

cc: Jim Martin, General Manager

1560 Concourse Drive
Rapid City, SD 57703

www.cetecengineering.com

cetec



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 25, 2008

Mr. and Mrs. Cregut
7800 Alberta Drive
Rapid City SD 57702

Dear Mr. and Mrs. Cregut:

Enclosed is a copy of the report, recommendation and public notice for Water Permit Application No. 2607-2 filed by Colonial Pine Hills Sanitary District. The public notice is scheduled to be published July 31 and August 7, 2008 in the Rapid City Journal.

This information is being sent to inform you of this application due the past interest you have expressed in the District's well development.

Sincerely,


Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 25, 2008

Highland Hills Water Association
8888 Highland Hills
Rapid City SD 57702

Dear Association:

Enclosed is a copy of the report, recommendation and public notice for Water Permit Application No. 2607-2 filed by Colonial Pine Hills Sanitary District. The public notice is scheduled to be published July 31 and August 7, 2008 in the Rapid City Journal.

This information is being sent to inform you of this application due the recent interest the Association expressed in the District's well development.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Eric Gronlund'.

Eric Gronlund
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

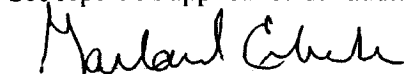
**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2607A-2, Colonial Pine Hills Sanitary District**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2607A-2, Colonial Pine Hills Sanitary District, c/o Jim Martin, 8251 Dunsmore Road, Rapid City SD 57702.

The Chief Engineer is recommending APPROVAL of Application No. 2607A-2 for a 20-year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, there is reasonable probability that there is unappropriated water available, 2) the proposed diversion can be developed with out unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2607A-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2607A-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
3. The well authorized by Permit Nos. 2607-2 and 2607A-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. Colonial Pine Hills Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.

See report on application for additional information.


Garland Erbele, Chief Engineer
July 24, 2008

See additional note on next page

NOTE: Supplemental information submitted with the application states that if a new Madison well is successful, the old existing Croyle and Naylor wells will be abandonment. If abandonment does occur the water rights associated with these wells will be subject to cancellation and the wells must be plugged in accordance with Water Management Board Rules, Chapter 74:02:04.

REPORT FOR
WATER PERMIT APPLICATION NO. 2607A-2
COLONIAL PINE HILLS SANITARY DISTRICT
JULY 15, 2008

Water Permit Application No. 2607A-2 proposes to change the location of the well authorized by Water Permit No. 2607-2. Water Permit No. 2607-2 appropriates 150 acre-feet of water annually at a diversion rate of 0.66 cubic feet of water per second from one well completed into the Madison aquifer located in the NW¼ NW¼ Section 33, T1N-R7E. This application proposes to develop a well into the same source (i.e. Madison aquifer); at the same diversion rate as authorized by Water Permit No. 2607-2 (i.e. 0.66 cfs); at a new location. This application proposes to change the well location to the N½ NE¼ Section 32, T1N-R7E, Pennington County.

Water Source: Madison aquifer (MDSN)

Geology and Aquifer Characteristics:

The Madison aquifer is a major regional aquifer that underlies parts of Montana, North Dakota, South Dakota, Wyoming and Canada. The aquifer contains an estimated 644,827,200 acre-feet of recoverable water in storage in South Dakota alone (Allen and others, 1985). The Madison aquifer is contained within the Madison Limestone which in general is a massive limestone and dolomite. The upper portion of the Madison Limestone is karstic with caves, solution collapse and enlarged conduits resulting in extensive secondary permeability; and the lower portion and the underlying Englewood Formation form a lower confining zone (Strobel and others, 1999). The Madison is generally considered an excellent aquifer in terms of its potential to supply good quality water to relatively productive wells, especially near the outcrop (recharge area). The site proposed by this application is approximately one mile from the Madison outcrop. The top of the Madison is expected to be about 700 feet below ground surface at this proposed well site (Carter and Redden, 1999a). Estimates of the thickness of the Madison in this area range from approximately 350 feet thick (Allen and others, 1985) to approximately 400 feet thick (Carter and Redden, 1999a) (Carter and Redden, 1999b). The Madison is under confined conditions at this proposed well site. The static water level of a well at the proposed site is predicted to be around 500 feet below grade (Strobel and others, 2000).

Water Availability:

This application does not propose to increase the amount of water that is appropriated from the Madison aquifer so the availability of unappropriated water from the aquifer is not an issue in this application review.

Observation Well Data:

The Water Rights Program monitors 26 observation wells completed into the Madison aquifer in the Black Hills Area (Water Rights, 2008a). Long-term water level declines are not apparent from any of these observation wells. Observation well data suggest that at the existing level of development, natural influences dominate the water levels of the aquifer and the effects of pumping as yet are not obvious. The nearest Water Rights' observation well completed into the Madison aquifer (PE-86A) is approximately two miles southeast this proposed well site.

Effect on Existing Water Rights:

Wells, including domestic wells, completed into aquifers shallower than the Madison aquifer (i.e. Alluvium, Terrace deposits, Inyan Kara aquifer, Sundance aquifer, Minnekahta aquifer and Minnelusa aquifer) are not expected to be affected by this proposed appropriation since the lower Minnelusa aquifer is a confining bed that isolates the Madison hydraulically from shallower aquifers.

There are 21 Water Permits/Rights appropriating groundwater within approximately two miles (Water Rights, 2008b) of the well site proposed by this application, they are shown below in table one.

PERMIT NO	NAME	STATUS	AQUIFER	USE	CFS
1628-2	COPPER OAKS WATER ASSN	LC	MDSN	SHD	0.05
1726-2	COLONIAL PINE HILLS SANITARY DISTRICT	LC	MDSN	SHD	0.38
1883-2	REPTILE GARDENS	LC	MNLS	COM	0.07
1925-2	PONDEROSA PARK DEV ASSOC	LC	MDSN	SHD	0.03
1965-2	HIGHLAND HILLS WATER ASS.	LC	MDSN	SHD	0.06
2045-2	WHISPERING PINES WATER	LC	DDWD	SHD	0.08
2053-2	SPRING CANYON WATER CO	LC	MDSN	SHD	0.05
2056-2	COUNTRYSIDE HOMEOWNERS	LC	DDWD	SHD	0.30
2108-2	COLONIAL PINE HILLS SANITARY DISTRICT	LC	MDSN	SHD	0.04
2295-2	COLONIAL PINE HILLS SANITARY DISTRICT	LC	DDWD	SHD	0.29
2305-2	SPRING CANYON WATER CO	LC	DDWD	SHD	0.04
2473-2	CREGUT INC	LC	MDSN	COM	0.04
2476-2	REPTILE GARDENS	LC	ALQ	COM	0.08
2461-2	COLONIAL PINE HILLS SANITARY DISTRICT	PE	MDSN	SHD	0.33
2475-2	CITY OF RAPID CITY	PE	MDSN	MUN	2.67
2496-2	SPRING CANYON WATER CO	PE	MDSN	SHD	0.17
2498-2	COUNTRYSIDE HOMEOWNERS	PE	MNLS	SHD	0.33
2507-2	HANI SHAFI	PE	DDWD	SHD	0.07
2519-2	CITY OF RAPID CITY	PE	MDSN	MUN	1.78
2600-2	GARY KLUTHE	PE	DDWD	SHD	0.04
2623-2	COLONIAL PINE HILLS SANITARY DISTRICT	PE	MDSN	SHD	0.07

LC= Water Right, PE= Water Permit, MDSN= Madison, MNLS= Minnelusa, DDWD= Deadwood, ALQ= Alluvium, SHD= Suburban Housing Development, COM=Commercial, MUN= Municipal,

Table 1. Groundwater appropriations within approximately two miles of the well site proposed by Water Permit Application No. 2607A-2

There are only three Water Rights/Permits supplied from the Madison aquifer belonging to others within approximately one mile of the well site proposed by this application. They are shown in table two.

WATER RIGHT/PERMIT NO	NAME	APPROXIMATE DISTANCE FROM 2607A-2
2473-2	CREGUT INC	1000 feet
1965-2	HIGHLAND HILLS WATER ASSOC.	3000 feet
1925-2	PONDEROSA PARK DEV ASSOC	1 mile

Table 2. Madison Water Rights/Permits not belonging to Colonial Pine Hills Sanitary District located within approximately one mile of the well proposed by Application No. 2607A-2

The potential impact of the well proposed by Water Permit Application No. 2607A-2 on the wells supplying Water Right Nos. 1965-2 and 1925-2, if measurable, is expected to be insignificant due to the distance between wells. In addition, the site proposed by this application is actually further from the Highland Hills well than the site original approved by Water Permit No. 2607-2.

The well site proposed by Water Permit Application No. 2607-2 was to be located approximately 2,500 feet east-southeast of the well that supplies Water Right No. 2473-2 (Cregut well). The well location proposed by Water Permit Application No. 2607A-2 will be approximately 1,000 feet from the Cregut well.

On December 27, 2007, the Water Rights Program received a telephone call from Robbie Cregut the holder of Water Right No. 2473-2, Cregut Inc. The Cregut well experienced problems because of low water levels and Mr. Cregut was concerned about the effects competing users were having on the well.

When considering the Cregut complaint, the data from Water Rights' Observation Well PE-86A was extrapolated for the area. The data (see figure 1) suggests that between August 2001 and December 2007, the potentiometric surface declined around 110 feet in this area due to natural conditions. The Well Completion Report submitted for the Cregut well indicates that when the well was constructed in August, 2001, there was approximately 140 feet between the static water level and the total depth of the well. The natural water level fluctuations in the area would have significantly affected the storage in the Cregut well, may have dramatically impacted the "total pumping head" requirement on the well pump, and may have even caused the water level of the well to drop below the pump.

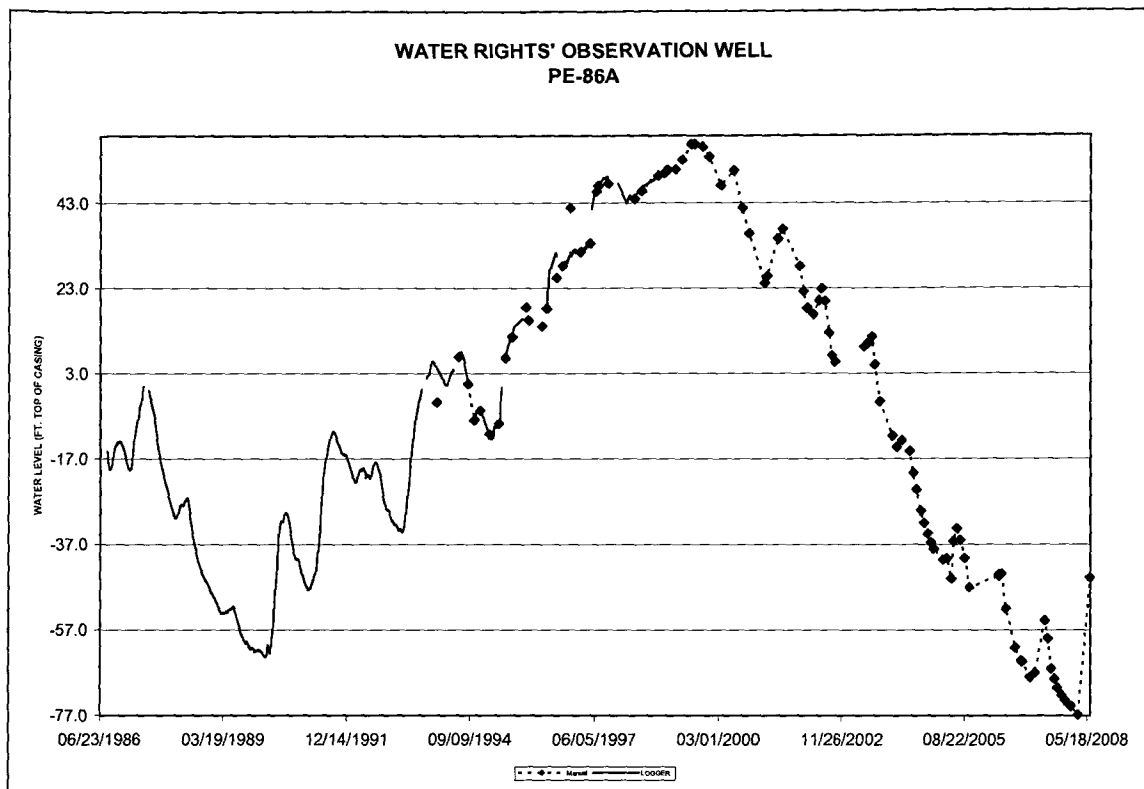


Figure 1. Hydrograph of Water Rights Observation Well PE-86A which is located approximately two miles southeast this proposed well site.

