



May 28, 2015

Alex Fischer, P.G.  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, CO 80203

**RE: Review of Form 28 Centralized E&P Waste Management Facility Permit  
Facility ID #441234, De Beque Water Station  
Black Hills Exploration and Production  
SESE Section 29, T8S, R97W, 6<sup>th</sup> PM, Mesa County, Colorado**

Dear Mr. Fischer:

In response to your comment letter dated May 4, 2015, we have prepared additional information for the above-referenced project to address COGCC's comments and concerns. All comments that had a COGCC Comment of "None" were not addressed in our responses. The following information reiterates your comments and our specific responses to each comment as follows:

**Design Report**

17. Form 28, Question 17.

Has financial assurance been provided as required by Rule 704? Answer: Yes.

**COGCC Comment:** Currently, there is a \$500,000 bond in place as a condition of approval of Pit Facility ID: 439235 and Form 2A (Document Number 400556701). A Financial Assurance Cost Estimate was provided with the submittal. Prior to approval, financial assurance shall be provided. Black Hills can provide the approximate additional \$1.5M financial assurance, however, the COGCC is currently having a third party review the closure of the facility and prepare an independent closure cost estimate. Based on the third party review, the financial assurance may be less than the estimated \$2M or more than the estimated \$2M.

***Response: Black Hills will wait for the results from the third party review before providing the additional financial assurance.***

20. Form 28, Question 20.

Have permits and notifications required by local governments and other agencies been provided? Answer: Yes.

**COGCC Comment:** Are there any additional permit requirements from the Colorado Division of Water Resources (DWR) for the two "Minor Jurisdictional Dams" and from State of Colorado or Mesa County for the underground storage tank (UST) for the collection of oil/condensate, or any other permits?

***Response: Black Hills has received approval for construction for Ponds 2 and 3 from the Colorado DWR. The approvals are included in Attachment A. The Colorado Department of Labor and Employment***

***– Division of Oil and Public Safety has been consulted regarding the UST. The Release Prevention Supervisor, Zach Hope, determined that this tank is exempt under the Petroleum Storage Tank Regulations (7 C.C.R. 1101-14) Section 2-1-1(b)(1) through 2-1-1(b)(15) and does not require permitting through their division.***

Introduction:

**COGCC Comment:** Provide clarification of Black Hills operations and pipeline infrastructure in how fluids are transferred to and from the De Beque Water Station.

***Response: Fluids are transferred to and from the De Beque Water Station via a network of existing and newly constructed pipelines. See the pipeline exhibit located in Appendix I of the Form 28 permit for the pipeline locations and sizes. A majority of this pipeline network were existing gas lines that have been converted to fluid pipelines. The fluids will be pumped out of each produced water storage pond via a submersible pump located in the bottom of the pond to the pump station building. In the pump station building, the fluids will be pumped through a multi-stage centrifugal 2,000 HP pump. This pump has the capacity and power to convey this water to the desired frac site or a future booster pump site as necessary.***

See comments above to Question 20 regarding the DWR. Provide the appropriate permits approved by the DWR for the non-jurisdictional dam (Pond 1, Pit Facility ID: 439235) and for the minor jurisdictional dams (Ponds 2 and 3).

***Response: Pond 1 was measured by the DWR to justify the construction of the pond as a non-jurisdictional pond. A memo from the DWR confirming that Pond 1 is a non-jurisdictional pond has been included in Attachment A. Approval letters from DWR for construction for Ponds 2 and 3 are located in Attachment A.***

COGCC Rules:

**COGCC Comment:**

*Rule 902.a*

Are the Hexprotect floating tiles acceptable to the Colorado Division of Park and Wildlife (CDPW) for the protection of waterfowl and other birds from coming in contact with water in the pits?

***Response: The Hexprotect floating tiles were presented to Jim Komatinsky at the Colorado Parks and Wildlife Department. An approval email from Jim is located in Attachment A.***

*Rule 902.b*

The COGCC is not aware of the "Draft Policy Memorandum No. 01-14." Produced Water Pond Dams." What is the source for this document?

**Response:** *Garrett Jackson from the Colorado Division of Water Resources supplied this document to WWC. He stated that he has worked with Alex Fischer from COGCC and Charles Johnson from CDPHE to draft this document and that it is still in DRAFT form. However, Black Hills is complying with this document to satisfy DWR concerns.*

*Rule 902.c*

It is stated that, *“When produced water is returned to the facility it will run through a secondary oil skimming chamber located within the proposed pump station before it will be stored in the lined Pond. Any oil or condensate collected from the skimming chamber will be stored in a buried tank outside of the building.”*

- What is the capacity of the skimming chamber?
- What is the capacity of the buried tank (underground storage tank, UST)?
- What are the design elements of the UST?
- Does this UST need to be permitted by other agencies or entities?

Provide the location of these features on the Facility Layout drawing.

**Response:**

- *The oil skimming chamber has inside dimensions of 30 feet long by 10 feet wide by 7 feet high. The tank has 2 feet of freeboard and has a water surface depth of 5 feet. There is an overshot and undershot baffle integrated into the skimming chamber. See the skimming chamber detail located in Attachment B. The capacity of the skimming chamber is 1,460 cubic feet or 350,000 gallons.*
- *The capacity of the UST is 3,000 gallons to store skimmed condensate.*
- *The UST is 16'-9" long and has an inside diameter 6'-0". See the drawings and product shop drawing submittal located in Attachment B.*
- *The Colorado Department of Labor and Employment – Division of Oil and Public Safety has been consulted regarding the UST. The Release Prevention Supervisor, Zach Hope, determined that this tank is exempt under the Petroleum Storage Tank Regulations (7 C.C.R. 1101-14) Section 2-1-1(b)(1) through 2-1-1(b)(15) and does not require permitting through their division.*
- *A facility layout drawing has been included in Attachment B showing the skimmed oil tank located on the north side of the pump station building. The oil skimming chamber is located inside the pump station building in the northwest corner and is represented by the dashed lines.*

*Rule 908.b.(9).B.*

It is stated that, *“Black Hills has installed three monitoring wells to a depth of 100-feet (one up-gradient and two down-gradient) but has not encountered groundwater to a*

*depth of 100 feet below ground surface.”... Black Hills request to be exempted from the groundwater monitoring requirements due to the significant depth to groundwater at this site and the construction of all ponds with dual liners and leak detection.”*

- Provide construction details of the monitoring wells.
- What is the purpose for the three monitoring wells, as they were not completed to groundwater?
- What is the depth to groundwater at this Facility?

Several water wells are located within a one-mile radius and at least two water wells within a quarter of a mile and one-half mile. These wells indicate the depth to static ground water up to 27 feet below ground surface (bgs). Please provide an explanation.

**Response:**

- ***The monitoring wells were constructed using a PVC casing to a depth of 100 feet with the bottom 80 feet being perforated pipe to allow ground water to percolate through, if the groundwater level were to reach this elevation. The well construction and test reports are provided in Attachment C.***
- ***The purpose of the three monitoring wells was to get bore logs for soil analysis and to monitor for the potential of shallow ground water. With groundwater not being encountered in the first 100 feet, it was determined that this site does not have shallow groundwater. With the groundwater depth being 100 plus feet below the surface and the deepest pond excavation being around 20 feet, the facility will have at least 80 feet of separation to groundwater which is more than adequate.***
- ***The depth to groundwater at the Facility is greater than 100 feet.***
- ***The well logs that were shown in Appendix B of the Form 28 submittal are summarized and shown on an updated Exhibit 7. Wells with permit No. 45237 and No. 292780 show a static water level of 27 feet and 36 feet, respectively. The total well depth for permit No. 45237 is 304 feet and the perforated casing depth is 220 feet to 270 feet (the depth at which the water is entering the well). The total well depth for permit No. 292780 is 430 feet and the perforated casing depth is 370 feet to 410 feet. These results show that these wells are drawing water from a confined aquifer and the artesian pressure of the aquifer causes the static water level to rise to the potentiometric surface.***

Exhibits:

**COGCC Comment:** Exhibit 1 is showing a 20' truck access road (10' fire lane with 10' buffer zone), the leader is pointing to what appears to be an access road and not the Fire Lane and Buffer Zone. Please clarify.

***Response: This road functions as both an access road to the laydown yard and pump station, as well as a fire lane with buffer zone.***

Provide detail of the skimming chamber and UST.

***Response: Details of the oil skimming chamber and UST have been included in Attachment B.***

Appendix C – Closure Plan and Cost Estimate:

**COGCC Comment:** Currently, there is a \$500,000 bond in place as a condition of approval of Pit Facility ID: 439235 and Form 2A (Document Number 400556701). A Financial Assurance Cost Estimate was provided with the submittal. Prior to approval, financial assurance shall be provided. Black Hills can provided the approximate additional \$1.5 M financial assurance, however, the COGCC is currently having a third party review the closure of the facility and prepare an independent closure cost estimate. Based on the third party review, the financial assurance may be less than the estimated \$2M or more than the estimated \$2M.

Cost for the abandonment of monitoring wells in accordance with the State of Colorado Engineers Office (SEO) should be included. Soil sampling and confirmation soil sampling shall be included with a focus in those areas more susceptible to potential impact. The removal and disposal of the UST should be included.

***Response: Black Hills will wait for the results from the third party review before providing the additional financial assurance. The cost of abandonment of monitoring wells was included as item no. 503. Long term soil sampling was included as item no. 502. The removal and disposal of the UST was not originally included in the reclamation cost. This item was added as item no. 325 at the cost of \$20,000. An updated overall site reclamation cost estimate has been included in Attachment D.***

Appendix E – Wildlife BMP Plan:

**COGCC Comment:** See previous comments regarding the Hexprotec floating tiles.

***Response: The Hexprotect floating tiles were presented to Jim Komatinsky at the Colorado Parks and Wildlife Department. An approval email from Jim is located in Attachment A.***

Appendix F – Spillway Policy Memorandum NO. 01-14:

**COGCC Comment:** See previous comment under Rule 902.b

***Response: Garrett Jackson from the Colorado Division of Water Resources supplied this document to WWC. He stated that he has worked with Alex Fischer from COGCC and Charles Johnson from CDPHE to draft this document and that it is still in DRAFT form. However, Black Hills is complying with this document to satisfy DWR concerns.***

Appendix G – Facility Design:

**COGCC Comment:** See previous comments regarding non-jurisdictional dam and minor jurisdictional size dams, “*Observations of groundwater levels during drilling as well as after completion of each borehole. Boreholes were drilled to depths of 30 feet and 100 feet below the ground surface, and groundwater was not observed or encountered in any of the boreholes.*”

Moist, wet, or groundwater was not mentioned on the boring logs and it is stated elsewhere in the submittal that groundwater was not observed in the monitoring wells. Clarify the statement, “*Observations of groundwater levels occurred during drilling as well as after completion of each borehole...*”

**Response:** *To clarify the statement it has been changed to say “There were attempted observations to observe groundwater levels during drilling as well as after completion of each borehole, but groundwater was never observed.”*

Provide monitoring well construction details.

**Response:** *The monitoring wells were constructed using a metal casing to a depth of 100 feet with the bottom 80 feet being perforated pipe to allow ground water to percolate through, if the groundwater level were to reach this elevation. The well construction and test reports are provided in Attachment C.*

Is there any emergency response control valves associated with this Facility?

**Response:** *There are a number of valves located within the pump station building that give the operator the flexibility to shut down or isolate incoming/outgoing flows. An exhibit was created for the De Beque Fire Station Department showing the location of these valve shut offs. This exhibit has been included as Exhibit C.*

Appendix I – Water Analysis Data:

**COGCC Comment:** Has any sampling and analysis been performed for volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs)?

**Response:** *Black Hills has sampled and analyzed produced water from their separators at HDU 9-41 within the Homer Deep Unit in April of 2015. These samples are representative of the water quality that will be sent to this facility. A copy of the water quality results is included in Attachment E.*

The most current analytical data is from 2007 with data going back to 1996. Is there more recent analytical data (including VOCs and SVOCs) that is representative of fluids that will be placed in the Pit Facility's?

**Response:** *Black Hills has sampled and analyzed produced water from their separators at HDU 9-41 within the Homer Deep Unit in April of 2015.*

***These samples are representative of the water quality that will be sent to this facility. A copy of the water quality results is included in Attachment E***

Provide pipeline testing results as part of the annual report submittal. Submit a GIS map with information in a suitable format showing the location of flowlines, type of pipe used in each segment, monitor points, valve locations, booster pump locations (if any) from the Homer Deep Unit, Winter Flats Unit and Horseshoe Canyon Unit. Provide and update as part of the annual report.

***Response: As part of an annual report, pipeline testing results and GIS data will be provided.***

Appendix J – Operating Plan:

**COGCC Comment:** Provide schematic and location of truck load out.

***Response: A schematic of the truck load out has been provided in Attachment F. The truck load out is located on the north side of the pump station pump and is adjacent to the UST. See the floor plan in Attachment B for the truck load out location.***

See previous comments regarding the UST oil and or condensate accumulation and storage.

***Response: See previous comment responses under Rule 902.c.***

See previous comments regarding the monitoring wells. If the wells are dry and groundwater is not anticipated, should they be properly abandoned?