Approval of this water permit application will relocate the well 1,500 feet closer to the Cregut well than the original well site. The potential impact of this well site relocation can be estimated with the application of the Modified Nonequilibrium (Jacob) Equation. The Jacob method provides a way of graphically representing the affect the change on location may have on the Cregut well using aquifer transmissivity estimates for the area (e.g. 5,000-7,500 square feet per day, (37,400-56,100 gallons per day per foot)) (Long and Putnam, 2002). See figure two.

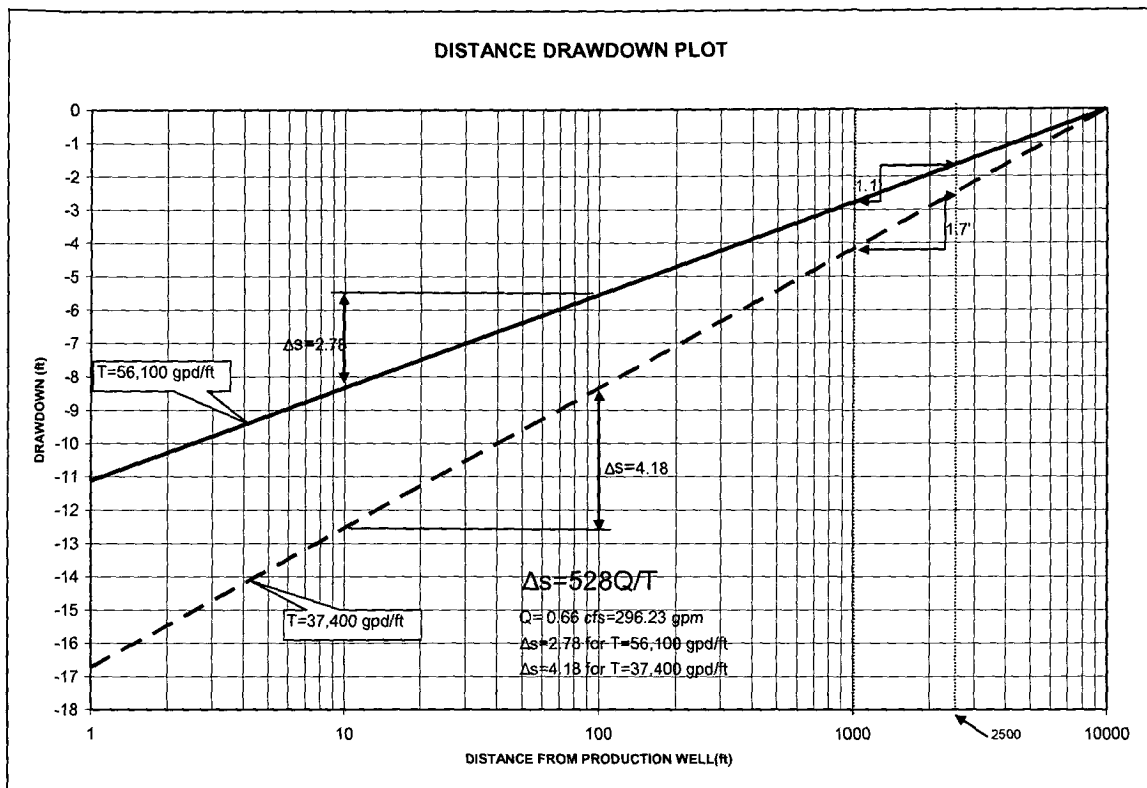


Figure 2. Distance drawdown plot used to estimate increase impact on a well 1000 feet from a production well versus 2,500 feet from a production well.

The significance of figure 2 is the slopes of the lines depicting the cone of depression (Δs), which are determined using the transmissivity estimates. Δs equals 4.18 when assuming a transmissivity of 37,400 gpd/ft.; meaning the drawdown resulting from this pumping would decrease 4.18 feet per log cycle as the distance increases from the production well. Δs equates to 2.78 for a transmissivity of 56,100 gpd/ft. The y-intercepts of the lines are arbitrary in this particular application of the Jacob method and are not intended to suggest that drawdown at the production well will be less than 20 feet. Since the actual drawdown in the production well is unknown, figure 2 can only be used to estimate that the drawdown 1,000 feet from the production well will be around 8.5 feet less than the drawdown at the production well if $T = 56,100 \text{ gpd/ft}$; and with $T = 37,400 \text{ gpd/ft}$ the drawdown 1,000 feet from the production well is estimated to be approximately 12.5 feet less than the drawdown at the production well. Figure 2 is noteworthy because it shows that a decrease in the distance between a Colonial Pine Hills Sanitary District well and the Cregut well from 2,500 feet to 1,000 feet would have an estimated impact of between 1.1 feet and 1.7 feet on the Cregut well. The worst case scenario represented by figure 2 assumes full time pumping at the maximum authorized diversion rate (0.66 cfs). Water Permit Application No. 2607A-2 proposes to only pump 150 acre-feet per year, or the equivalent to full time pumping of about 0.21 cfs. The resultant impact on the Cregut well would obviously be reduced at the lower average diversion rate proposed by this application. A decline of the water level in the Cregut well of an additional 1.1-1.7 feet will not significantly impact the Cregut well's ability to supply the permit. This is particularly true when considering the natural water level fluctuations discussed above.

Water Management Board rules 74:02:04 and 74:02:05, which were promulgated pursuant to SDCL 46-6-6.1, provide for the regulation of large capacity wells to the degree necessary to

maintain an adequate depth of water for a prior appropriator in wells that have the ability to produce water **independent of artesian head pressure**. Simply put, the pump placement in a prior appropriator's well is not necessarily protected.

If the water levels in the Madison aquifer were to decline, owners of existing wells bear the responsibility of lowering the pump inlet in the well to the top of the aquifer, if necessary. Increased lift would decrease the pump discharge; or require a larger pump or a different type of a pump to maintain the same output.

An increase in operating expenses that may result from interference between wells is not necessarily an adverse impact. The Water Management Board considered this situation in the matter of Water Permit Application 2313-2, Coca-Cola Bottling Company of the Black Hills (Water Rights, 1995). The Board adopted findings of fact and conclusions of law that basically state that if the increased cost or decreased production is considered an adverse impact, it could be in conflict with SDCL 46-1-4, which requires South Dakota's water resources to be put to beneficial use to the fullest extent of which they are capable.

TERM LIMITATION:

SDCL 46-2A-20 requires that "... no water permit for construction of works to withdraw water from the Madison formation in Butte, Fall River, Custer, Lawrence, Meade and Pennington counties may be issued for a term of more than twenty years, unless the water management board determines, based upon the evidence presented at the hearing that:

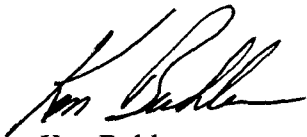
(1) Sufficient information is available to determine whether any significant adverse hydrologic effects on the supply of water in the Madison formation would result if the proposed withdrawal were approved; and

(2) The information, whether provided by the applicant or by other means, show that there is a reasonable probability that issuance of the proposed permit would not have a significant adverse effect on nearby Madison formation wells and springs."

Evidence is not available to justify issuing these permits without a term limitation of 20 years.

Conclusions:

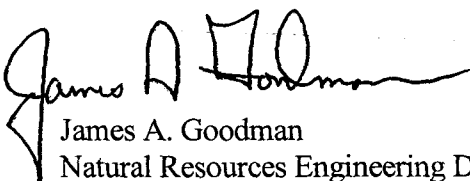
1. The Madison aquifer is a viable aquifer in this area.
2. This diversions proposed by these application will not adversely impair existing water rights.
3. Information is not available to justify issuing these permits without a term limitation of 20 years.



Ken Buhler

Natural Resources Engineering Specialist

Approved by



James A. Goodman

Natural Resources Engineering Director

References:

- Allen, J.C., Iles, D.L., and Petres, A.K., 1985, Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Tasks 3A.B.C. and 4A.B.: Groundwater Resource Inventory: South Dakota Department of Water and Natural Resources
- Carter, J.M. and Redden, J.A., 1999a, Altitude of the Top of the Madison Limestone in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D, 2 sheets, scale 1:100,000
- Carter, J.M. and Redden, J.A., 1999b, Altitude of the Top of the Deadwood Formation in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-E, 2 sheets, scale 1:100,000
- Carter, J.M., Driscoll, D.G., and Hamade, G.R., 2001a, Estimated Recharge to the Madison and Minnelusa Aquifers in the Black Hills Area, South Dakota and Wyoming, Water Years 1931-98: U.S. Geological Survey Water-Resources Investigations Report 00-4278, 66 p.
- Carter, J.M., Driscoll, D.G., Hamade, G.R., and Jarrell, G.J., 2001b, Hydrologic Budgets for the Madison and Minnelusa Aquifers, Black Hills of South Dakota and Wyoming, Water Years 1987-1996: U.S. Geological Survey Water-Resources Investigations Report 01-4119, 53 p., Water-Resources Investigations Report 01-4119, U.S. Department
- Driscoll, F.G., 1986, Groundwater and Wells, Johnson Division, St. Paul, MN, pg.558
- Long, A.J., Putnam, L.D., 2002, Flow-System Analysis of the Madison and Minnelusa Aquifers in the Rapid City Area, South Dakota-Conceptual Model: U.S. Geological Survey Water-Resources Investigations Report 02-4185, 100 p.
- Strobel, M.L., Jarrell, G.J., Sawyer, J.F., Schleicher, J.R., and Fahrenbach, M.D., 1999, Distribution of Hydrogeologic Units in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-743, 3 sheets, scale 1:100,000
- Strobel, M.L., Galloway, J.M., Hamade, G.R., And Jarrell, G.J., 2000, Potentiometric Surface of the Madison Aquifer in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D, 2 sheets, scale 1:100,000
- Water Rights, 2008a, "Observation Well Records", SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights, 2008b, "Water Right/Permit files", SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights, 2008c, "Water Well Completion Report files", SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Woodward Clyde Consultants, 1981, Well Field Hydrology Technical Report, for the ETSI Coal Slurry Pipeline Project, U.S. Dept. of Interior, Bureau of Land Management