***Response: The monitoring wells will remain in place and will be checked periodically to see if the groundwater depth has fluctuated and risen to a depth less than 100 feet. When the facility is at the end of its useful life and needs to be reclaimed, the monitoring wells will be properly plugged and abandoned.***

Down gradient surface water features should be considered for water sampling and monitoring. Do the Reservoir Ditch and other canals and ditches flow continuously throughout the year?

***Response: As part of the COA from COGCC for Pond 1, COA 32 required that surface water samples be collected prior to use and once every 12 months. Upstream and downstream surface water will be sampled. The Reservoir Ditch and other canals and ditches are considered ephemeral drainages and only receive flows during peak runoff events and infrequently during the irrigating months only when water is available.***

Is the leak detection system for the three pits manual or automated?

***Response: The leak detection system will be automated using a magnetic float switch and tied into the SCADA system to alert personnel as soon as a leak is detected.***

Appendix K – Emergency Response Plan:

**COGCC Comment:** If and when emergency contact names and numbers change, COGCC shall be notified.

**Response:** *COGCC will be notified if emergency contact names and numbers change.*

Form 28 Construction Drawings:

I. De Beque Produced Water Reuse facility – Pond 1:

**COGCC Comment:** Sheet 21 of 49 shows a permanent seeded mound approximately 50 feet by 200 feet in dimension near the northwest corner of Pond 1. This feature is noted as a “Berm” on Exhibit 4 (which is mislabeled as Exhibit 2) and appears to be located on the adjacent parcel to the west. Please clarify.

**Response:** *The parcel to west was acquired by Black Hills through means of a boundary line relocation. This boundary line relocation has been filed at the Mesa County Clerk and Recorder’s Office and the parcel number is 2444-293-00-282. This berm has been proposed to block the view of the office building from the adjacent land owner’s residence.*

II. De Beque Produced Water Reuse Facility – Pond 2:

**COGCC Comment:** Sheet 11 of 29 shows the top of berm sloping away from the pits at 3%, the typical berm cross section on sheet 6 of 29 shows a 2% cross slope, please clarify.

**Response:** *The top of berm slope of 3% shown on Sheet 11 is an error and has been corrected to 2%. An updated Sheet 11 that shows the correct slope is located in Attachment G.*

**COGCC Comment:** No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. Operators shall submit a Colorado P.E. approved/stamped as-built drawing of the pit within 30 days of construction completion certifying the volume of the pit, and the available freeboard.

**Response:** *Pond 2 will be constructed using fill material to hold liquids. The pits and fill slope have been designed and certified by a P.E. See the Geotechnical Report located in Appendix G of the Form 28 submittal for an analysis of the fill slopes. During construction of the pit, supervision will be provided by the P.E. or their agent. The entire base of the pit is in cut. The Operator will submit a Colorado P.E. approved/stamped set of as-built drawings of the pit within 30 days of construction completion certifying the volume of the pit, and the available freeboard.*



III. De Beque Produced Water Reuse Facility – Pond 3:

**COGCC Comment:** Sheet 11 of 28 shows the top of berm sloping away from the pits at 3%, the typical berm cross section on sheet 6 of 28 shows a 2% cross slope, please clarify.

**Response:** *The top of berm slope of 3% shown on Sheet 11 is an error and has been corrected to 2%. An updated Sheet 11 that shows the correct slope is located in Attachment E.*

**COGCC Comment:** *No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. Operators shall submit a Colorado P.E. approved/stamped as-built drawing of the pit within 30 days of construction completion certifying the volume of the pit, and the available freeboard.*

**Response:** *Pond 3 will be constructed using fill material to hold liquids. The pits and fill slope have been designed and certified by a P.E. See the Geotechnical Report located in Appendix G of the Form 28 submittal for an analysis of the fill slopes. During construction of the pit, supervision will be provided by the P.E. or their agent. The entire base of the pit is in cut. The Operator will submit a Colorado P.E. approved/stamped set of as-built drawings of the pit within 30 days of construction completion certifying the volume of the pit, and the available freeboard.*

The revised Form 28 submittal is attached for your review. It is our sincere hope that these comments have been adequately addressed and that the **De Beque Water Station Form 28 submittal** be approved as soon as possible. Please do not hesitate to contact us should you have any further questions or require additional clarification.

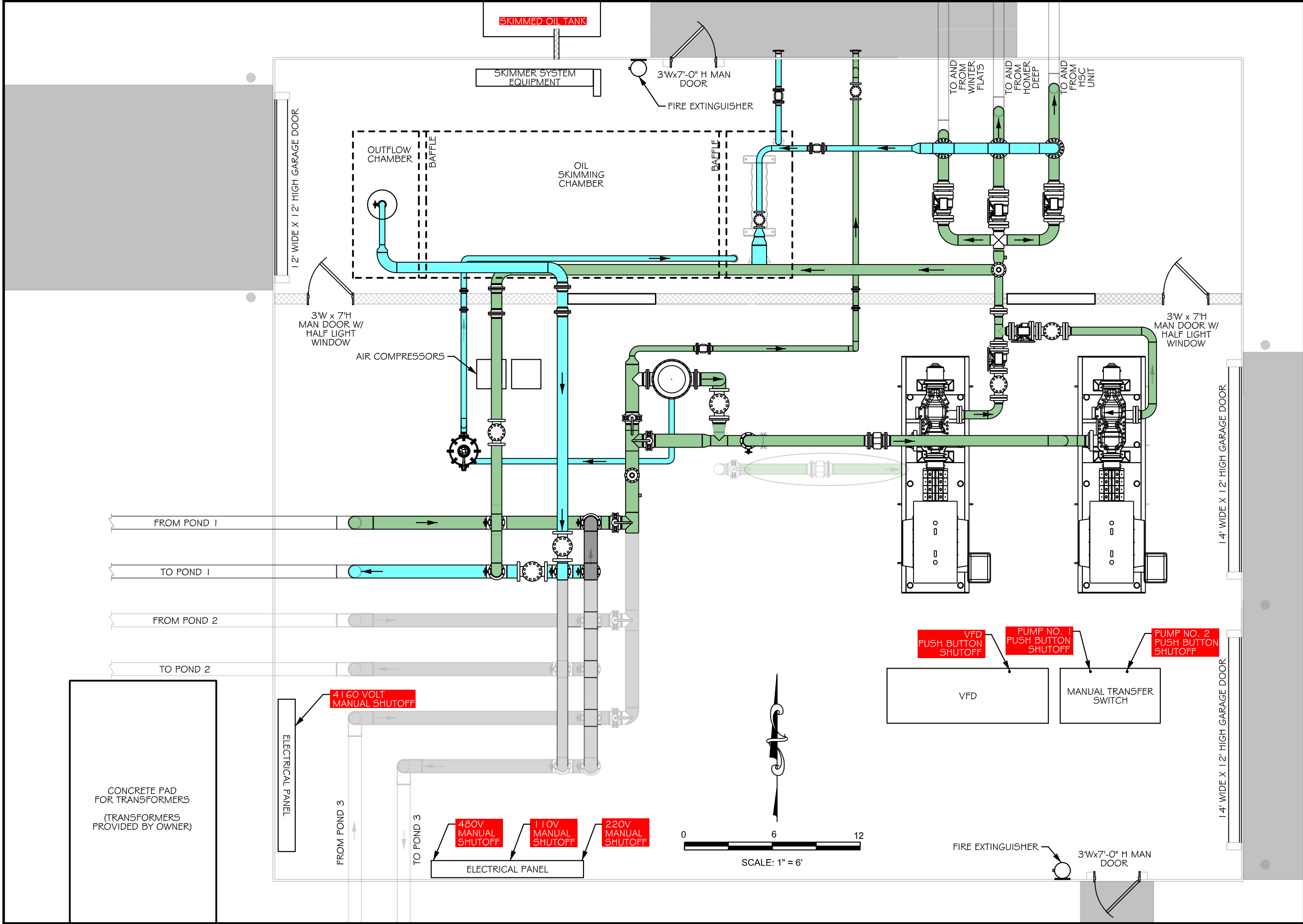
Sincerely,

Shawn Higley, P.E.  
Branch Manager

cc: Black Hills, File

Encl.: As Noted  
DP

# EXHIBITS



**DE BEQUE WATER STATION**

**PUMP STATION BUILDING LAYOUT**

**EXHIBIT**

**C**

DSGN	DATE	CKD
MMZ	5/7/15	STH
REV	DATE	CKD

**JOB # 2013-134**

**WVC ENGINEERING**

1275 MAPLE STREET, SUITE F  
HELENA, MT 59601  
(406) 443-3962

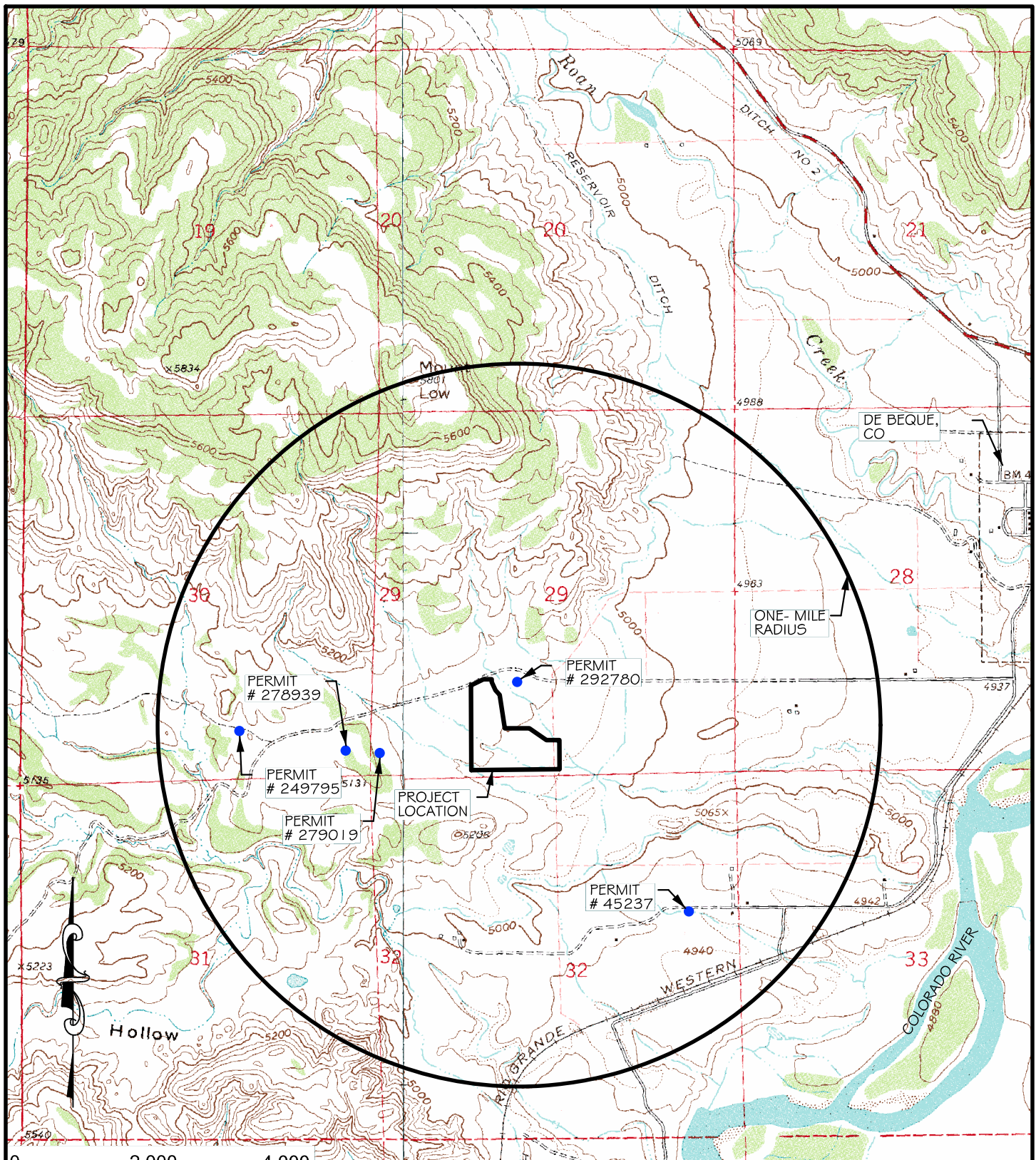
**Black Hills Exploration & Production**

2350 G Road, Suite 101  
Grand Junction, CO 81505

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EXPRESS WRITTEN AUTHORIZATION.

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0 2,000 4,000  
SCALE: 1" = 2,000'

**LEGEND**  
● WATER WELL  
DATA RETRIEVED FROM THE COLORADO  
DEPARTMENT OF NATURAL RESOURCES,  
WATER RESOURCES DIVISION,  
COLORADO'S WELL PERMIT SEARCH

Well Information				
Permit No.	Date Drilled	Static Water Level	Total Depth of Well	Perforated Casing Depth
45237	1971	27'	304'	220' to 270'
249795	2004	325'	680'	513'
278939	2008	90'	482'	422' to 482'
279019	2013	106'	344'	264' to 344'
292780	2014	36'	430'	370' to 410'

**EXHIBIT**  
7

**DE BEQUE WATER STATION  
SECTION 29, T8S, R97W 6TH P.M.  
ONE MILE WATER WELL MAP**

DSGN	DATE	CKD
MMZ	10/20/14	STH
REV	DATE	CKD
TAS	2/20/15	STH
MMZ	5/8/15	

**APPLICANT:**  
**Black Hills Exploration & Production**  
1515 WYNKOOP ST., SUITE 500  
DENVER, CO 80202  
(303) 566-3356

**WWC ENGINEERING**  
1275 MAPLE STREET, SUITE F  
HELENA, MT 59601  
(406) 443-3962

# **ATTACHMENT A**

## **COLORADO DWR APPROVALS**





**COLORADO**  
Division of Water Resources  
Department of Natural Resources

Dam Safety Branch

May 6, 2015

Mr. Shawn Higley, P.E.  
WWC Engineering  
1275 Maple Street, Suite F  
Helena, MT 59601  
[shigley@wwcengineering.com](mailto:shigley@wwcengineering.com)

VIA EMAIL

When replying, please refer to:  
**DEBEQUE WATER STATION POND 2 DAM,**  
**DAMID 700108**  
Water Division 5, Water District 70  
Construction File No. C-2030

**SUBJECT:** Approval of Plans and Specifications for Construction and Approval of Hazard Classification Study

Dear Mr. Higley,

Thank you for submitting plans and specifications for the proposed construction of the DeBeque Water Station Pond 2 dam for approval by the Office of the State Engineer. The DeBeque Water Station Pond 3 is located in Mesa County, Colorado. This project consists of construction of a lined pond for storage of water produced by oil and gas operations. Pond 2 is one of three ponds on the site, with Pond 3 also being jurisdictional and Pond 1 being non-jurisdictional in size.

We have completed our review of the design and construction documents and found them acceptable for construction. We are transmitting one copy of the construction drawings cover sheet and specifications cover sheet and signature page with approval signatures digitally as digitally signed PDF files. Our acceptance and approval of these documents are effective as of the date of this letter.

This letter also serves as our acceptance of the Hazard Classification study submitted May 8, 2014, for DeBeque Water Station Pond 2. We agree with the analyses that were performed, and agree that the dam, if constructed as shown in the report and on the approved drawings, will be classified as a Low hazard dam.

The construction of this project must be performed under the purview of a professional engineer registered in the State of Colorado. Your attention is directed to Rule 9.2 (copy enclosed) of the Rules and Regulations concerning construction observations, coordination, and documentation activities required for this minor size, Low hazard dam. Please keep Mr.



Mr. Shawn Higley, P.E.  
DeBeque Water Station Pond 2 Dam, Construction Approval Letter  
DAMID 700108, Construction File No. C-2030  
May 6, 2015  
Page 2 of 2

Garrett Jackson of our Grand Junction office at (970) 245-8355 informed of the construction status so he may also meet our obligations under Rule 9.

Please submit "As-Constructed" documents including mylar reproductions of the approved drawings with a wet signature and date on the "as-constructed" statement. In addition, please include one set of drawings in PDF format, upon completion of construction. Final acceptance of the construction will be contingent upon our receipt and acceptance of the "As-Constructed" drawings, as well as the other requirements of Rule 10 (copy enclosed) of the Rules and Regulations.

We also request that you submit the final cost information for the completed project along with your Rule 10 submission; the Dam Safety Branch is developing a dam construction cost database and your final cost information will be utilized anonymously in that database. The database when fully developed will be used as a resource for dam engineers and dam owners statewide.

We look forward to working with WWC Engineering and Black Hills Plateau Production on the successful completion of this project. Please do not hesitate to call me at (719) 530-5536 if you have any questions concerning this matter or any other dam safety related issues.

Sincerely,

William T. McCormick, III, P.E., P.G.  
Chief, Dam Safety Branch  
*for*, Deputy State Engineer

Enc: Copies of Rule 9 and 10 of the "Rules and Regulations for Dam Safety and Dam Construction"

ec: Alan Martellaro, Division Engineer  
Ben Krause, District 70 Water Commissioner  
Erin Gleason, Dam Safety Engineer  
Garrett Jackson, Design Review Engineer  
Jeremy Franz, Design Review engineer  
Brett Hurlbut, Black Hills Plateau Production, [Brett.Hurlbut@blackhillscorp.com](mailto:Brett.Hurlbut@blackhillscorp.com)  
Drew Pearson, WWC Engineering, [dpearson@wwcengineering.com](mailto:dpearson@wwcengineering.com)





**COLORADO**  
Division of Water Resources  
Department of Natural Resources

Dam Safety Branch

April 21, 2015

Mr. Shawn Higley, P.E.  
WWC Engineering  
1275 Maple Street, Suite F  
Helena, MT 59601  
[shigley@wwcengineering.com](mailto:shigley@wwcengineering.com)

VIA EMAIL

When replying, please refer to:  
**DEBEQUE WATER STATION POND 3 DAM,**  
**DAMID 700109**  
Water Division 5, Water District 70  
Construction File No. C-2031

**SUBJECT:** Approval of Plans and Specifications for Construction and Approval of Hazard Classification Study

Dear Mr. Higley,

Thank you for submitting plans and specifications for the proposed construction of the DeBeque Water Station Pond 3 dam for approval by the Office of the State Engineer. The DeBeque Water Station Pond 3 is located in Mesa County, Colorado. This project consists of construction of a lined pond for storage of water produced by oil and gas operations. Pond 3 is one of three ponds on the site, with Pond's 2 also being jurisdictional and Pond 1 being non-jurisdictional in size.

We have completed our review of the design and construction documents and found them acceptable for construction. We are transmitting one copy of the construction drawings cover sheet and specifications cover sheet and signature page with approval signatures digitally as digitally signed PDF files. Our acceptance and approval of these documents are effective as of the date of this letter.

This letter also serves as our acceptance of the Hazard Classification study submitted May 8, 2014, for DeBeque Water Station Pond 3. We agree with the analyses that were performed, and agree that the dam, if constructed as shown in the report and on the approved drawings, will be classified as a Low hazard dam.

The construction of this project must be performed under the purview of a professional engineer registered in the State of Colorado. Your attention is directed to Rule 9.2 (copy enclosed) of the Rules and Regulations concerning construction observations, coordination, and documentation





Mr. Shawn Higley, P.E.  
DeBeque Water Station Pond 3 Dam, Construction Approval Letter  
DAMID 700109, Construction File No. C-2031  
April 21, 2015  
Page 2 of 2

activities required for this minor size, Low hazard dam. Please keep Mr. Garrett Jackson of our Grand Junction office at (970) 245-8355 informed of the construction status so he may also meet our obligations under Rule 9.

Please submit "As-Constructed" documents including mylar reproductions of the approved drawings with a wet signature and date on the "as-constructed" statement. In addition, please include one set of drawings in PDF format, upon completion of construction. Final acceptance of the construction will be contingent upon our receipt and acceptance of the "As-Constructed" drawings, as well as the other requirements of Rule 10 (copy enclosed) of the Rules and Regulations.

We also request that you submit the final cost information for the completed project along with your Rule 10 submission; the Dam Safety Branch is developing a dam construction cost database and your final cost information will be utilized anonymously in that database. The database when fully developed will be used as a resource for dam engineers and dam owners statewide.

We look forward to working with WWC Engineering and Black Hills Plateau Production on the successful completion of this project. Please do not hesitate to call me at (719) 530-5536 if you have any questions concerning this matter or any other dam safety related issues.

Sincerely,

William T. McCormick, III, P.E., P.G.  
Chief, Dam Safety Branch  
*for*, Deputy State Engineer

Enc: Copies of Rule 9 and 10 of the "Rules and Regulations for Dam Safety and Dam Construction"

ec: Alan Martellaro, Division Engineer  
Ben Krause, District 70 Water Commissioner  
Erin Gleason, Dam Safety Engineer  
Garrett Jackson, Design Review Engineer  
Jeremy Franz, Design Review engineer  
Brett Hurlbut, Black Hills Plateau Production, [Brett.Hurlbut@blackhillscorp.com](mailto:Brett.Hurlbut@blackhillscorp.com)  
Drew Pearson, WWC Engineering, [dpearson@wwcengineering.com](mailto:dpearson@wwcengineering.com)





**COLORADO**  
Division of Water Resources  
Department of Natural Resources

Dam Safety Branch

March 26, 2015

Mr. Shawn T. Higley, P.E.  
WWC Engineering  
1275 Maple Street, Suite F  
Helena, MT 59601  
[shigley@wwcengineering.com](mailto:shigley@wwcengineering.com)

VIA email

When replying, please refer to:  
**DEBEQUE POND #1 dam, DAMID 700110**  
Water Division 5, Water District 70

**SUBJECT:** Verification of construction

Dear Mr. Higley,

As requested by Mr. Drew Pearson of your office, I have observed the completed construction of the DeBeque Pond #1 dam. I confirmed by field measurements that the dam was constructed as a non-jurisdictional water impoundment according to our Rules and Regulations for Dam Safety and Dam Construction.

Please do not hesitate to call if you have any questions.

Sincerely,

Garrett Jackson, P.E.  
Design Review Engineer

ec: Bill McCormick, Dam Safety Branch Chief  
Alan Martellaro, Division Engineer  
Erin Gleason, Dam Safety Engineer  
Alex Fischer, Colorado Oil and Gas Conservation Commission [alex.fischer@state.co.us](mailto:alex.fischer@state.co.us)



## Drew Pearson

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**From:** Komatinsky - DNR, Jim <jim.komatinsky@state.co.us>  
**Sent:** Wednesday, February 05, 2014 11:24 AM  
**To:** Drew Pearson  
**Subject:** Re: DeBeque Station Water Facility

**Categories:** Red Category

Drew:

Yes, I did look at the pond cover. Several other companies are using similar materials, and to my knowledge with success. This type of cover would be acceptable and encouraged. Pits should also be fenced to exclude both large and small animals.

What we do not find acceptable is flagging, such as those plastic flags used in car lots! Both Colorado Parks and Wildlife and the USFWS find flagging not effective and we regularly find dead birds and animals in flagged pits.

Thanks for checking and we look forward to your design.

Jim

On Wed, Feb 5, 2014 at 11:04 AM, dpearson <[dpearson@wwcengineering.com](mailto:dpearson@wwcengineering.com)> wrote:  
Jim,

Did you have a chance to look at the wildlife deterrent that we proposed in our Wildlife BMP plan? It was the AQUA Hexprotect Cover and I had included information about these in the Appendix of the memo. Are these something that will likely be approved?

Drew



**Drew Pearson, P.E., L.S.I. | Civil Engineer/Land Surveyor**

1275 Maple Street, Suite F | Helena, MT 59601

Tel [406-443-3962](tel:406-443-3962) | Cell [406-459-8536](tel:406-459-8536)  
[www.wwcengineering.com](http://www.wwcengineering.com)

On 1/29/2014 1:37 PM, Komatinsky - DNR, Jim wrote:

Drew:

Thank you for the proposed wildlife plan for the DeBeque Station Water Facility you prepared for Black Hills Exploration and Production located in Section 29, T8S, R97W. This facility will require review/approvals from Mesa County as well as the Colorado Oil and Gas Conservation Commission (COGCC). Colorado Parks and Wildlife (CPW) cannot approve this proposal until it is formally submitted to the appropriate agencies with all applicable information and has been distributed for comments.

A review of the information you forwarded to CPW indicated you have a good start in addressing CPW's wildlife concerns. CPW appreciates your pro-active involvement in wildlife mitigation for this project which we anticipate will speed up the review of this project when formally submitted.

We will be looking forward to Black Hills Exploration and Production's application submittals for this project.