Form 8

RECEIVED

AUG - 8 2008

WATER RIGHTS
PROGRAM

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Pennington) SS

I, Patricia K. Van Patten

certify that the attached printed Notice was
taken

from the Rapid City Journal

printed and published in Rapid City

County of Pennington and

state of South Dakota. The notice was
published

in the newspaper on the following two dates:

July 31, 2008

August 7, 2008

Cost of Printing One hundred thirteen

dollars and sixty-eight cents (\$113.68)

Patricia K. Van Patten
(Signature)

Legal Advertising Rep.
(Title)

08/07/08
(Date Signed)

July 31, Aug. 7 L20247320

NOTICE OF APPLICATION NO. 2607A-2 TO AMEND WATER PERMIT NO. 2607-2

Notice is given that Colonial Pine Hills Sanitary District, c/o Jim Martin, 8251 Dunsmore Rd., Rapid City, SD 57702, has filed an application to change the location of a well authorized by Water Permit No. 2607-2. Water Permit No. 2607-2 appropriates 150 acre-feet of water annually at a diversion rate of 0.66 cubic feet of water per second from one well completed into the Madison Aquifer located in NW1/4NW1/4 Section 33, T1N-R7E, for suburban housing development use. This application proposes to move the well location to the NW1/4NE1/4 Section 32, T1N-R7E. No increase in the diversion rate is authorized by this application.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2607A-2 for a 20-year term because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use, and 3) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is Water Rights Program, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605-773-3321), and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 18, 2008.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel. If legal counsel is obtained, contact Eric Granlund at the above Water Rights Program address to request copies of information pertaining to this application.

Steven M. Pirner, Secretary
Department of Environment
and Natural Resources



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 25, 2008

Rapid City Journal
PO Box 450
Rapid City SD 57709

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2607A-2 to Appropriate Water to be published twice. Please publish the first notice on July 31, 2008 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Colonial Pine Hills Sanitary District, c/o Jim Martin, 8251 Dunsmore Rd., Rapid City SD 57702 (Ph # 605-348-3113).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

No. 2607A-2

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of July 25, 2008 enclosing Notice to Appropriate Water by Application No. 2607A-2 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.

July 25, 2008

Colonial Pine Hills Sanitary District
Jim Martin
8251 Dunsmore Road
Rapid City SD 57702

Dear Mr. Martin

Water Permit Application No. 2607A-2 for suburban housing use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Rapid City Journal printed at Rapid City SD (Ph # 605-394-8300). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

cc: Ted Schultz, CETEC Engineering, 1560 Concourse Dr, Rapid City SD 57703

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish first Notice on July 31, 2008 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 2607A-2 to Amend Water Permit No. 2607-2

Notice is given that Colonial Pine Hills Sanitary District, c/o Jim Martin, 8251 Dunsmore Rd, Rapid City SD 57702 has filed an application to change the location of a well authorized by Water Permit No. 2607-2. Water Permit No. 2607-2 appropriates 150 acre-feet of water annually at a diversion rate of 0.66 cubic feet of water per second from one well completed into the Madison Aquifer located in NW ¼ NW ¼ Section 33-T1N-R7E for suburban housing development use. This application proposes to move the well location to the N ½ NE ¼ Section 32-T1N-R7E. No increase in the diversion rate is authorized by this application.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2607A-2 for a 20-year term because 1) the proposed diversion can be developed with out unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 18, 2008.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

OCT 31 2008

Colonial Pine Hills Sanitary District
Jim Martin
8251 Dunsmore Road
Rapid City SD 57702-8950

Dear Mr. Martin:

Enclosed is Water Permit No. 2607A-2 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right. Also, enclosed is receipt no. 03669 in the amount of \$50.00

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

Buhler, Ken

From: Buhler, Ken
Sent: Tuesday, April 06, 2010 9:03 AM
To: 'TedS@cetecengineering.com'
Subject: Croyle II Well comments

Ted:

This email is a follow up to our telephone conversation regarding your March 26, 2010 letter concerning the potential hydro fracturing of the Colonial Pine Hills Sanitary District Croyle II Well. As we discussed, a hydrofrac may or may not prove to be effective stimulation for this well, but the procedure you outline does not seem unreasonable. There are no Water Right Permitting issues associated with a hydrofrac of this well. It appears that from a DENR prospective, the Surface Water Quality Program and the Ground Water Quality Program will be need to be involved on a limited basis (surface water discharge permit and injection water sampling requirements respectively).

If you have any questions or need anything else, let me know

Ken Buhler
Natural Resources Engineering Specialist
SD DENR-Water Rights Program
(605)773-3352

04/06/2010

Buhler, Ken

From: Ted Schultz [TedS@cetecengineering.com]
Sent: Friday, April 02, 2010 10:53 AM
To: Hicks, Matt
Cc: Brandner, Tom; Hamann, Sheldon; Buhler, Ken
Subject: RE: Proposed Colonial Pine Hills Sanitary District Hydrofrac

Matt, We will plan to collect the water sample at the injection point. This is the message from EPA below.

----- Forwarded by Steven Pratt/R8/USEPA/US on 03/31/2010 11:52 AM -----

From: "Ted Schultz"
 <TedS@cetecengineering.com>

To: Steven
 Pratt/R8/USEPA/US@EPA

Cc: Douglas
 Minter/R8/USEPA/US@EPA

Date: 03/31/2010 11:10
 AM

Subject: Request for determination of jurisdiction on Drinking Water
 Well near Rapid City, SD

Based on our review, its quite clear that your proposed program for drinking water well stimulation, etc. would fall outside of the UIC program's jurisdiction. Please let me know if this email response will suffice, or whether you would prefer a letter signed off by our GW Program Director.

Thanks,

Douglas Minter

Theodore F. Schultz, P.E.
 CETEC Engineering Services, Inc.
 1560 Concourse Drive
 Rapid City, SD 57703
 605-341-7800

From: Matt.Hicks@state.sd.us [mailto:Matt.Hicks@state.sd.us]
Sent: Thursday, April 01, 2010 2:43 PM
To: Ted Schultz
Cc: Tom.Brandner@state.sd.us; Sheldon.Hamann@state.sd.us; Ken.Buhler@state.sd.us

04/06/2010

Subject: Proposed Colonial Pine Hills Sanitary District Hydrofrac

Ted,

To follow up on our discussion from this morning regarding the hydrostimulation of the drinking water well south of Rapid City, DENR will require sampling of the water being injected and used to hydrostimulate the well. The sample is to be collected at the injection point (wellhead) at the start of hydrostimulation and analyzed for oil and grease, TPH-D and VOC's (including BTEX) parameters, and the analysis forwarded to the DENR Ground Water Quality Program. Work on the well can continue while the samples are being analyzed.

If you have any additional questions, please feel free to contact me.

Matt Hicks, Senior Hydrologist
South Dakota DENR
523 East Capitol
Pierre, SD 57501
Phone: 605-773-5337
Fax: 605-773-6035

04/06/2010

RECEIVED
MAR 29 2010
WATER RIGHTS
PROGRAM

March 26, 2010

Mr. Ken Buhler
S.D. Dept. of Environment & Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: **Hydrofracturing Discussion**
Colonial Pine Hills Sanitary District
Croyle II Well, Water Right Permit 2607A-2

Dear Ken:

I am forwarding information regarding potential hydrofracturing and dye testing at the new Croyle II Well in Pennington County. The Colonial Pine Hills Sanitary District proposes to hydrofracture the Madison well and inject a biodegradable NSF approved fluorescein dye to track movement through the aquifer and to adjacent wells. Taylor Drilling Company will perform the work with assistance from Perry Rahn if approved. Permission has been received to take samples at most of the adjacent wells and a hydrofracturing and dye testing plan is attached. Please review the plan and provide comments. Please also provide any necessary forms or approvals that are needed to complete this proposed work. No work has been completed to date, but planning is proceeding at this time and we would appreciate your input.

Sincerely,

CETEC Engineering Services, Inc.



Ted Schultz, P.E.
Project Manager

cc: Jim Martin, CPHSD
Randy Taylor, Taylor Drilling
Perry Rahn, PhD

1560 Concourse Drive
Rapid City, SD 57703

www.cetecengineering.com

cetec

March 26, 2010

Croyle II Well Development Discussion

Hydrofracturing Request for Proposal
Colonial Pine Hills Sanitary District, Pennington County, South Dakota
Croyle II Well, Water Right Permit No. 2607A-2

Steps to Date:

1. Air Development Complete. 70 - 85 gpm with unknown drawdown. Well completed in March 2010 by Taylor Drilling.
2. Slug Test Complete. Formation accepted 85 gpm with 507 ft. head above static. Slug test provided results on anticipated formation conditions and ability transport water through the formation. The slug test provided recommended flow rates and pressures for the hydrofracturing option.
3. Pump test delayed to explore hydrofracturing option. Costs for the pump test are high and the cost of 2 pump tests may be avoided.
4. Acidizing well has been considered, but proximity to adjacent wells provides a high risk situation. Acidizing may provide 0-4 times more production. Acidizing is not currently planned. This may become more feasible if dye test results are positive.
5. Hydro-Stimulation or Hydrofracturing Options and Methods Explored
 - A. Hydrostimulation or Hydrofracturing is a method of improving the yield of various types of well by opening and flushing out previously closed fractures with high pressure water. High pressure inflatable packers suitable for this and similar applications such as stress testing, degassing coal bed methane and block caving.
 - B. Fracturing, stimulation, or stress testing is a method employed in geotechnical investigations to assist in determination of in-situ rock strength. The basic method is to use packers to isolate the section of interest, then generate a fracture in this section by water pressurization and measure the orientation of this fracture using an impression packer. This information allows determination of the principal in-situ stress of the rock mass.
6. Hydrofracturing Items
 - a. Fill tanks with drinking water at 180 gpm or more from hydrant. 8" hose along Croyle Avenue could provide up to 800 gpm. WP Booster and Conifer Well could be started with tanks full. Needed water is 50,000 to 80,000 gallons.
 - b. Water Storage Frac Tanks: 40,000 gallons (local Warne Chemical). Supplemented with 8" water line source of potable CPHSD water.
 - c. Flow Rate: 900 gpm or higher with Quintex Pumps
 - d. Pressure: 2200 psi estimated
 - e. Noise: Noise from pump trucks is extremely high. Pumping would be scheduled during the middle of a work day with notification to adjacent landowners.