Thank you,

Jim Komatinsky

--

*Jim Komatinsky*

*Land Use Specialist*

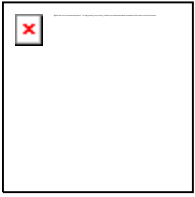
*Colorado Parks and Wildlife*

[970-255-6104](tel:970-255-6104)

[jim.komatinsky@state.co.us](mailto:jim.komatinsky@state.co.us)

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*Jim Komatinsky*

*Land Use Specialist*

*Colorado Parks and Wildlife*

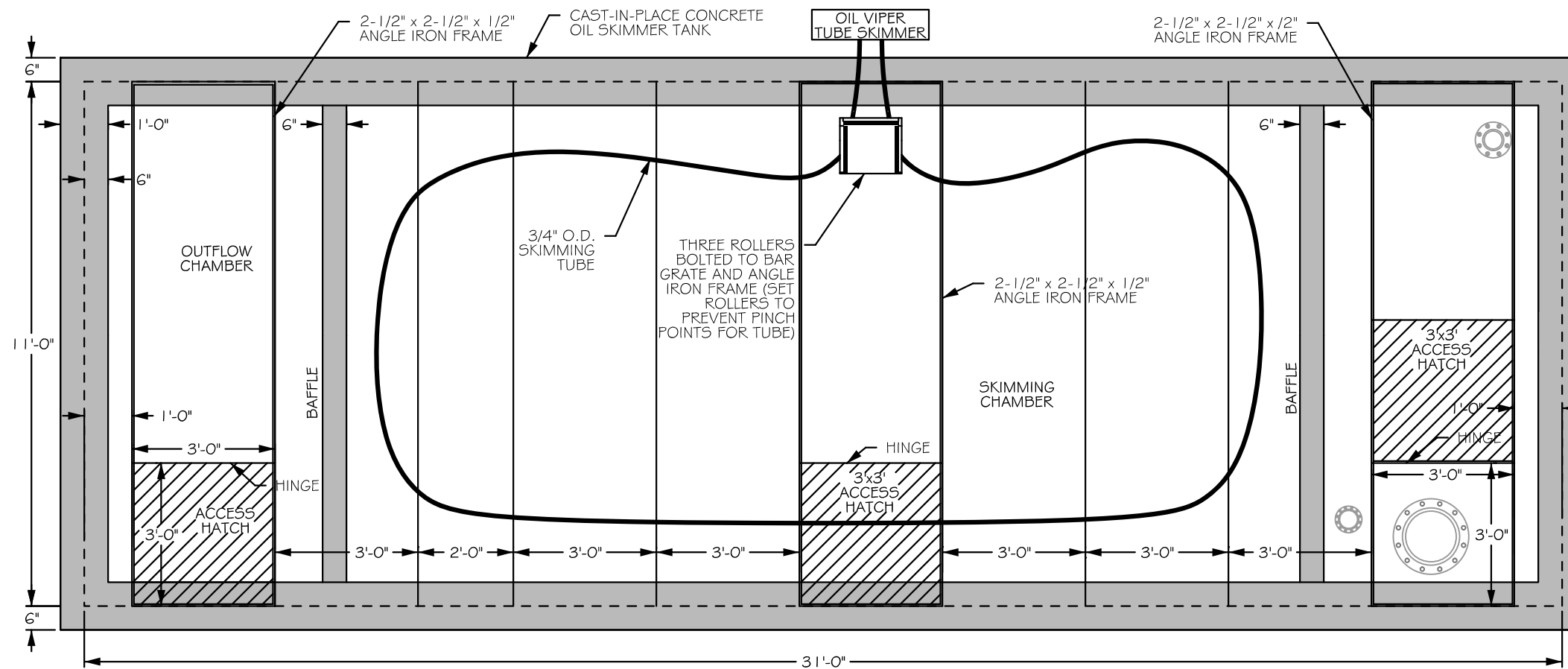
*970-255-6104*

[jim.komatinsky@state.co.us](mailto:jim.komatinsky@state.co.us)

# **ATTACHMENT B**

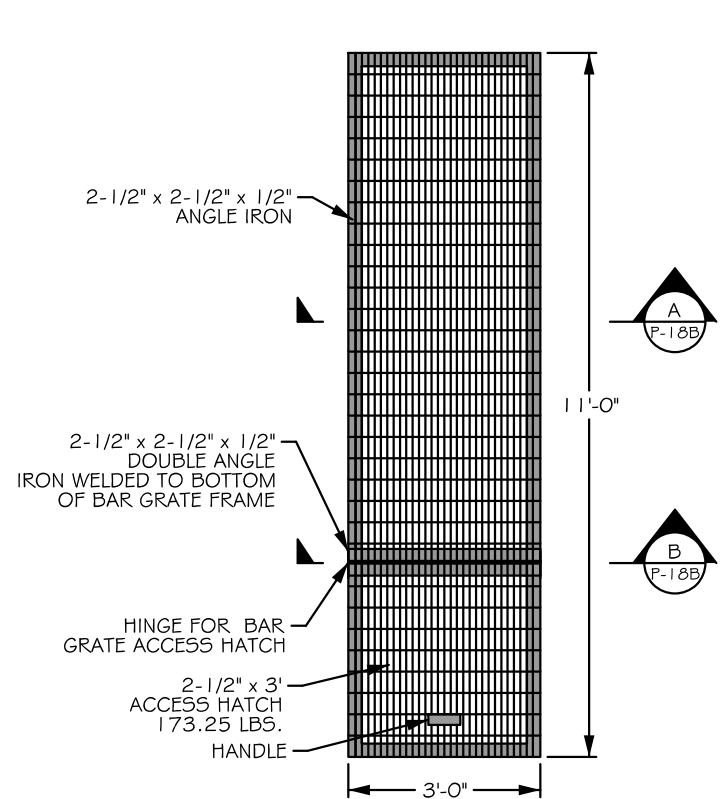
## **OIL SKIMMING DETAILS**





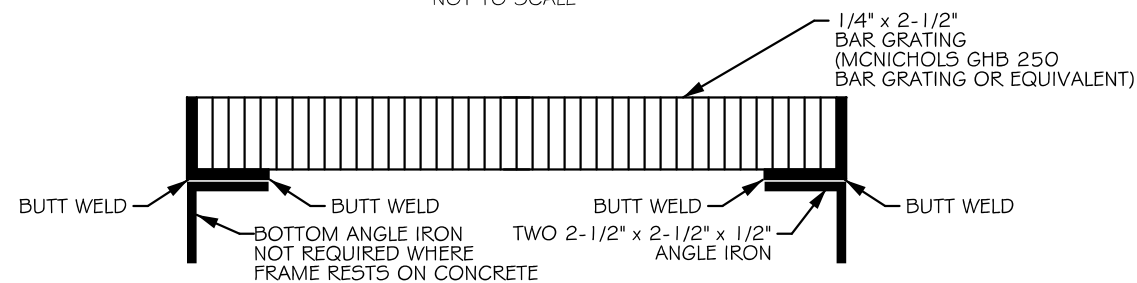
### OIL SKIMMER DETAIL

NOT TO SCALE



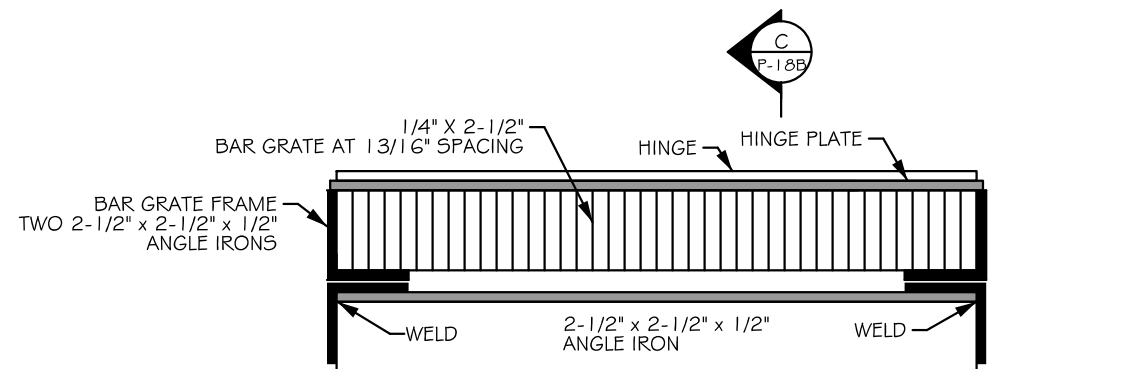
## BAR GRATE HINGED ACCESS

SCALE: 1" = 3'



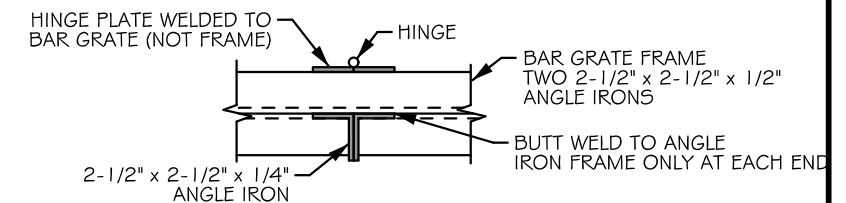
### BAR GRATE ANGLE IRON FRAME SECTION

NOT TO SCALE



### ACCESS HATCH-HINGED SECTION

NOT TO SCALE



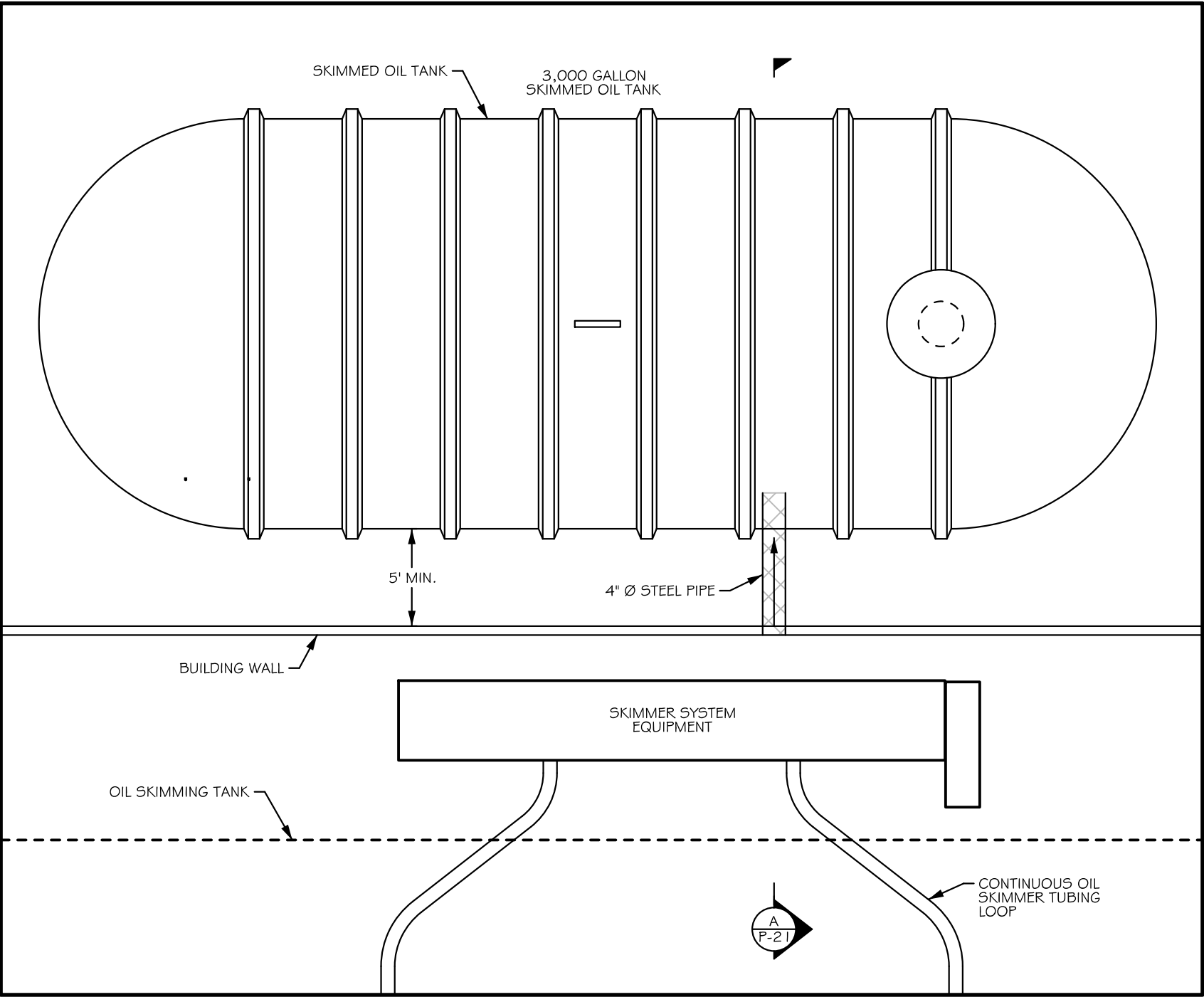
### ACCESS WELD DETAIL

NOT TO SCALE

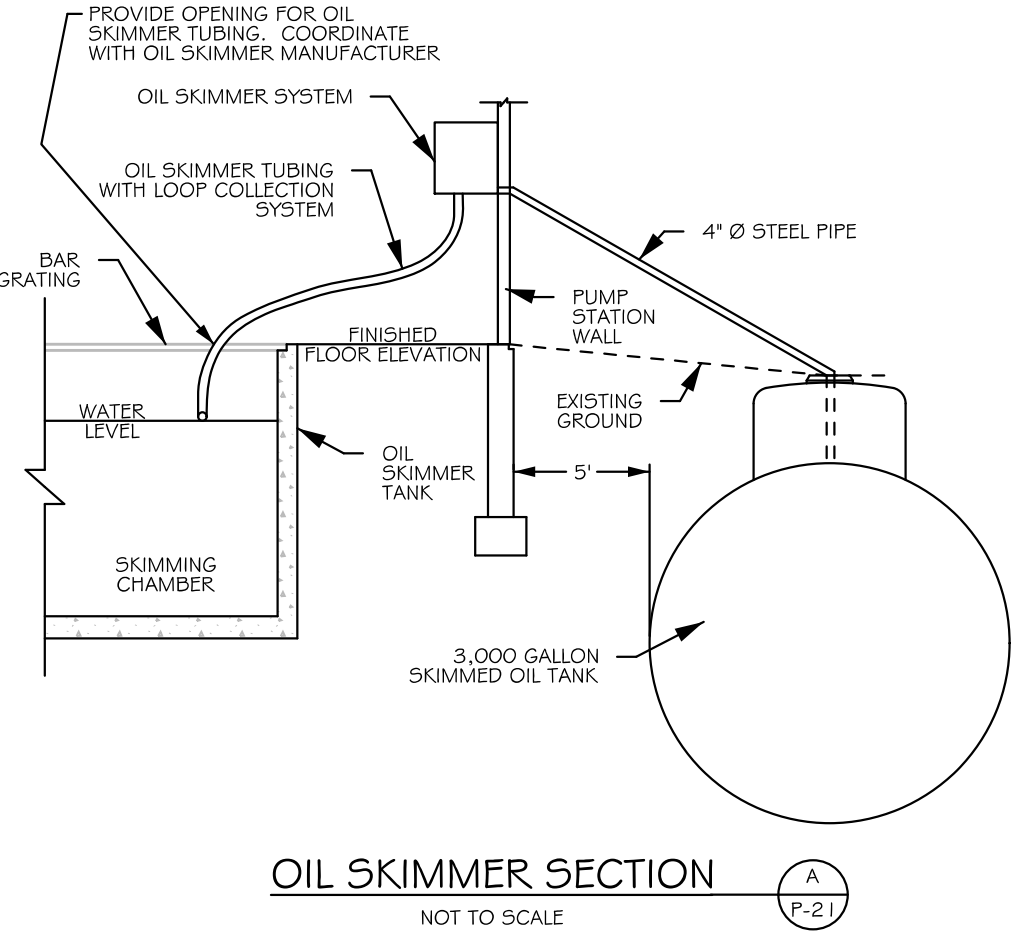
NOTES:

- NOTES:
1. 1/4" x 2-1/2" BAR GRATING WEIGHT OF 3' x 11' SECTION 23.1 LB/SQ.FT - 762.30 POUNDS
  2. FOR THE SECTIONS OF THE MCNICHOLS BAR GRATING THAT DO NOT HAVE A HATCH AND ANGLE IRON FRAME, WELD A 3'-0" x 3" x 1/2" FLAT STEEL BAR TO THE BOTTOM ON EACH END OF THE GRATE.





- NOTES:
- 1) SKIMMED OIL TANK SHALL BE XERXES 6' DIAMETER DOUBLE-WALL 3,000 GALLON FIBERGLASS TANK.
  - 2) TANK SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
  - 3) TANK SHALL BE LOCATED A MINIMUM OF 5 FEET FROM PROPOSED PUMP STATION BUILDING.



**WVC ENGINEERING**

1275 MAPLE STREET, SUITE F  
HELENA, MT 59601  
(406) 443-3962

**Black Hills Exploration & Production**  
A Black Hills Corporation Enterprise

2350 G Road, Suite 101  
Grand Junction, CO 81505

DSGN	DATE	CKD	STH	REV	DATE	CKD	STH	DDP	DATE	CKD	STH
	09/14				10/14						

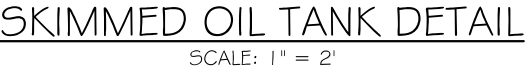
JOB # 2013-134

DE BEQUE WATER STATION  
PUMP STATION

Oil Skimmer System Details

SHEET  
P-21

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EXPRESS WRITTEN AUTHORIZATION.

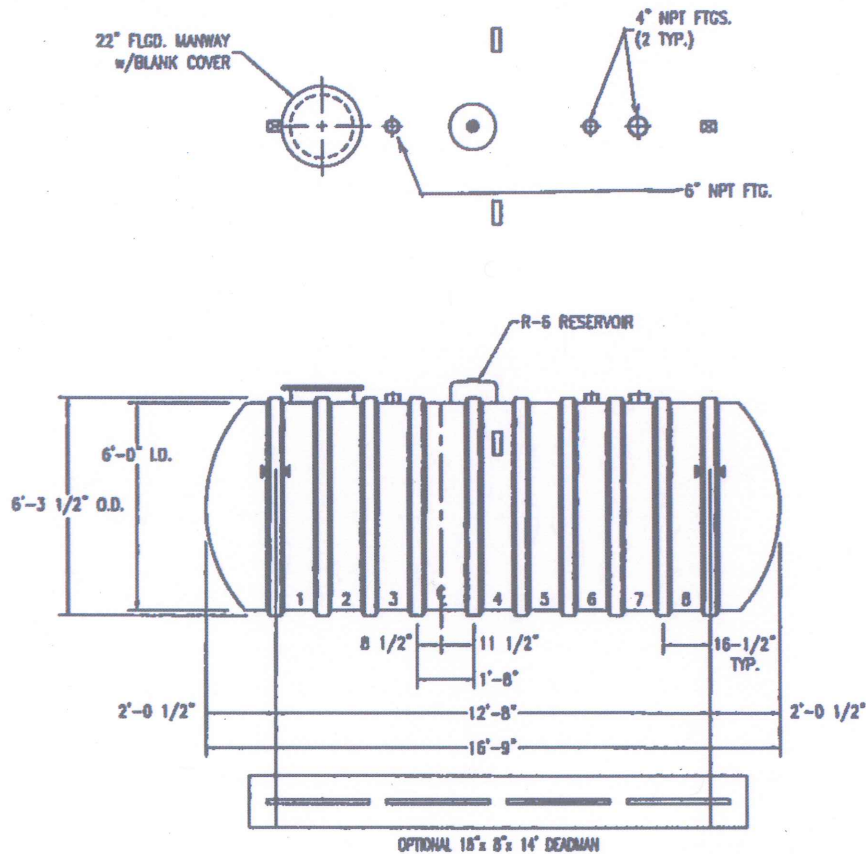


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# APPROVED

*Ed Everett 12/1/2014*

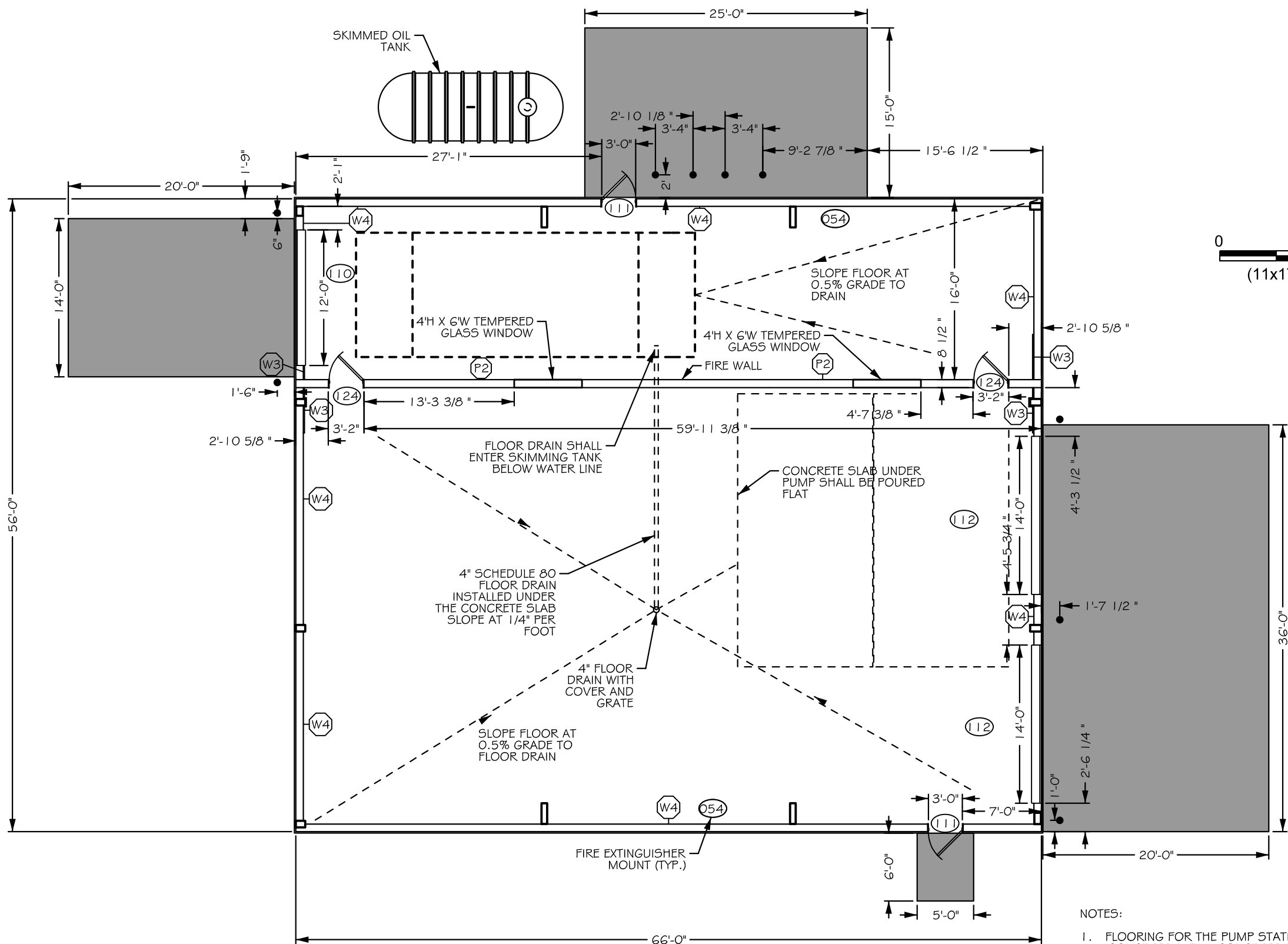
SHELL CODES: 1-E6D06SD, 1-E6D04SD



**NOTES:**

- HOLD DOWN STRAP CLIP
- ▶◀ HOLD DOWN STRAP LOCATION
- TYPE "13" LIFT LUG - SD
- TYPE "13" LIFT LUG - HD

DWT-6 TYPE II (6')-3000		DATE
GJ PIPE		10/23/14
CONTAINMENT SOLUTIONS		DESIGNED BY ROXNER
3,323		REVISION 11/25/14-B
2450/3000		DWG NUMBER 9435-000



NOTES:

- FLOORING FOR THE PUMP STATION BUILDING SHALL BE CONCRETE WITH A CONCRETE FINISHING AGENT APPLIED. FINISHING AGENT SHALL BE CONSPEC TOUGH SEAL (OR APPROVED NON-YELLOWING COATING). FINISHING AGENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

0 10 20  
(11x17) SCALE: 1" = 10'



DE BEQUE WATER STATION  
PUMP STATION

Floor Plan

DSGN	DATE	CKD
MJB	9/14	STH
REV	DATE	CKD
DSD	10/14	STH
KJG	11/14/14	STH
JOB # 2013-134		

**Black Hills Exploration & Production**  
A Black Hills Corporation Enterprise  
2350 G Road, Suite 101  
Grand Junction, CO 81505

**WWC ENGINEERING**  
1275 MAPLE STREET, SUITE F  
HELENA, MT 59601  
(406) 443-3962

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WRITTEN AUTHORIZATION.

PEN TABLE PATH: K:\Hillman\BLACK HILLS\13134 - DE BEQUE STATION\ENGINEERING PLANS\DEBEQUE COLORADO\11/14/2014  
FILE PATH: K:\Hillman\BLACK HILLS\13134 - DE BEQUE STATION\ENGINEERING PLANS\DEBEQUE COLORADO\11/14/2014

Phase 2\_Pump Detail.dgn

# **ATTACHMENT C**

## **WELL CONSTRUCTION REPORTS**

## STATE OF COLORADO, OFFICE OF THE STATE ENGINEER

APPROVAL # GWS31-91-03

1.	<b>WELL PERMIT NUMBER</b> MH-52220-A	
2.	Owner Name(s): Red Rock Gathering Co. Mailing Address: 2128 Railroad Ave # 203 City, State, Zip : Rifle, Co 81650 Phone # :	
APPROVAL # GWS31-91-03		
3.	<u>WELL LOCATION AS DRILLED</u> DISTANCES FROM SEC. LINES SE 1/4 SW 1/4 Sec: 29 Twp: 8 S Range: 97 W 6th PM ft. from Sec. line and ft. from Sec. line OR Easting: 2 20 098 Northing: 43 58 099 SUBDIVISION: LOT: BLOCK: FILING (UNIT): STREET ADDRESS AT LOCATION	
4.	GROUND SURFACE ELEVATION ft. DRILLING METHOD Air Rotary DATE COMPLETED: 2/18/2014 TOTAL DEPTH: 100 DEPTH COMPLETION: 100	
5.	<b>GEOLOGIC LOG</b>	
6.	<b>HOLE DIAMETER (in)</b>	
7.	<b>FROM (ft)</b>	
8.	<b>TO (ft)</b>	
9.	<b>Depth</b>	
10.	<b>Type of Material (Size, Color, and Type)</b>	
11.	000-015 Dirt	
12.	015-100 Wasatch formation	
7. PLAIN CASING		
13.	OD (in)	
14.	Kind	
15.	Wall Size	
16.	From (ft)	
17.	To (ft)	
18.	2.5	
19.	PVC	
20.	Sch 40	
21.	-1	
22.	20	
PERF. CASING : Screen Slot Size		
23.	2.5	
24.	PVC	
25.	Sch 40	
26.	20	
27.	100	
8. Filter Pack		
Material : Silica Sand		
Size : 10-20		
Interval : 18-100		
9. Packer Placement		
Type :		
Depth :		
10. GROUTING RECORD		
Material		
Amount		
Density		
Interval		
Placement		
Cement		
1 sk		
6 gal/sk		
0-1		
poured		
Bentonite		
6 sks		
chips		
1-18		
poured		
11. DISINFECTION : Type : HTH Amt. Used : 0 oz.		
12. WELL TEST DATA : ( ) Check Box If Test Data Is Submitted On Supplemental		
TESTING METHOD : Air Compressor		
Static Level : 0 ft. Date/Time Measured 2/18/2014 Production Rate 0 gpm		
Pumping Level : Total ft. Date/Time Measured 2/18/2014 Test Length : 2 hours		
Test Remarks:		
13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. (Pursuant to Section 24-4-1-4 (13)(a) CRS, the making of false statements constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.)		
CONTRACTOR : Shelton Drilling Corp. Phone : (970) 927-4182		
Mailing Address : P.O. Box 1059 Basalt, Co. 81621 Lic. No. 1095		
Name / Title (Please Type or Print)		
Signature		
Date		
Wayne Shelton / President		
2/24/2014		

FOR OFFICE USE ONLY

APPROVAL # GWS31-91-03

2. Owner Name(s): Red Rock Gathering Co.  
Mailing Address: 2128 Railroad Ave # 203  
City, State, Zip : Rifle, Co 81650  
Phone # :

4.	GROUND SURFACE ELEVATION	ft.	DRILLING METHOD	Air Rotary
	DATE COMPLETED: 3/25/2014	TOTAL DEPTH:	100	DEPTH COMPLETION: 100

5.	GEOLOGIC LOG		6. HOLE DIAMETER (in)		FROM (ft)		TO (ft)	
Depth	Type of Material (Size, Color, and Type)		5.6		0		100	
000-006	Dirt							
006-100	Wasatch formation							
			7. PLAIN CASING					
			OD (in)	Kind	Wall Size	From (ft)	To (ft)	
			2.5	PVC	Sch 40	-1	20	
			PERF. CASING : Screen Slot Size					
			2.5	PVC	Sch 40	20	100	

9. Packer Placement  
Type :  
Depth :

Material	Amount	Density	Interval	Placement
Cement	1 sk	6 gal/sk	0-1	poured
Bentonite	4 sks	chips	1-18	poured

Static Level :	0	ft.	Date/Time Measured	3/25/2014	Production Rate	0	gpm
Pumping Level :	Total	ft.	Date/Time Measured	3/25/2014	Test Length :	2	hours
Test Remarks:							

Lic. No. 1095

3/27/2014

## STATE OF COLORADO, OFFICE OF THE STATE ENGINEER

APPROVAL # GWS31-91-03

1.	<b>WELL PERMIT NUMBER</b> MH-52220-C				
2.	Owner Name(s): Red Rock Gathering Co. Mailing Address: 2128 Railroad Ave # 203 City, State, Zip : Rifle, Co 81650 Phone # :		APPROVAL # GWS31-91-03		
3.	<b>WELL LOCATION AS DRILLED</b> SE 1/4 SW 1/4 Sec: 29 Twp: 8 S Range: 97 W 6th PM <b>DISTANCES FROM SEC. LINES</b> ft. from Sec. line and ft. from Sec. line OR Easting: 2 20 247 Northing: 43 54 742 SUBDIVISION: LOT: BLOCK: FILING (UNIT): STREET ADDRESS AT LOCATION				
4.	<b>GROUND SURFACE ELEVATION</b> ft. <b>DRILLING METHOD</b> Air Rotary <b>DATE COMPLETED:</b> 3/26/2014 <b>TOTAL DEPTH:</b> 100 <b>DEPTH COMPLETION:</b> 100				
5.	<b>GEOLOGIC LOG</b>		<b>6. HOLE DIAMETER (in)</b>		<b>FROM (ft)</b>
	Depth	Type of Material (Size, Color, and Type)	5.6		0
	000-016	Dirt			100
	016-100	Wasatch formation			
			<b>7. PLAIN CASING</b>		
			OD (in)	Kind	Wall Size
			2.5	PVC	Sch 40
			<b>PERF. CASING : Screen Slot Size</b>		
			2.5	PVC	Sch 40
	Water Located:  Remarks :		<b>8. Filter Pack</b>		<b>9. Packer Placement</b>
			Material : Silica Sand		Type :
			Size : 10-20		Depth :
			Interval : 17-100		
			<b>10. GROUTING RECORD</b>		
			Material	Amount	Density
			Cement	1 sk	6 gal/sk
			Bentonite	6 sks	chips
11. DISINFECTION : Type : HTH			Amt. Used : 0 oz.		
12. WELL TEST DATA : ( ) Check Box If Test Data Is Submitted On Supplemental					
TESTING METHOD : Air Compressor					
Static Level : 0 ft.		Date/Time Measured 3/26/2014		Production Rate 0 gpm	
Pumping Level : Total ft.		Date/Time Measured 3/26/2014		Test Length : 2 hours	
Test Remarks:					
13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. (Pursuant to Section 24-4-1-4 (13)(a) CRS, the making of false statements constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.) <b>CONTRACTOR :</b> Shelton Drilling Corp. Mailing Address : P.O. Box 1059 Basalt, Co. 81621 Phone : (970) 927-4182 Lic. No. 1095					
Name / Title (Please Type or Print)		Signature		Date	
Wayne Shelton / President				3/27/2014	



# **ATTACHMENT D**

## **RECLAMATION COSTS**

## OVERALL SITE RECLAMATION ESTIMATE

### DE BEQUE WATER STATION FACILITIES

Black Hills Exploration and Production  
Job Number: 2013-134  
Mesa County

Prepared By: DRD  
Date: May-15  
Location: De Beque, CO  
Type of Work: Reclamation

Item	Description	Unit	Quantity	Unit Price Dollars	Cost Dollars
<b>PROJECT MOB. &amp; MISC. FEES</b>					
100	Mobilization/Prep Work	LS	1	\$55,000.00	\$55,000.00
101	Permits, Bonds and Insurance	LS	1	\$25,000.00	\$25,000.00
				<b>Subtotal</b>	<b>\$80,000.00</b>
<b>OFFICE BUILDING</b>					
200	Interior Walls - Demo	LS	1	\$6,600.00	\$6,600.00
201	Interior Kitchen Cabinets - Demo	LS	1	\$3,200.00	\$3,200.00
202	Interior Bathroom Fixtures - Demo	LS	1	\$4,300.00	\$4,300.00
203	Sheet Rock - Demo	LS	1	\$5,500.00	\$5,500.00
204	Insulation - Demo	LS	1	\$6,300.00	\$6,300.00
205	Removal of Doors, Windows and Heating System	LS	1	\$4,000.00	\$4,000.00
206	Removal Electrical Fixtures and Control Panel	LS	1	\$1,400.00	\$1,400.00
207	Removal of Roof Metal Sheeting	LS	1	\$8,000.00	\$8,000.00
208	Removal of Siding Sheet Metal	LS	1.0	\$17,500.00	\$17,500.00
209	Removal of Super Structure	LS	1.0	\$25,000.00	\$25,000.00
210	Removal and Disposal of Concrete Slab and Doors	LS	1.0	\$7,000.00	\$7,000.00
211	Removal and Disposal of Main Floor Slab	LS	1	\$19,000.00	\$19,000.00
212	Removal and Disposal of Concrete Footings and Stem Walls	LS	1	\$16,200.00	\$16,200.00
213	Removal and Disposal of Bollards, Handrails, Misc.	LS	1	\$3,000.00	\$3,000.00
214	Removal of Underground Water Tank	LS	1	\$7,500.00	\$7,500.00
215	Removal of Sewage Septic System	LS	1	\$3,000.00	\$3,000.00
216	Removal of Parking and Building	LS	1	\$18,500.00	\$18,500.00
				<b>Subtotal</b>	<b>\$156,000.00</b>
<b>PUMP STATION BUILDING</b>					
300	Removal of Centrifugal Pumps	LS	1	\$12,000.00	\$12,000.00
301	Removal of VFD Electrical Pump Panels	LS	1	\$2,000.00	\$2,000.00
302	Removal of High Pressure Pipe Lines	LS	1	\$23,000.00	\$23,000.00
303	Removal of Supply Lines	LS	1	\$17,800.00	\$17,800.00
304	Removal of Skimming Chamber	LS	1	\$9,800.00	\$9,800.00
305	Removal of Diffuser Piping	LS	1	\$6,400.00	\$6,400.00
306	Removal of Control System	LS	1	\$1,390.00	\$1,400.00
307	Interior Windows and Doors - Demo	LS	1	\$2,850.00	\$2,900.00
308	Interior Walls - Demo	LS	1	\$5,600.00	\$5,600.00
309	Removal of Exterior Doors	LS	1	\$3,000.00	\$3,000.00
310	Removal of Interior Sheet Rock and Insulation	LS	1	\$10,500.00	\$10,500.00
311	Removal of Ceiling Sheet Rock and Insulation	LS	1	\$10,200.00	\$10,200.00
312	Removal of all Electrical Fixtures	LS	1	\$3,000.00	\$3,000.00
313	Removal of Exterior Sheet Metal Siding	LS	1	\$28,000.00	\$28,000.00
314	Removal of Roof Purlins	LS	1	\$16,800.00	\$16,800.00
315	Removal of Siding Purlins	LS	1	\$35,000.00	\$35,000.00
316	Removal of Structural Steel	LS	1	\$38,500.00	\$38,500.00
317	Removal of Anchor Systems	LS	1	\$7,400.00	\$7,400.00
318	Removal of Transformer	LS	1	\$7,600.00	\$7,600.00
319	Removal of Exterior Concrete Pads and Doors	LS	1	\$18,600.00	\$18,600.00
320	Removal of Building Floor Slab	LS	1	\$27,700.00	\$27,700.00
321	Removal of Pump Foundation	LS	1	\$26,600.00	\$26,600.00
322	Removal of Underground Pipe Lines to Exterior	LS	1	\$16,100.00	\$16,100.00
323	Regrading Building Site	LS	1	\$2,900.00	\$2,900.00
324	Topsoil Placement at Building Site	LS	1	\$40,700.00	\$40,700.00
325	Removal of UST	LS	1	\$20,000.00	\$20,000.00
				<b>Subtotal</b>	<b>\$393,500.00</b>
<b>POND RECLAMATION</b>					
400	Removal and Disposal of Pond 1 Piping	LS	1	\$40,000.00	\$40,000.00
401	Removal and Disposal of Pond 2 Piping	LS	1	\$40,000.00	\$40,000.00
402	Removal and Disposal of Pond 3 Piping	LS	1	\$40,000.00	\$40,000.00
403	Removal and Salvage of Submersible Pump	LS	1	\$28,000.00	\$28,000.00
404	Plug all Piping going into each Pond	LS	1	\$13,000.00	\$13,000.00
405	Removal and Disposal of Liner from Ponds 1, 2 and 3	SF	406,110	\$0.60	\$243,700.00
406	Removal of Miscellaneous Structures	LS	1	\$1,200.00	\$1,200.00
407	Excavate and Backfill Ponds 1, 2 and 3	CY	148,500	\$3.20	\$475,200.00
408	Fine Grade Surface to Final Profile	LS	1	\$8,300.00	\$8,300.00
409	Place 6" of Topsoil	AC	23	\$3,500.00	\$80,500.00
410	Seeding with Fertilizer and Erosion Controls	AC	23	\$2,000.00	\$46,000.00
411	Installation of Storm Water Controls	AC	23	\$2,000.00	\$46,000.00
412	Soil Sampling for Backfill Approval	EA	25	\$100.00	\$2,500.00
				<b>Subtotal</b>	<b>\$1,064,400.00</b>
<b>OVERALL SITE RECLAMATION</b>					
500	Maintenance Reseeding	LS	1	\$31,060.00	\$31,100.00
501	Long-term storm water protection	LS	1	\$5,000.00	\$5,000.00
502	Long-term Water and Soil Sampling	EA	10	\$1,600.00	\$16,000.00
503	Plug and Abandon Monitoring Wells	EA	3	\$1,000.00	\$3,000.00
504	Weed Maintenance - 5 years	LS	1	\$5,000.00	\$5,000.00
				<b>Subtotal</b>	<b>\$60,100.00</b>
				<b>Capital Cost Subtotal</b>	<b>\$1,754,000.00</b>
600	Contingency		15%		\$266,000.00
				<b>Total Capital Cost</b>	<b>\$2,020,000.00</b>

Note: All remaining water in the facility that has not evaporated will be pumped by the Owner to an injection well disposal facility prior to reclamation