1560 Concourse Drive
Rapid City, SD 57703

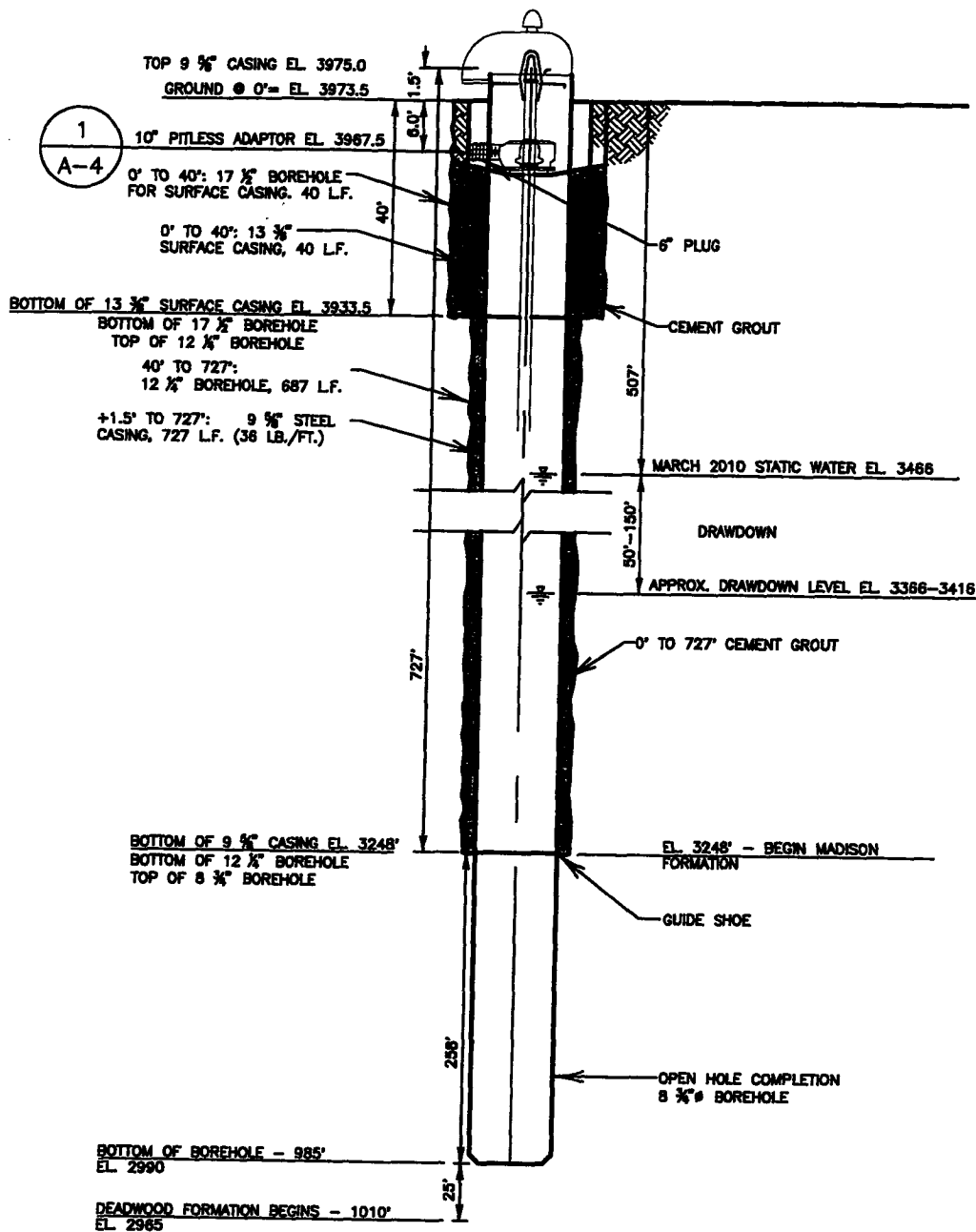
www.cetecengineering.com

cetec

- f. Security: Notifications will be made to adjacent owners and the road will be closed adjacent to the site.
 - g. Packer: Mechanical packer is needed to avoid higher pressure on casing.
 - h. Tank and pump truck delivery route and access difficult from Gillette. 5 – 16,000 gallon frac tanks hauled to site from Gillette cost is high. So local tanks and the on the ground pipeline will be used.
 - i. Dye testing will be performed by Taylor Drilling and Perry Rahn, PhD to determine direction and rate of transmission through the aquifer. Data will provide data on geologic conditions and flow rates through the aquifer. This data would aid in acid treatment application for the well. Dye color is not seen to the naked eye. Dye levels would be between 1 ppm and 10 ppb so the dye could be tested with sampling equipment. Coordination with SDSM&T, DENR, and USGS will be completed.
 - j. Sampling will be completed at adjacent wells to determine transmissivity and possible connectivity. Nearby wells, include:
 - Cregut Well: 1,100 ft.
 - Nonanna Well: 1,600 ft.
 - Peridot Lane Barnes Well: 1,800 ft.
 - Dean Hamm Well: 2,000 ft.
 - Countryside North: 2,000 ft.
 - Clarkson Well: 2,200 ft.
 - Highland Hills Well: 2,900 ft.
 - Red Rocks Well: 5,400 ft.
 - k. Discussions held with Ken Buhler – DENR, Perry Rahn – SDSM&T, Larry Putnam – USGS, and other local well drillers with similar experience.
 - l. SDDENR Permits: Review requested by DENR to determine required permits. Potable water and biodegradable NSF dye proposed for injection in the new well.
 - m. Permission: Permission from adjacent wells has been received for sampling from the wells. Cooperation from adjacent well owners will allow for additional knowledge of the Madison aquifer in this area.
 - n. Costs: Estimated at \$60,000.
 - i. Frac Tanks/Piping
 - ii. Pump Truck
 - iii. Packer
 - iv. Delivery
 - v. Testing and Rig Time
 - vi. Benefit vs. Cost?
7. Alternatives: All alternatives carry different risks associated with the work or outcomes. Costs to perform hydrofracturing or acid treatment will much higher in the future. The possible results are a 2-3 increase in flow rate or no flow increase at all.

- a. Do not hydrofracture and develop the well at lower production with liner and pump in open hole.
- b. Perform hydrofracturing now with dye test and monitor adjacent wells.
- c. Perform acid treatment after hydrofracturing and monitor adjacent wells.
- d. Do not develop the well and delay decisions on final outcome.

October 23, 2009 8:33:10 a.m.
Drawing: A-3 - A-4-PUMP SETTING.DWG (Schille) (\\MAIN-DATA\CETEC\PROJECTS & PROPOSALS\07196.00 NEW CPHSD WELL STUDY & INVESTIGATION\DRAWINGS\SHEETS\)



1
A-3 **PROPOSED WELL PROFILE**
NOT TO SCALE

GEOLOGIC STRATIFICATION DATA

SPEARFISH FORMATION	EL. 3973'
MINNEKAHTA LIMESTONE	
OPECHE SHALE	EL. 3720'
MINNELUSA SANDSTONE	EL. 3200' - EL. 3720'
MINNELUSA POTENTIOMETRIC SURFACE	EL. 3700±
MADISON FORMATION	EL. 2800' - EL. 3200'
ENGLEWOOD FORMATION	EL. 2800±

SECTION 02581

HYDROFRACTURING WATER WELL

PART 1 - GENERAL

- 1.1 Description. Furnish all labor, material, transportation, tools, supplies, equipment and appurtenances for hydrofracturing of the existing water supply well described herein. Work shall include, but is not necessarily limited to mobilization, setup, potable water tanks, pump equipment, reporting, and related work.

1.2 Additional Requirements and Standards Specified Elsewhere.

- A. AWWA Standard for Water Wells, A100- 97 or current edition.
- B. Recommended Standards for Water Works (Ten States Standards) – 1997 or current edition.
- C. American Petroleum Institute Standards (API)
- D. ARSD 74:02:04 Well Construction Standards (State of South Dakota).

1.3 Submittals

- A. Product Data.
 - 1. Packer data. (If used). A packer may not be necessary for this work.
- B. Construction Plan and Contractor Information
 - 1. Provide a written construction plan, sequence and schedule for the work. Include planned procedures and construction methods for setup, water storage, pumping, pressure, duration, and related work.
 - 2. Submit names of subcontractors proposed to be employed in connection with the project.

1.4 Job Conditions

- A. Formation Log.
 - 1. The existing well is constructed into Madison Limestone Formation for domestic use. The plans illustrate the strata of geological formations. The well includes casing to a depth of 727 ft. below the ground surface and an 8-3/4" open hole to a depth of 1010 ft.
- B. Well Site.
 - 1. The proposed well is located on property owned by the District. The property is a 1.35 acre lot located in a residential subdivision. The site is gently sloping at approximately 5% slope. The property is located 2 miles southwest of Rapid City, South Dakota. Refer to plans for exact location.
 - 2. The waste water shall be piped away from the site to the designated surface discharge location. The water discharged shall meet the conditions of the permit and not include any contaminants.
 - 3. Confine operations, materials storage, equipment storage and disturbance of any nature to designated areas at the well site.
- C. Qualifications.
 - 1. The Contractor will be required to demonstrate that he has the proper equipment, personnel and experience on work of a similar nature for drinking water wells.
 - 2. Statements of qualifications, including description of pumping and hydrofracturing equipment, listing of previous projects, and experience of personnel to be employed on this project may be required.
 - 3. The work shall conform to well construction standards as set forth in South Dakota Administrative Rules Chapter 74:02:04.
- D. Well Yield.
 - 1. The existing well has been air developed to a level of 85—100 gpm at a depth of 900 ft. in the hole. The back pressure for the air development was only approximately 100 psi.
 - 2. The objective of this construction is to obtain a reliable yield of approximately 200 - 250 gpm with a drawdown of 200' or less at maximum pumping rate. The Owner intends to develop the well to the maximum sustainable production rate.

- E. Working Days and Hours.
 - 1. The Contractor may not conduct pumping operations overnight. Work will not be allowed 24 hours per day unless approved by the Owner. Work shall be completed during daylight hours of 7 am to 7 p.m. Pumping for the hydrofracturing process is allowed between 9 am and 4 pm.
- F. Water Furnished by Owner.
 - 1. Potable water for filling storage tanks may be obtained from the Owner from a flushing hydrant located 300 ft. north of the well. Water used from the system is to be measured by a hydrant meter/backflow assembly furnished by the Owner. There will be no cost to the Contractor for Owner-furnished water. The Contractor shall provide hose to deliver water to the site.
- G. Set Up For Hydrofracturing. Mobilization and demobilization costs and set up time for truck, pumping equipment, water storage tanks, and other equipment used in the well development hydrofracturing procedure will be paid for at the lump sum price.
- H. Hydrofracturing Well Development. Hydrofracturing pumping, packer, tanks, and related work will be paid for at a lump sum price.

PART 2 - PRODUCTS

2.1 Existing Well Casing

- A. The existing steel casing meets the following standards. Steel Casing Pipe Standards: New steel casing pipe equipped with a guide shoe meeting AWWA Standard A-100, ASTM or API specifications for water well construction. American made.
- B. Casing Pipe: American Petroleum Institute (API) Grade K-55 (Prime), 9-5/8" O.D., 36 lb./ft. per API 5 CT.
- C. Couplings: Threaded, API short.
- D. The existing casing is cemented with grout.

2.2 Packers

- A. Hydrofracturing Packer. A downhole packer tool will be required for use in the hydrofracturing process. The packer shall be rated for 8,000 psi or twice the anticipated pressure application. The packer shall consist of a hydraulic cylinder with rubber seals that compress and lock on borehole or casing walls. The mechanical packer shall be free in the hole prior to mechanical tensioning. The packer shall mechanically seal within a few minutes of pumping commencement.
- B. The interior diameter of the 9-5/8", 36 lb./ft. casing shall be measured in the field and the appropriate diameter packer shall be selected.
- C. Frac-Packer, IPI, or alternate manufacturer.

2.3 Hydrofracture Performance Requirements

- A. Performance and Design Requirements:
 - 1. Initial Testing: Pump rate of 200 gpm at lower pressures below 200 psi to identify ability of formation to take water.
 - 2. Hydrofracture Pumping Rate: 1,500 to 3,000 gpm
 - 3. Hole Pressure Range: 200 psi to 2500 psi. Pressure at 5 minutes approximately 1200 psi.
 - 4. Water Storage: 30,000 to 80,000 gallons (Dependent upon pump type and pressures)
 - 5. Available Fill Rate From Hydrant: 80 to 100 gpm
 - 6. Estimated Pumping Time: 20 to 30 minutes. Pump rate estimated at 1500 gpm with peak of 3000 gpm. Triplex or Quintex high pressure pumps may be used with higher pressures and lower volumes.
 - 7. Pumping fluid: potable drinking water at 55 degrees Fahrenheit.
 - 8. Provide pumping equipment to meet these conditions. Submittals of equipment ranges is required.

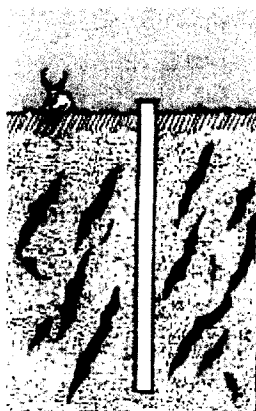
2.4 Dye

- A. Biodegradable Dye Tracers
 - 1. Visible fluorescent dye

PART 3 - EXECUTION

3.1 Description

- A. Water in hard rock is generally located in cracks and fractures originating from natural geological processes. The best water-bearing cracks are those that are more or less vertically oriented, which are open and therefore can hold a large amount of water. Horizontal cracks are compressed by the rock strata above and are consequently more narrow.
- B. The hydrofracturing method may make wells more productive. The method was developed in the oil industry and it is used successfully in water well field.
- C. Basic Methodology:
 - 1. Test pump to establish yield of the well. Low flow rate and pressure test prior to hydrofracturing.
 - 2. Lower the packer into the hole, expand it to seal off the well.
 - 3. Pump water through the packer into the sealed part of the well, this sets up a hydraulic pressure forcing the liquid to infiltrate the wall of the hole.
 - 4. Small cracks open up. Due to the high pressure and the high water flow these propagate and find their way to adjacent fractures that often contain water.
 - 5. Contact with water holding fractures are established and the capacity of the well is improved.
 - 6. The operation can be repeated to reach a better yield.
 - 7. Remove the packer, put the test pumping equipment into the hole and establish the new yield.



BEFORE - DRY WELL
The well has no contact
with water-bearing layers



USE THE WELL SERVICE UNIT
The well is reactivated
by hydraulic fracturing



AFTER PRODUCTIVE WELL
An improved contact with surrounding
water-bearing layer is established

3.2 Hydrofracturing Methods

- A. Hydrofracturing is a method of improving the yield of various types of well by opening and flushing out previously closed fractures with high pressure water. High pressure inflatable packers suitable for this and similar applications such as stress testing, degassing coal bed methane and block caving. Standard sizes are available for bores with pressure rating up to 10,000 psi.
- B. Fracturing or Stress Testing is a method employed in geotechnical investigations to assist in determination of in-situ rock strength. The basic method is to use inflatable packers to isolate the section of interest, then generate a fracture in this section by water pressurization and measure the orientation of this fracture using an impression packer. (An impression packer has a cover made of a semi-cured rubber that retains an impression of the borehole wall when deflated. On removal of the packer this impression can be examined to determine its orientation.) This information allows determination of the principal in-situ stress of the rock mass.

- C. This type of hydrofracturing does not involve fracturing of the rock. Rather, it is a specialized, three-step well development method. In crystalline rock hydrofracturing, one or two packers are used to isolate a section of the rock borehole; then water is injected under pressure.
 - 1. The first step involves a high breakdown pressure. This is when molecules of water enter a clay or sediment filled fracture in a quantity sufficient enough to provide a "jacking pressure" which widens the filled fracture. Typically, the peak injection pressures range from 1,000 to 5,000 psi.
 - 2. The second step is when high volumes of water are pumped into the now enlarged fracture system and the clay/sediment is loosened up. The injection volume generally ranges from 1000 to 3000 gallons per minute (gpm) and the pressure is about 1/3 to 1/2 the breakdown pressure in step one.
 - 3. The third step (immediately following step two) involves the shutting down of the hydrofracturing injection pump and opening up a valve at the top of the injection string to allow injected water to back flush out of the well. At this point, the well behaves like a flowing well with a high artesian pressure. And this is when loosened clay/sediment is removed from the well. The water is normally quite dirty and has a high concentration of sediment.
- D. Frequently, with the same packer setting, steps 2 & 3 are repeated to "wash out" additional clay/sediment from the affected fracture system. Success is achieved when a well produces enough water after hydrofracturing to satisfy the domestic supply requirements.
- E. To develop fractured, hard rock domestic wells using the hydrofracturing process requires a capable pump. First, the pumping system must generate pressures of 2,000 to 4,000 psi to open up the fractures. Then, a lower pressure, but higher flow rate must be delivered to flush or clean the fractures (step 2).

3.3 Safety

- A. The Contractor is advised to secure the work area and protect against unauthorized personnel in the work area. Safety measures should be taken at all times and high pressure pumping safeguards should be followed.

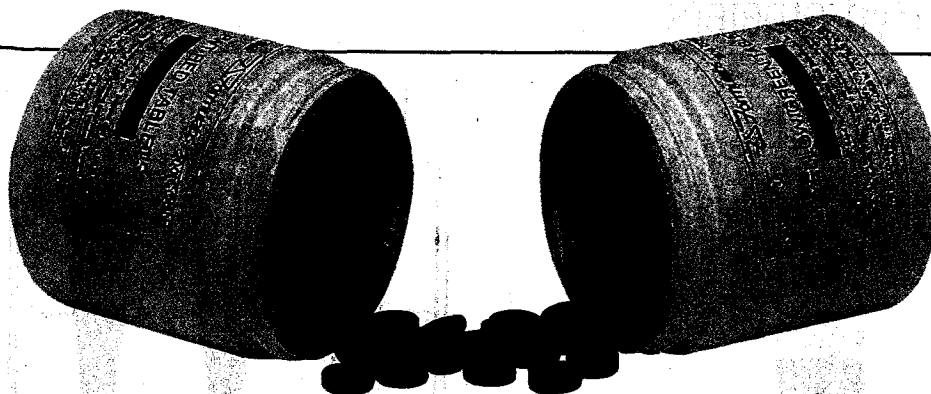
3.4 Dye Injection.

- A. The dye injection process shall be completed in conjunction with the frac water pumping. Biodegradable dye for potable water shall be used at low concentrations that are not visible to the naked eye at concentrations less than 1 ppm.
- B. Testing of the adjacent wells prior to pumping, during pumping, and after pumping shall be completed to monitor dye results and corresponding travel times of the water. The water samples shall be collected from identified wells and fluorescein dye testing shall be completed on the samples. A written log of the test results and corresponding travel times shall be calculated.
- C. The test results shall include potential flow paths, ground water velocities, dye concentration, and additional results found during testing.

3.5 Well Protection.

- A. The well is planned for disinfection following the pump testing. The hydrofracturing process shall not introduce any equipment that has been contaminated or other products not approved for drinking water applications. All water shall be potable drinking water with food grade approved biodegradable NSF approved dye.
- B. Discharge Piping System.
 - 1. Provide discharge piping to convey well discharge to the approved surface watercourse.
 - 2. Comply with DENR permit requirements for sampling and testing of well discharges.

*** END OF SECTION ***



order online
BENMEADOWS.COM

Biodegradable Dye Tracers

Easy to See and Use—Tracer Dyes Provide Quick Visual Detection

Visible fluorescent Dyes make water flow patterns easy to see, track and map in lakes, reservoirs, septic systems, piping and all other bodies of water. Bright, vivid, ecologically safe colors are easily detected in clear, deionized water in the range of 100 ppb of active ingredient. Choose **Tablets**, **Liquid Concentrate**, **Powder** or **Wax Cake**, **Cone** or **Donut** dye tracers.

FLT Yellow/Green color is excellent for high silt or red clay backgrounds. This dye fluoresces green (520nm).

FWT Red is fluorescent and a good choice for use in greenish or yellowish water with a lot of algae. Red dye fluoresces orange (588nm).

FLT Orange can be used as an alternate where neither Yellow/Green or Red would provide proper contrast.

FLT Blue is frequently used for decorative effects, evaluation of household systems and where blue may be more acceptable to public view. Blue dye is for visual detection only and cannot be seen under ultraviolet light or detected by fluorometry.

Industrial Blue, formulated with Acid Blue 9, is often used in fountains, ponds and streams for decorative effect. Acid Blue 9 is not recommended for use in or around potable water sources. Blue dye is for visual detection only and cannot be seen under ultraviolet light or detected by fluorometry.

Industrial Red dye is made with Rhodamine B and should not be used in or around potable water sources.

Compliance: FWT Red and FLT Yellow/Green dyes and FLT Blue dyes are NSF certified for potable water. Industrial Red is not NSF certified for potable water.

No.	Description	Each	
		1-3	4+
FLT YELLOW/GREEN			
9JF-23679	Tablets, Bottle of 200	\$36.70	\$35.00
9JF-23681	Liquid, 1 pt.	17.60	16.90
9JF-23683	Liquid, 1 gal.	77.00	69.30
9JF-113346	Powder, 1-lb. Pkg.	126.00	121.00
9JF-113678	Wax Cakes, Pkg. of 10	116.00	111.00
9JF-113704	Wax Cones, Pkg. of 6	163.00	156.00
9JF-113387	Wax Donuts, 4" dia., 32 oz.	163.00	156.00
9JF-221384	Wax Cake	10.80	
FWT RED			
9JF-23680	Tablets, Bottle of 200	42.70	40.50
9JF-23682	Liquid, 1 pt.	40.80	39.00
9JF-23684	Liquid, 1 gal.	183.00	175.00
9JF-113347	Powder, 1-lb. Pkg.	175.00	168.00
9JF-113705	Wax Cones, Pkg. of 6	219.00	209.00
9JF-113391	Wax Donuts, 4" dia., 32 oz.	194.00	186.00
9JF-221441	Wax Cake	13.00	
FLT ORANGE			
9JF-113401	Tablets, Bottle of 200	44.60	43.10
9JF-113397	Liquid, 1 pt.	34.10	32.50
9JF-113395	Liquid, 1 gal.	159.00	152.00
9JF-113399	Powder, 1-lb. Pkg.	175.00	168.00
9JF-113694	Wax Cakes, Pkg. of 10	155.00	148.00
9JF-113706	Wax Cones, Pkg. of 6	219.00	209.00
FLT BLUE			
9JF-85160	Tablets, Bottle of 200	63.80	60.60
9JF-85163	Liquid, 1 gal.	165.00	158.00
9JF-113353	Powder, 1-lb. Pkg.	175.00	168.00
INDUSTRIAL BLUE			
9JF-85159	Tablets, Bottle of 200	71.20	68.00
9JF-85162	Liquid, 1 gal.	109.00	102.00
INDUSTRIAL RED			
9JF-85158	Tablets, Bottle of 200	71.20	68.00

Pond Dyes

Concentrated Water Dye Available in Liquid or Toss-and-Go Soluble Bags

Add beauty to your lake, pond or fountain with this nontoxic, long-lasting deep blue Dye. Does not harm fish, birds or other wildlife when used correctly. Use 1 gal. of **Liquid Concentrate** or one pkg. of 6 **2.5-oz. Soluble Bags** to treat a one-acre pond to a depth of 4' (~1.3 million gal.).