# **ATTACHMENT E**

## **WATER QUALITY**



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**MAIN PAGE**

PROJECT NO. :	201504119	ANALYSIS NO. :	01
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	26943
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR C 10:00		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	105
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	MOLE %	MASS %	VOL %
WATER	99.9942	99.9781	99.9710
ALCOHOLS	0.0051	0.0206	0.0261
NITROGEN (AIR)	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
METHANE	0.0007	0.0006	0.0020
ETHANE	0.0000	0.0000	0.0000
PROPANE	0.0000	0.0000	0.0000
I-BUTANE	0.0000	0.0000	0.0000
N-BUTANE	0.0000	0.0000	0.0000
I-PENTANE	0.0000	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000
HEXANES PLUS	0.0000	0.0007	0.0009
TOTALS	100.0000	100.0000	100.0000

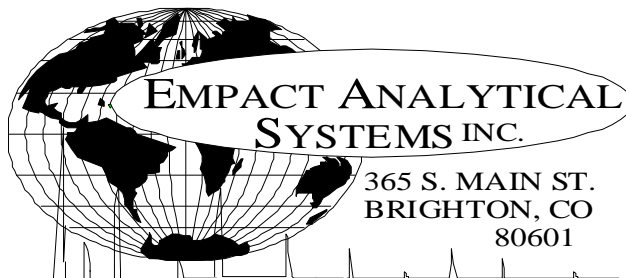
BTEX COMPONENTS	MOLE%	MASS%
BENZENE	0.0000	0.0000
TOLUENE	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000
XYLENE	0.0000	0.0000
TOTAL BTEX	0.0000	0.0000

(CALC: GPA STD 2145-94 & TP-17 @ 14.696 & 60 F)

	TOTAL SAMPLE
Specific Gravity (H2O=1) =	1
API Gravity =	10
Molecular Weight =	100.00
Absolute Density =	8.34
Heating Value Liq. Idl Gas=	0
Vapor/Liquid =	0.02
Vapor Pressure =	0.99

\*(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES.  
THE USE OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO  
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303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**E & P TANK / GLYCALC INFORMATION**

PROJECT NO. :	201504119	ANALYSIS NO. :	01
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE :	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	26943
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR C 10:00		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	105
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	Mole %	Wt %	LV %
CARBON DIOXIDE	0.0000	0.0000	0.0000
NITROGEN (AIR)	0.0000	0.0000	0.0000
METHANE	0.0007	0.0006	0.0020
ETHANE	0.0000	0.0000	0.0000
PROPANE	0.0000	0.0000	0.0000
I-BUTANE	0.0000	0.0000	0.0000
N-BUTANE	0.0000	0.0000	0.0000
I-PENTANE	0.0000	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000
CYCLOPENTANE (N-C5)	0.0000	0.0000	0.0000
N-HEXANE	0.0000	0.0000	0.0000
CYCLOHEXANE (OTHER C6)	0.0000	0.0000	0.0000
OTHER HEXANES	0.0000	0.0000	0.0000
OTHER HEPTANES	0.0000	0.0000	0.0000
METHYLCYCLOHEXANE (OTHER C7)	0.0000	0.0000	0.0000
2,2,4 TRIMETHYLPENTANE	0.0000	0.0000	0.0000
BENZENE	0.0000	0.0000	0.0000
TOLUENE	0.0000	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000	0.0000
XYLENES	0.0000	0.0000	0.0000
OTHER OCTANES	0.0000	0.0000	0.0000
OCTANES PLUS	----	0.0000	0.0007
NONANES	0.0000	0.0000	0.0000
DECANES PLUS	0.0000	0.0007	0.0009
SUB TOTAL	0.0007	0.0013	0.0029
WATER	99.9942	99.9781	99.9710
ALCOHOLS	0.0051	0.0206	0.0261
TOTAL	100.0000	100.0000	100.0000

API Gravity	=	10.00	60/60
Vapor Pressure	=	0.99	PSIA & 100 F

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



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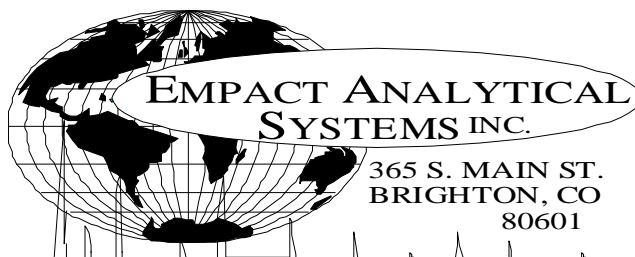
**EXTENDED NATURAL GAS LIQUID ANALYSIS ("DHA")**

**BY CARBON NUMBER**

PROJECT NO. :	201504119	ANALYSIS NO. :	01
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO.:	26943
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR C 10:00		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	105
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT / CARBON NUMBER	MOLE%	MASS %	VOLUME %
WATER	99.9942	99.9781	99.9710
ALCOHOLS	0.0051	0.0206	0.0261
NITROGEN	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
C1	0.0007	0.0006	0.0020
C2	0.0000	0.0000	0.0000
C3	0.0000	0.0000	0.0000
C4	0.0000	0.0000	0.0000
C5	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.0000
C7	0.0000	0.0000	0.0000
C8	0.0000	0.0000	0.0000
C9	0.0000	0.0000	0.0000
C10	0.0000	0.0000	0.0000
C11	0.0000	0.0000	0.0000
C12	0.0000	0.0001	0.0001
C13	0.0000	0.0003	0.0004
C14	0.0000	0.0003	0.0004
C15	0.0000	0.0000	0.0000
C16	0.0000	0.0000	0.0000
C17	0.0000	0.0000	0.0000
C18	0.0000	0.0000	0.0000
C19	0.0000	0.0000	0.0000
C20	0.0000	0.0000	0.0000
C21	0.0000	0.0000	0.0000
C22	0.0000	0.0000	0.0000
C23	0.0000	0.0000	0.0000
C24	0.0000	0.0000	0.0000
C25	0.0000	0.0000	0.0000
C26	0.0000	0.0000	0.0000
C27	0.0000	0.0000	0.0000
C28	0.0000	0.0000	0.0000
C29	0.0000	0.0000	0.0000
C30+	0.0000	0.0000	0.0000
<b>Total</b>	<b>100.0000</b>	<b>100.0000</b>	<b>100.0000</b>

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**DHA COMPONENT LIST**

PROJECT NO. :	201504119	ANALYSIS NO. :	01
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	26943
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR C 10:00		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	105
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Water	W	99.9942	99.9781	99.9710
Nitrogen	NHC	0.0000	0.0000	0.0000
Carbon Dioxide	NHC	0.0000	0.0000	0.0000
Methane	P1	0.0007	0.0006	0.0020
Ethane	P2	0.0000	0.0000	0.0000
Propane	P3	0.0000	0.0000	0.0000
i-Butane	I4	0.0000	0.0000	0.0000
n-Butane	P4	0.0000	0.0000	0.0000
i-Pentane	I5	0.0000	0.0000	0.0000
Acetone	X2	0.0004	0.0012	0.0015
n-Pentane	P5	0.0000	0.0000	0.0000
t-Butanol	X4	0.0047	0.0194	0.0246
n-Dodecane	P12	0.0000	0.0001	0.0001
n-Tridecane	P13	0.0000	0.0003	0.0004
n-Tetradecane	P14	0.0000	0.0003	0.0004
TOTAL		100.0000	100.0000	100.0000

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**MAIN PAGE**

PROJECT NO. :	201504119	ANALYSIS NO. :	02
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	11917
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR A 10:54		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	100
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	MOLE %	MASS %	VOL %
WATER	99.9891	99.9726	99.9544
ALCOHOLS	0.0051	0.0207	0.0262
NITROGEN (AIR)	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
METHANE	0.0055	0.0049	0.0163
ETHANE	0.0003	0.0005	0.0014
PROPANE	0.0000	0.0000	0.0000
I-BUTANE	0.0000	0.0000	0.0000
N-BUTANE	0.0000	0.0000	0.0000
I-PENTANE	0.0000	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000
HEXANES PLUS	0.0000	0.0013	0.0017
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	MOLE%	MASS%
BENZENE	0.0000	0.0000
TOLUENE	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000
XYLENE	0.0000	0.0000
TOTAL BTEX	0.0000	0.0000

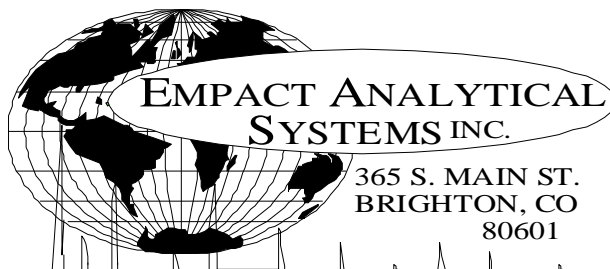
(CALC: GPA STD 2145-94 & TP-17 @ 14.696 & 60 F)

	TOTAL SAMPLE
Specific Gravity (H2O=1) =	0.9999
API Gravity =	10.01
Molecular Weight =	100.00
Absolute Density =	8.34
Heating Value Liq. Idl Gas=	0
Vapor/Liquid =	0.03
Vapor Pressure =	1.23

\*(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES.  
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303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**E & P TANK / GLYCALC INFORMATION**

PROJECT NO. :	201504119	ANALYSIS NO. :	02
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	11917
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR A 10:54		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	100
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	Mole %	Wt %	LV %			
CARBON DIOXIDE	0.0000	0.0000	0.0000			
NITROGEN (AIR)	0.0000	0.0000	0.0000			
METHANE	0.0055	0.0049	0.0163			
ETHANE	0.0003	0.0005	0.0014			
PROPANE	0.0000	0.0000	0.0000			
I-BUTANE	0.0000	0.0000	0.0000			
N-BUTANE	0.0000	0.0000	0.0000			
I-PENTANE	0.0000	0.0000	0.0000			
N-PENTANE	0.0000	0.0000	0.0000			
CYCLOPENTANE (N-C5)	0.0000	0.0000	0.0000			
N-HEXANE	0.0000	0.0000	0.0000			
CYCLOHEXANE (OTHER C6)	0.0000	0.0000	0.0000			
OTHER HEXANES	0.0000	0.0000	0.0000			
OTHER HEPTANES	0.0000	0.0000	0.0000			
METHYLCYCLOHEXANE (OTHER C7)	0.0000	0.0000	0.0000			
2,2,4 TRIMETHYLPENTANE	0.0000	0.0000	0.0000			
BENZENE	0.0000	0.0000	0.0000			
TOLUENE	0.0000	0.0000	0.0000			
ETHYLBENZENE	0.0000	0.0000	0.0000			
XYLENES	0.0000	0.0000	0.0000			
OTHER OCTANES	0.0000	0.0000	0.0000			
OCTANES PLUS	----	0.0000	----	0.0013	----	0.0017
NONANES	0.0000	0.0003	0.0004			
DECANES PLUS	0.0000	0.0010	0.0013			
SUB TOTAL	0.0058	0.0067	0.0194			
WATER	99.9891	99.9726	99.9544			
ALCOHOLS	0.0051	0.0207	0.0262			
TOTAL	100.0000	100.0000	100.0000			

API Gravity	=	10.01	60/60
Vapor Pressure	=	1.23	PSIA & 100 F

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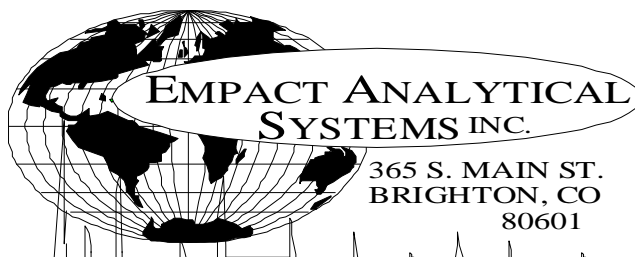
**EXTENDED NATURAL GAS LIQUID ANALYSIS ("DHA")**

**BY CARBON NUMBER**

PROJECT NO. :	201504119	ANALYSIS NO. :	02
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO.:	11917
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR A 10:54		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	100
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT / CARBON NUMBER	MOLE%	MASS %	VOLUME %
WATER	99.9891	99.9726	99.9544
ALCOHOLS	0.0051	0.0207	0.0262
NITROGEN	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
C1	0.0055	0.0049	0.0163
C2	0.0003	0.0005	0.0014
C3	0.0000	0.0000	0.0000
C4	0.0000	0.0000	0.0000
C5	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.0000
C7	0.0000	0.0000	0.0000
C8	0.0000	0.0000	0.0000
C9	0.0000	0.0003	0.0004
C10	0.0000	0.0000	0.0000
C11	0.0000	0.0000	0.0000
C12	0.0000	0.0002	0.0003
C13	0.0000	0.0003	0.0004
C14	0.0000	0.0003	0.0004
C15	0.0000	0.0001	0.0001
C16	0.0000	0.0000	0.0000
C17	0.0000	0.0000	0.0000
C18	0.0000	0.0001	0.0001
C19	0.0000	0.0000	0.0000
C20	0.0000	0.0000	0.0000
C21	0.0000	0.0000	0.0000
C22	0.0000	0.0000	0.0000
C23	0.0000	0.0000	0.0000
C24	0.0000	0.0000	0.0000
C25	0.0000	0.0000	0.0000
C26	0.0000	0.0000	0.0000
C27	0.0000	0.0000	0.0000
C28	0.0000	0.0000	0.0000
C29	0.0000	0.0000	0.0000
C30+	0.0000	0.0000	0.0000
<b>Total</b>	<b>100.0000</b>	<b>100.0000</b>	<b>100.0000</b>