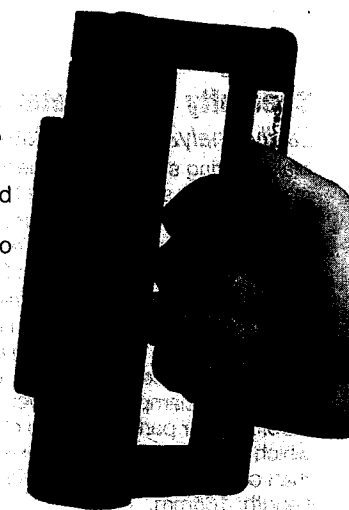
No.	Description	Each	
		1-3	4+
9JF-221263	Liquid Concentrate, 1 gal.	\$47.50	\$42.30
9JF-221264	2.5-oz. Soluble Bags, Pkg. of 6	51.60	46.50

Raytech Versalume Ultraviolet Lamp

Portable Lamp with Carry Handle

Recommended for prospectors, gemologists, sanitation inspectors and criminologists. This lightweight Lamp features a built-in handle that opens to form a stand and 360° lamp rotation.

Choose from a **Long Wave Lamp** or combination **Short/Long Wave Lamp**. Both have a lamp area of 1" x 1" and a 4W lamp. Four **AA Batteries** (sold separately) give four hours of use. Each unit comes with a 60-page guide: "The Story of Fluorescence." Short Wave: 254nm. Long Wave: 330-400nm.

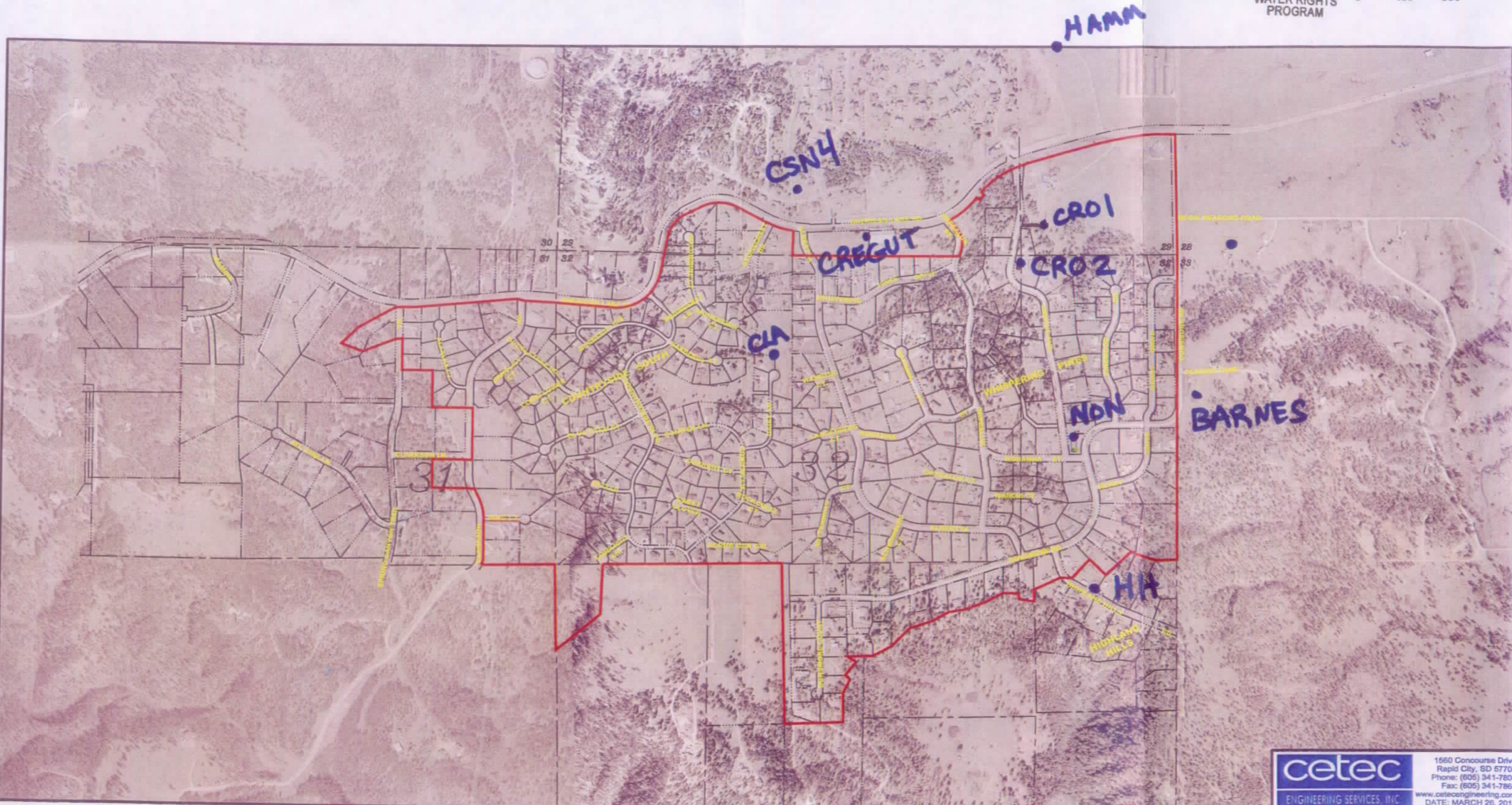
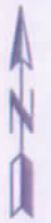


No.	Description	Each	
		1-3	4+
9JF-103030	Long Wave Lamp	\$86.20	
9JF-103031	Short/Long Wave Lamp	89.60	
9JF-9875	AA Batteries, Pkg. of 8		7.60

COLONIAL PINE HILLS SANITARY DISTRICT

PENNINGTON COUNTY, SOUTH DAKOTA

RECEIVED
MAR 29 2010
WATER RIGHTS
PROGRAM



March 26, 2010 10:20:11 a.m.
Drawing: WALL MAP BOOK.DWG (Schlitz) (\\MAN-DATA\CETEC\PROJECTS & PROPOSALS\07106.00 NEW CHSD WELL STUDY & INVESTIGATION\DRAWINGS\SUBS\WALL MAPS AND BOOKS\)

cetec
ENGINEERING SERVICES, INC.

1560 Concourse Drive
Rapid City, SD 57703
Phone: (605) 341-7800
Fax: (605) 341-7864
www.cetecengineering.com
DATE: MARCH 26, 2010

2607A-2

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

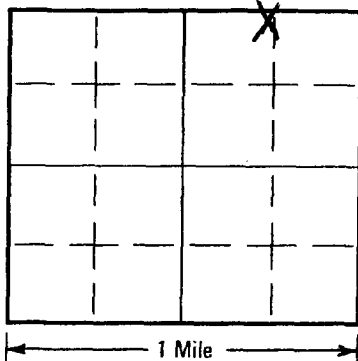
Location NW 1/4 NE 1/4 Sec 32 Twp 1N Rg 7ECounty Pennington

Please mark well location with an "X"

W

E

Well Completion Date

April 28, 10

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 150 ft. from Septic (identify source).PROPOSED USE: U.H.D. ☒
☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well
METHOD OF DRILLING: Rotary - AirCASING DATA: ☒ Steel ☐ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>54.5</u> LB/FT	<u>13 3/8</u> IN	<u>0</u> FT	<u>40</u> FT	<u>17 1/2</u> IN
<u>36</u> LB/FT	<u>9 5/8</u> IN	<u>42</u> FT	<u>725</u> FT	<u>12 1/4</u> IN
<u>—</u> LB/FT	<u>—</u> IN	<u>740</u> FT	<u>1010</u> FT	<u>8 3/4</u> IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>I-II</u>	<u>45</u>	<u>14</u> lb./gal	<u>0</u> ft	<u>40</u> ft
<u>I-II</u>	<u>275</u>	<u>14</u> lb./gal	<u>0</u> ft	<u>725</u> ft

Describe grouting procedure Pressure grouted through casingSCREEN: ☐ Perforated pipe ☐ Manufactured

Diameter _____ IN Length _____ FEET

Material _____

Slot Size _____ Set From _____ Feet to _____ Feet

Other information _____

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

DISINFECTION: Was well disinfected upon completion?

☒ YES, How: chlorine☐ NO, Why Not? solutions

Laboratory sent to for water quality analysis

Mid ContinentWell Owner: Colonial Pine Hills Sanitary DistrictBusiness Name: SameAddress: 8251 Dunsmore Rd
Rapid City, S. Dak 57702

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Gravel, sand, clay, Red shale	0	35
Minnelusa	35	575
Madison	575	985
Englewood	985	1010

STATIC WATER LEVEL 500 Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced Flowrate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped☐ Bailed☒ OtherDescribe: Air Developed 25.5 HRS
Test Pump installed & ran
for 46.75 HRS.

Pumping Level Below Land Surface

638 ft. After 1/2 Hrs. pumped 175-185 GPM700 ft. After 9 1/2 Hrs. pumped 235-245 GPM

If pump installed, pump rate _____ GPM

REMARKS Note: Attached are step down
down & test log data, sample
description & geophysical log's
Water Permit No. 2607A-2This well was drilled under license # 331

And this report is true and accurate.

Drilling firm Taylor Drilling Inc.

Signature of License Representative:

K Tyl

Signature of Well Owner or Equitable Property Holder:

RECEIVED

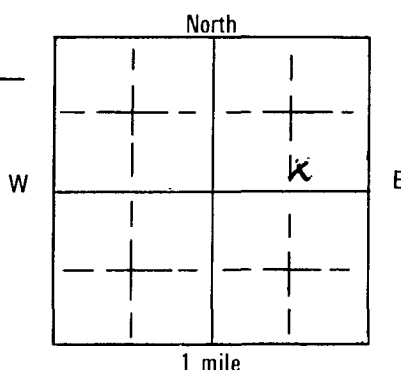
JUN 24 2010

WATER RIGHTS PROGRAM

Date: April 30, 10

SOUTH DAKOTA WELL AND TEST HOLE PLUGGING REPORT

10-85

Location SE 1/4 SE 1/4 Sec 29 Twp 1N Rg 7ECounty
PenningtonPlease mark well
location with
an "X"

Well Owner:

Name Colonial Pine Hills Sanitary DistrictAddress 8251 Dunsmore Rd.Rapid City, S. Dak. 57702Plugging completion Date April 8, 2010

CHECK APPROPRIATE BOX

EXISTING WELL

☒ Croyle I well

TEST HOLE

☐Well depth 628 FT.Casing material SteelCasing size(s) 6 5/8" O.D.Casing condition O.K.

Hole depth _____

Hole size _____

Describe plugging procedure: 1st cementing Job. 9 SK cement Pumped through 2" Trimming Line set @ 625 FT. 2nd cementing Job, cement Top @ 609 FT. 80 SK. cement Pumped through 2" Trimming Line set @ 607 FT. 3rd cementing Job, cement Top @ 218 FT. 24 SK of cement Pumped through 2" Trimming Line set @ 210 FT. Cement was returned to surface.

Describe grout or plugging material: Portland Type I-II cement grout
was used To Plug well.

Type of non-slip plug: _____

This well or test hole was plugged under license # 331 And this report is true and accurate.Drilling firm Taylor Drilling Inc.Signature of Licensed Representative [Signature]

Signature of Well Owner _____

Date April 30, 10

RECEIVED

JUN 24 2010

WATER RIGHTS
PROGRAM



TAYLOR DRILLING CO.

2310 Commerce Road
RAPID CITY, SOUTH DAKOTA 57702-8062

RALPH L. TAYLOR, JR. (Randy)
KIM E. TAYLOR

TELEPHONE:
Office: (605) 348-3600
Fax: (605) 394-9409
After Hours: (605) 341-5417
or: (605) 787-4989

Colonial Pine Hills Sanitary District
Croyle II Well
Sample Description

Depth	Description
0-24'	Gravel, Sand & Clay
24-40'	Red Shale, White Limestone, Yellow Sandstone
40-60'	Yellow Sandstone
60-80'	Yellow & White Sandstone
80-110'	Yellow Sandstone
110-120'	Yellow Sandstone, Red Shale, Red Limestone, Yellow Clay
120-130'	Yellow Sandstone, Some Chert
130-140'	Yellow Sandstone, Yellow and White Clay, Some Red Shale, Red Limestone
140-150'	Red Limestone, Red Shale
150-170'	Red, White & Pink Limestone, Maroon Clay
170-180'	Red Shale, Red Dolomite, Some White Limestone
180-190'	Red & Purple Limestone, Red Shale
190-200'	Red, Maroon & White Dolomite
200-210'	Red Limestone, Red Shale
210-220'	White, Pink & Brown Dolomite, Some Pink Limestone
220-230'	Yellow & White Sandstone, White Clay
230-240'	Light Yellow Dolomite, Yellow Clay
240-250'	Tan Sandstone, Some Tan Clay
250-260'	Tan Sandstone, White & Red Clay
260-270'	Tan & Light Tan Sandstone
270-280'	Tan & Yellow Sandstone
280-290'	Yellow Sandstone, Red Dolomite
290-300'	Red & Maroon Dolomite
300-310'	Maroon Dolomite, Some Red Caly
310-330'	Maroon, Pink & Red Dolomite, Some Light Tan Limestone
330-340'	Red & Maroon Limestone, Red & Maroon Shale, Some Red & White Limestone
340-370'	Red, Yellow Dolomite, Some Maroon Shale, Some Red Shale
370-390'	Purple & White Dolomite, Purple & White Limestone

MAILING ADDRESS: P.O. BOX 7738 • RAPID CITY, SOUTH DAKOTA 57709-7738

390-400'	Purple, Maroon, White & Red Dolomite
400-410'	Red & Tan Dolomite w/ White Anhydrite
410-420'	Red, Tan & White Dolomite, Purple & White Siltstone
420-430'	Pink & Tan Dolomite, Pink & Tan Limestone
430-440'	Light Pink, Light Tan Limestone, Light Pink & Lavender Dolomite
440-450'	Light Tan, Lavender Dolomite, White & Maroon Limestone
450-460'	Light Tan, Lavender Dolomite, White Limestone, Pink & White Sandstone
460-480'	Some White Sandstone, White to Lavender Limestone, Red Sandstone
480-490'	Red Sandstone
490-500'	Red Dolomite, White Tan & Pink Limestone
500-520'	Tan, Light Tan Yellow Lavender Dolomite
520-530'	Tan, Light Tan Limestone, Some White Limestone
530-540'	Light Tan to Yellow Limestone
540-550'	Light Tan to Yellow Limestone, White & Grey Chert
550-560'	Tan Limestone Some White & Pink Limestone
560-570'	Tan Limestone, Some Pink, White, Light Yellow Limestone
570-580'	White, Tan, Light Pink Limestone, Some Red Shale
	This could be the top of Madison.
580-590	White, Lt Pink to White Limestone, White Dolomite, Some Green & Yellow Clay
	This sample looks like Madison Limestone.
590-600'	White Limestone, White Dolomite, Red Shale
600-610'	Red Shale, White Limestone
610-620'	Red Shale, White Limestone, Some Pink to Red Limestone
620-630'	White Limestone, Red Shale, Red to Lavender Limestone
630-640'	White, Maroon Limestone, Some Red Shale
640-650'	White Limestone, Some Lavender Limestone
650-660'	White Limestone, Red Shale, Red Limestone
660-680'	White Limestone
680-690'	White Limestone, Red Shale, Light Tan, Light Pink Limestone
690-695'	White Limestone, Yellow Clay, Tan & Light Gray Limestone
695-700'	White, Yellow, Light Gray Limestone
700-710'	White, Light Pink, Tan, Yellow Limestone, Some Yellow & Red Clay
710-720'	Tan, Light Pink, White Limestone, Some Yellow Clay
720-730'	Light Pink, Light Yellow, White Limestone, Some Dark Tan Limestone
730-740'	White, Tan, Light Pink Limestone
740-750'	White to Light Yellow, Tan to Light Yellow Limestone
750-760'	White, Light Yellow Limestone
760-770'	Tan, Light Yellow, White Limestone
770-780'	Lavender, Tan Limestone
780-790'	Tan Limestone, some Lavender Limestone
790-800'	Tan, Lavender, Light Yellow Limestone, White Dolomite
800-810'	White Dolomite, Light Yellow Limestone, Some Tan Limestone
810-820'	White Dolomite
820-830'	Off White, Light Tan Dolomite
830-840'	Dark Tan, White Dolomite
840-850'	Tan to Off White Limestone
850-860'	Tan, Pink Limestone
860-870'	Off White Limestone

870-920'	Tan Limestone
920-930'	Tan Limestone, Tan Dolomite
930-960'	Off White to Light Tan Dolomite
960-980'	Off White Dolomites
980-990'	White Dolomite, Maroon Limestone
990-1000'	Light Gray, Maroon Limestone
1000-1010'	Maroon Limestone – Total Depth of Well

Formation Tops

Minnelusa	35 ft – 575 ft
Madison	575 ft – 985 ft
Englewood	985ft – 1010 ft

Air Development Test before Hydro. Stimulation

Static Water Level – 507 ft
 45 gpm @ 710 ft – 4 hrs
 70 gpm @ 1010 ft – 2 hrs

Air Development Test after Hydro. Stimulation

125 gpm @ 700 ft
 200 gpm @ 1000 ft



TAYLOR DRILLING CO.

2310 Commerce Road
RAPID CITY, SOUTH DAKOTA 57702-8062

RALPH L. TAYLOR, JR. (Randy)
KIM E. TAYLOR

TELEPHONE:
Office: (605) 348-3600
Fax: (605) 394-9409
After Hours: (605) 341-5417
or: (605) 787-4989

Recovery Test at Croyle II Well Friday March 5, 2010

Time	W.L Depth
2:28 PM	Hole Full
2:30 PM	55 Ft.
2:35 PM	155 Ft.
2:40 PM	237 Ft.
2:45 PM	301 Ft.
2:50 PM	351 Ft.
2:55 PM	391 Ft.
3:00 PM	421 Ft.
3:05 PM	445.6 Ft.
3:10 PM	463 Ft.
3:15 PM	474 Ft.
3:20 PM	485.7 Ft.
3:25 PM	495.3 Ft.

End of Recovery Test

TAYLOR DRILLING CO.

2310 Commerce Road
RAPID CITY, SOUTH DAKOTA 57702-8062

RALPH L. TAYLOR, JR. (Randy)
KIM E. TAYLOR

TELEPHONE:
Office: (605) 348-3600
Fax: (605) 394-9409
After Hours: (605) 341-5417
or: (605) 787-4989

Slug Test at Croyle II Well

Time	G.P.M	W.L Depth
12:50 PM	50	513.05
12:55 PM		452.6
1:00 PM		606.0
1:05 PM		373.4
1:10 PM		347.5
1:15 PM		326.7
1:20 PM		310.4
1:25 PM		296.1
1:30 PM		285.6
1:35 PM		275.0
1:40 PM		266.4
1:45 PM		256.0
1:50 PM	1:50pm start 100	249.6
1:55 PM	100	169.6
2:00 PM		107.0
2:05 PM		53.0
2:10 PM		Hole Full
2:28 PM	85 gpm	SURFACE-Hole Full

2607A3

Matt Hix
Ken Buhler

RECEIVED

March 31, 2010

Mr. Steven Pratt, Ground Water Program Director
EPA Region VIII
1595 Wynkoop Street
Denver, Colorado 80202

APR 01 2010

DEPT. OF ENVIRONMENT &
NATURAL RESOURCES
GROUND WATER PROGRAM

Re: **Determination of Jurisdiction**
Hydrostimulation of Drinking Water Well
Croyle II Well, South Dakota Water Right Permit 2607A-2
Colonial Pine Hills Sanitary District, Pennington County, South Dakota

Dear Mr. Pratt:

I am forwarding information regarding proposed hydrostimulation at the new Croyle II Well drinking water well in Pennington County, South Dakota. The Colonial Pine Hills Sanitary District proposes to hydrostimulate the newly constructed Madison aquifer drinking water well to increase water production of the well. The well was completed and air developed in February and March 2010. On behalf of the Colonial Pine Hills Sanitary District I am requesting a determination of jurisdiction and necessary permitting required, if any, for the proposed work.

The hydrostimulation will utilize potable drinking water pumped under pressures of 1,500 psi to 2,500 psi and flow rates of 500 to 1,500 gallons per minute. The injection fluid will be potable drinking water at approximately 55-60 degrees Fahrenheit with low concentrations of dye. The water quality parameters are the same as the water within the Madison formation as the water will be pumped from other local wells. The dye proposed is a biodegradable NSF approved fluorescein dye to track movement through the aquifer. A licensed well driller will coordinate the work.

Stimulation Program:

The well will be hydrostimulated with a pump truck and high pressure water injection for a period of 45 minutes to 2 hours. One or two sessions is anticipated to complete the stimulation. Hydrostimulation is a method of improving the yield of various types of well by opening and flushing out previously closed fractures with high pressure water. High pressure mechanical packers will be used in the well casing. The hydrostimulation flow rate of potable water is estimated at 900 gpm or higher with Quintex Pumps with a pressure of approximately 2,200 psi.

Fracturing, stimulation, or stress testing is a method employed in geotechnical investigations to assist in determination of in-situ rock strength. The basic

1560 Concourse Drive
Rapid City, SD 57703

www.cetecengineering.com

cetec

07196, 00/3/31/2010

P: 605-341-7800
C: 605-341-7804

method is to use packers to isolate the section of interest, then generate a fracture in this section by water pressurization and measure the orientation of this fracture using an impression packer. This information allows determination of the principal in-situ stress of the rock mass.

The proposed plan currently includes hydrostimulation, but could also include acidizing of the well with a mixture of hydrochloric acid and potable water. The mixture would be reviewed to ensure the acid is neutralized quickly through the aquifer. Please provide a determination of jurisdiction on the hydrostimulation and potential acidizing process for the new well. Please contact me at 605-341-7800 with any questions. The project is currently on hold pending these findings.

Sincerely,

CETEC Engineering Services, Inc.

A handwritten signature in cursive script, reading "Ted Schultz".

Ted Schultz, P.E.
Project Manager

cc: Jim Martin, CPHSD
Randy Taylor, Taylor Drilling
Perry Rahn, PhD
Matt Hix and Ken Buhler, SDDENR

Permit Nos. 2607-2 & 2607A-2
Upper Cheyenne River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have on this day, 6/4/2012, made a thorough examination of the water use system constructed by Colonial Pine Hills Sanitary District, 8251 Dunsmore Road, Rapid City, SD 57702 holder of Permit No. 2607A-2, bearing the priority date of December 18, 2006. Permit No. 2607A-2 authorizes changing the location of the well authorized by Permit No. 2607-2. Permit No. 2607A-2 is authorized to appropriate a total of 0.66 cfs (300 gpm) from one groundwater well (Madison Aquifer) for suburban housing purposes, in Pennington County.

Inspection contact and relationship to
 permit holder, if applicable:

Mike,
(Operator)

A. Works used to divert the water:

Grundfos submersible pump – 230 gpm capacity (0.51 cfs).

B. Works used to transport water to place of use:

Suburban housing distribution lines.

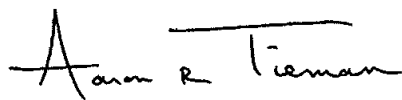
The system is in the following condition good. The point of diversion (well) is located specifically at Lat/Lon – N44.009277/W-103.297400 which is the approximately 60 feet south and 1360 feet west of the NE corner of Section 32, T1N-R7E. The works are capable of diverting 0.51 cfs which is to be used for suburban housing purposes.

Water has been put to beneficial use and should be licensed for 0.51 cfs.

All structures, wells and lands on map Y

Exceptions to compliance are: none.

Comments: This permit changes the location of the well authorized by Permit No. 2607-2. Applicable portions of Permit No. 2607-2 should be incorporated into Permit No. 2607A-2.



Aaron Tieman
 Natural Resources Engineer II
 DENR, Water Rights Program

Date report completed: June 30, 2015

FIELD INVESTIGATION REPORT FOR TEMPORARY PERMIT NOS. 2607-2 & 2607A-2

DATE OF INVESTIGATION:	June 4, 2012
NAME & ADDRESS OF PERMIT HOLDER	Colonial Pine Hills Sanitary District 8251 Dunsmore Road Rapid City, SD 57702
INVESTIGATION CONTACT/ RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE	Mike (Operator)
DIVERSION POINT LEGAL LOCATION	N½ NE¼ Section 32, T1N-R7E
WATER SUPPLY SOURCE	Groundwater, Madison Aquifer

Other permit(s) associated with the project:

WELL INFORMATION:

- 1) Well Drilling Firm: **Taylor Drilling**
- 2) No. of Wells **One**
- 3) Depth(s) **1110** feet
- 4) Well log is available **yes**
- 5) Comment:

Casing:

- 1) Diameter: **13³/₈** inches Diameter: **9⁵/₈** inches
- 2) Length: **40** feet Length: **727** feet
- 3) Type: **Steel** Type: **Steel**

4) Screen:

- 1) Type: **Open Hole**
- 2) Length: **N/A** feet
- 3) Static water level: **N/A**

Pump:

- 1) Make: **Grundfos**
- 2) Model: **230S600-12**
- 3) Capacity: **230** GPM

Motor:

- 1) Make: **Franklin**
- 2) Model No.: **2396045821**
- 3) Horsepower rating: **100** hp

DISTRIBUTION LINES OR CANALS:

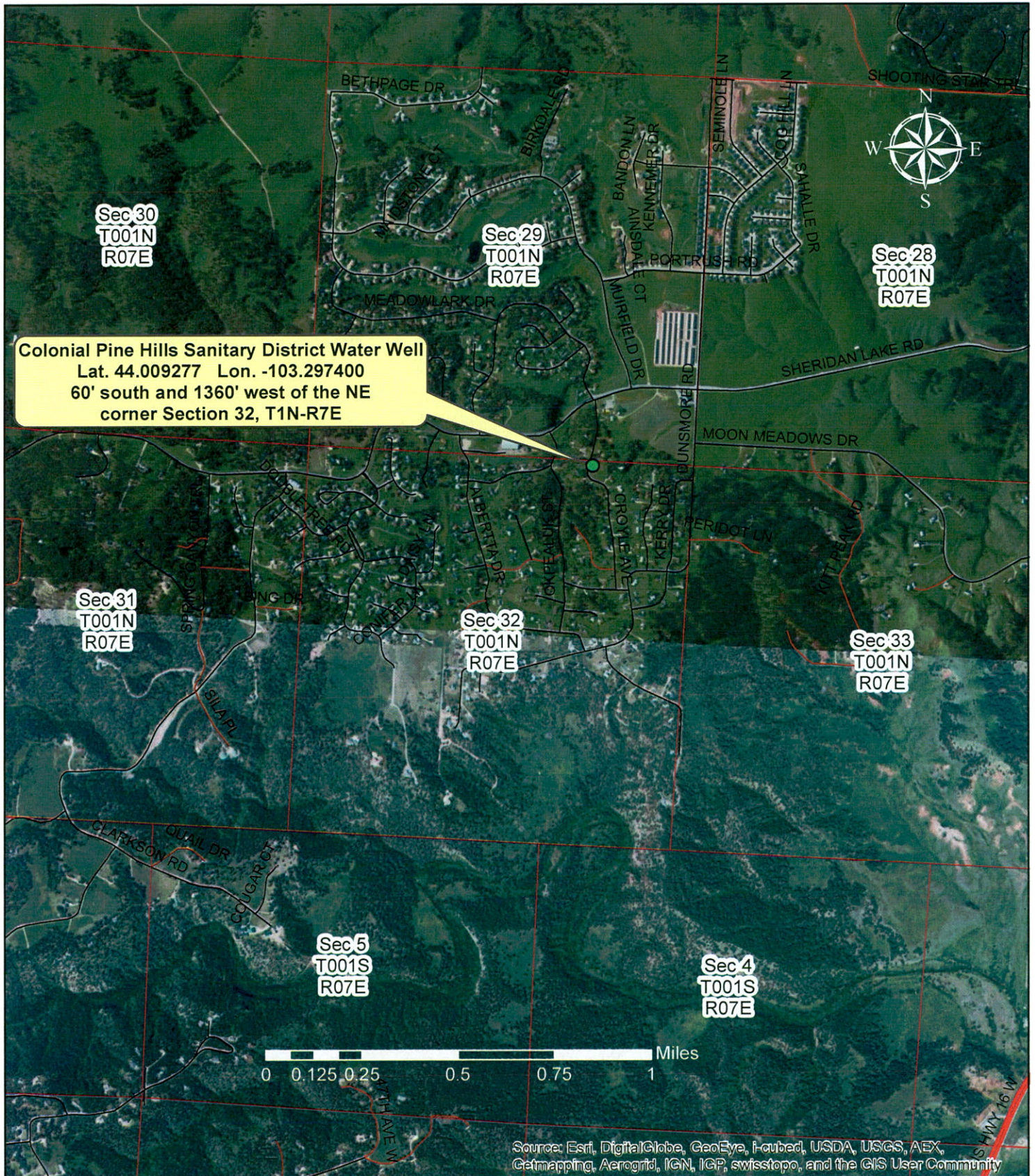
- 1) Type: **Suburban housing distribution lines.**

PERMIT QUALIFICATIONS:

- 1) Special qualifications to permit being abided by **Yes**
- 2) All structures, wells and lands on map **Yes**

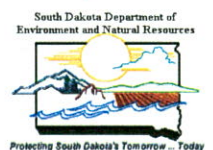
COMMENTS: This permit changes the location of the well authorized by Water Permit No. 2607-2.

Water Right 2607-2 & 2607A-2
Colonial Pine Hills Sanitary District
June 4, 2012



Aaron R. Tieman

Aaron Tieman
Natural Resources Engineer II
DENR Water Rights Program



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCESJOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

AUG 27 2015

2607-2
2607A-2Jim Martin, Mgr
Colonial Pine Hills Sanitary District
8251 Dunsmore Rd
Rapid City SD 57702 8950

Dear Mr. Martin:

Enclosed is Water License No. 2607A-2. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 2607A-2, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

Note: Upon licensing, the applicable portions of Water Permit No. 2607-2 were incorporated into Water License No. 2607A-2.

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 2607A-2**

(1) Colonial Pine Hills Sanitary District, 8251 Dunsmore Rd, Rapid City SD 57702-8950 made Application No. 2607A-2, May 29, 2008 for a water permit to change the location of the well authorized under Water Permit No. 2607-2. The project is located in Pennington County, South Dakota. Permit No. 2607A-2, with a priority date of December 18, 2006 was approved August 18, 2008 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before February 12, 2012 and the application to beneficial use of water on or before February 12, 2016.

Water Permit No. 2607-2, with a priority date of December 18, 2006, authorized diversion of 0.66 cubic feet of water per second with an annual volume of 150 acre feet from one well completed into the Madison Aquifer. The water is used for suburban housing development purposes. Water Permit No. 2607A-2 allowed for a change in location of the well with no increase in the diversion rate.

The applicable portions of Water Permit No. 2607-2 are incorporated into Water License No. 2607A-2.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 0.51 cubic feet of water per second (150 acre feet annually) for beneficial use. The location of the diversion point is approximately 60 feet south and 1,360 feet west of the NE corner of Section 32, T1N, R7E (N ½ NE ¼).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use.

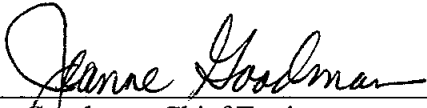
(4) Pursuant to South Dakota Water Law 46-5-30.1 Colonial Pine Hills Sanitary District, 8251 Dunsmore Rd, Rapid City SD 57702-8950 the holder and/or owner of Incorporated Water Right No. 2607A-2 is issued a license to appropriate water, the right to use 0.51 cubic feet of water per second (150 acre feet annually) from ground water, one well (Madison Aquifer) with a priority date of December 18, 2006 from the location specified in (2) of this license for suburban housing development purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Incorporated Water Right No. 2607A-2 and subject to the following qualifications:

- In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2607A-2 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the Permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2607A-2 may also be cancelled for non-construction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1, and Board Rule ARSD 74:02:01:37.
- The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.

continued

- The well authorized by Permit Nos. 2607-2 and 2607A-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28. *The well was completed in April, 2010 by Taylor Drilling Inc. A copy of the log is on file with the Water Rights Program.*
- Colonial Pine Hills Sanitary District shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.



Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

AUG 27 2015

date