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**DHA COMPONENT LIST**

PROJECT NO. :	201504119	ANALYSIS NO. :	02
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	11917
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR A 10:54		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	100
SAMPLE PRES. :	200	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Water	W	99.9891	99.9726	99.9544
Nitrogen	NHC	0.0000	0.0000	0.0000
Carbon Dioxide	NHC	0.0000	0.0000	0.0000
Methane	P1	0.0055	0.0049	0.0163
Ethane	P2	0.0003	0.0005	0.0014
Propane	P3	0.0000	0.0000	0.0000
i-Butane	I4	0.0000	0.0000	0.0000
n-Butane	P4	0.0000	0.0000	0.0000
i-Pentane	I5	0.0000	0.0000	0.0000
Acetone	X2	0.0004	0.0013	0.0016
n-Pentane	P5	0.0000	0.0000	0.0000
t-Butanol	X4	0.0047	0.0194	0.0246
n-Nonane	P9	0.0000	0.0003	0.0004
n-Dodecane	P12	0.0000	0.0002	0.0003
n-Tridecane	P13	0.0000	0.0003	0.0004
n-Tetradecane	P14	0.0000	0.0003	0.0004
n-Pentadecane	P15	0.0000	0.0001	0.0001
UnknownC18s	U18	0.0000	0.0001	0.0001
TOTAL		100.0000	100.0000	100.0000

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**MAIN PAGE**

PROJECT NO. :	201504119	ANALYSIS NO. :	03
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	16372
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR B 11:23		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	90
SAMPLE PRES. :	210	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	MOLE %	MASS %	VOL %
WATER	99.9884	99.9723	99.9532
ALCOHOLS	0.0052	0.0210	0.0266
NITROGEN (AIR)	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
METHANE	0.0061	0.0054	0.0180
ETHANE	0.0002	0.0004	0.0011
PROPANE	0.0000	0.0000	0.0000
I-BUTANE	0.0000	0.0000	0.0000
N-BUTANE	0.0000	0.0000	0.0000
I-PENTANE	0.0000	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000
HEXANES PLUS	0.0001	0.0009	0.0011
TOTALS	100.0000	100.0000	100.0000

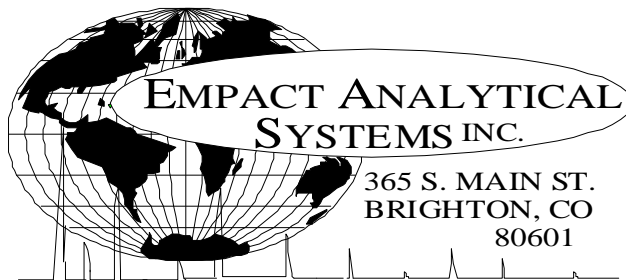
BTEX COMPONENTS	MOLE%	MASS%
BENZENE	0.0000	0.0000
TOLUENE	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000
XYLENE	0.0000	0.0000
TOTAL BTEX	0.0000	0.0000

(CALC: GPA STD 2145-94 & TP-17 @ 14.696 & 60 F)

	TOTAL SAMPLE	C6+ FRACTION
Specific Gravity (H2O=1) =	0.9999	0.7292 60/60
API Gravity =	10.01	62.55 60/60
Molecular Weight =	100.00	128.26
Absolute Density =	8.34	6.09 LBS/GAL
Heating Value Liq. Idl Gas=	0	118521 BTU/GAL
Vapor/Liquid =	0.03	16.94 CUFT/GAL
Vapor Pressure =	1.26	0.18 PSIA @100 F

\*(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES.  
THE USE OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO  
RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.



303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**E & P TANK / GLYCALC INFORMATION**

PROJECT NO. :	201504119	ANALYSIS NO. :	03
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE :	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	16372
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR B 11:23		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	90
SAMPLE PRES. :	210	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT	Mole %	Wt %	LV %
CARBON DIOXIDE	0.0000	0.0000	0.0000
NITROGEN (AIR)	0.0000	0.0000	0.0000
METHANE	0.0061	0.0054	0.0180
ETHANE	0.0002	0.0004	0.0011
PROPANE	0.0000	0.0000	0.0000
I-BUTANE	0.0000	0.0000	0.0000
N-BUTANE	0.0000	0.0000	0.0000
I-PENTANE	0.0000	0.0000	0.0000
N-PENTANE	0.0000	0.0000	0.0000
CYCLOPENTANE (N-C5)	0.0000	0.0000	0.0000
N-HEXANE	0.0000	0.0000	0.0000
CYCLOHEXANE (OTHER C6)	0.0000	0.0000	0.0000
OTHER HEXANES	0.0000	0.0000	0.0000
OTHER HEPTANES	0.0000	0.0000	0.0000
METHYLCYCLOHEXANE (OTHER C7)	0.0000	0.0000	0.0000
2,2,4 TRIMETHYLPENTANE	0.0000	0.0000	0.0000
BENZENE	0.0000	0.0000	0.0000
TOLUENE	0.0000	0.0000	0.0000
ETHYLBENZENE	0.0000	0.0000	0.0000
XYLENES	0.0000	0.0000	0.0000
OTHER OCTANES	0.0000	0.0000	0.0000
OCTANES PLUS	----	0.0001	0.0009
NONANES	0.0001	0.0007	0.0009
DECANES PLUS	0.0000	0.0002	0.0002
SUB TOTAL	0.0064	0.0067	0.0202
WATER	99.9884	99.9723	99.9532
ALCOHOLS	0.0052	0.0210	0.0266
TOTAL	100.0000	100.0000	100.0000

API Gravity	=	10.01	60/60
Vapor Pressure	=	1.26	PSIA & 100 F

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303-637-0150

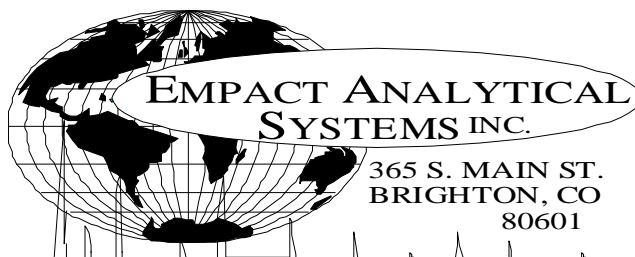
**EXTENDED NATURAL GAS LIQUID ANALYSIS ("DHA")**

**BY CARBON NUMBER**

PROJECT NO. :	201504119	ANALYSIS NO. :	03
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO.:	16372
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR B 11:23		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	90
SAMPLE PRES. :	210	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

COMPONENT / CARBON NUMBER	MOLE%	MASS %	VOLUME %
WATER	99.9884	99.9723	99.9532
ALCOHOLS	0.0052	0.0210	0.0266
NITROGEN	0.0000	0.0000	0.0000
CARBON DIOXIDE	0.0000	0.0000	0.0000
C1	0.0061	0.0054	0.0180
C2	0.0002	0.0004	0.0011
C3	0.0000	0.0000	0.0000
C4	0.0000	0.0000	0.0000
C5	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.0000
C7	0.0000	0.0000	0.0000
C8	0.0000	0.0000	0.0000
C9	0.0001	0.0007	0.0009
C10	0.0000	0.0000	0.0000
C11	0.0000	0.0000	0.0000
C12	0.0000	0.0000	0.0000
C13	0.0000	0.0001	0.0001
C14	0.0000	0.0001	0.0001
C15	0.0000	0.0000	0.0000
C16	0.0000	0.0000	0.0000
C17	0.0000	0.0000	0.0000
C18	0.0000	0.0000	0.0000
C19	0.0000	0.0000	0.0000
C20	0.0000	0.0000	0.0000
C21	0.0000	0.0000	0.0000
C22	0.0000	0.0000	0.0000
C23	0.0000	0.0000	0.0000
C24	0.0000	0.0000	0.0000
C25	0.0000	0.0000	0.0000
C26	0.0000	0.0000	0.0000
C27	0.0000	0.0000	0.0000
C28	0.0000	0.0000	0.0000
C29	0.0000	0.0000	0.0000
C30+	0.0000	0.0000	0.0000
<b>Total</b>	<b>100.0000</b>	<b>100.0000</b>	<b>100.0000</b>

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303-637-0150

**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**DHA COMPONENT LIST**

PROJECT NO. :	201504119	ANALYSIS NO. :	03
COMPANY NAME :	BLACK HILLS PLATEAU PRODUCTION	ANALYSIS DATE:	MAY 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 20, 2015
PRODUCER :		CYLINDER NO. :	16372
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	SEPARATOR B 11:23		EMPACT
	HDU 9-41		
***FIELD DATA***		SAMPLE TEMP. :	90
SAMPLE PRES. :	210	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; PH = 7		

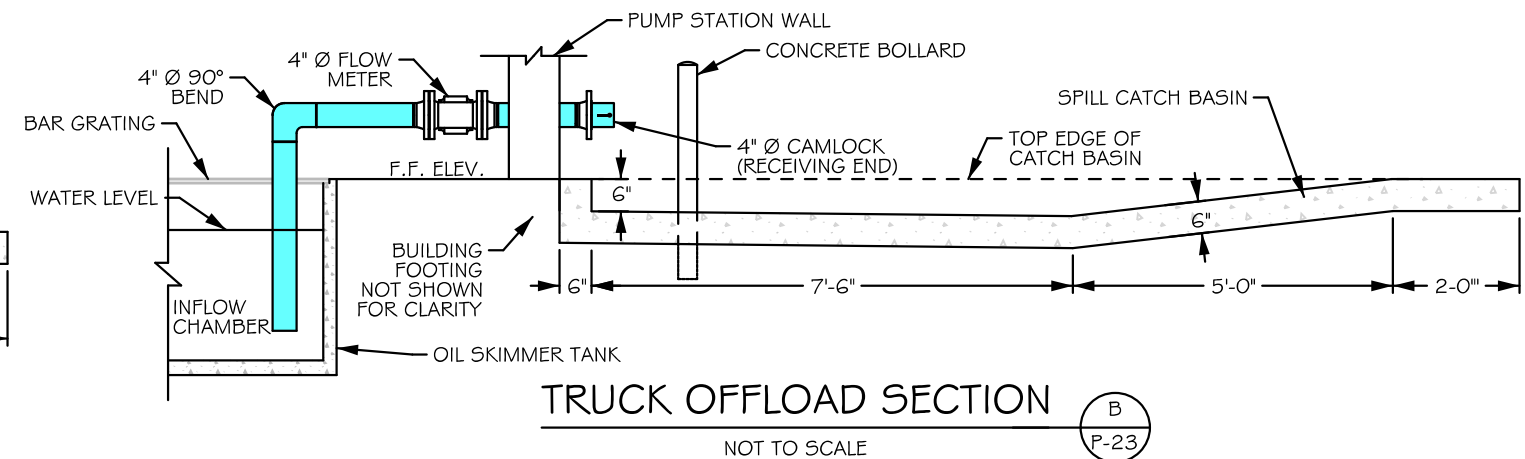
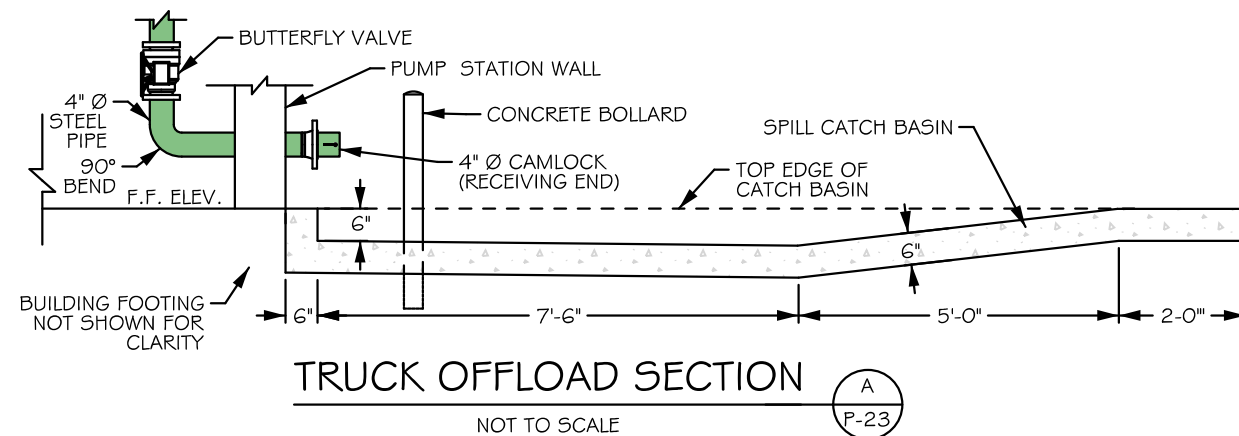
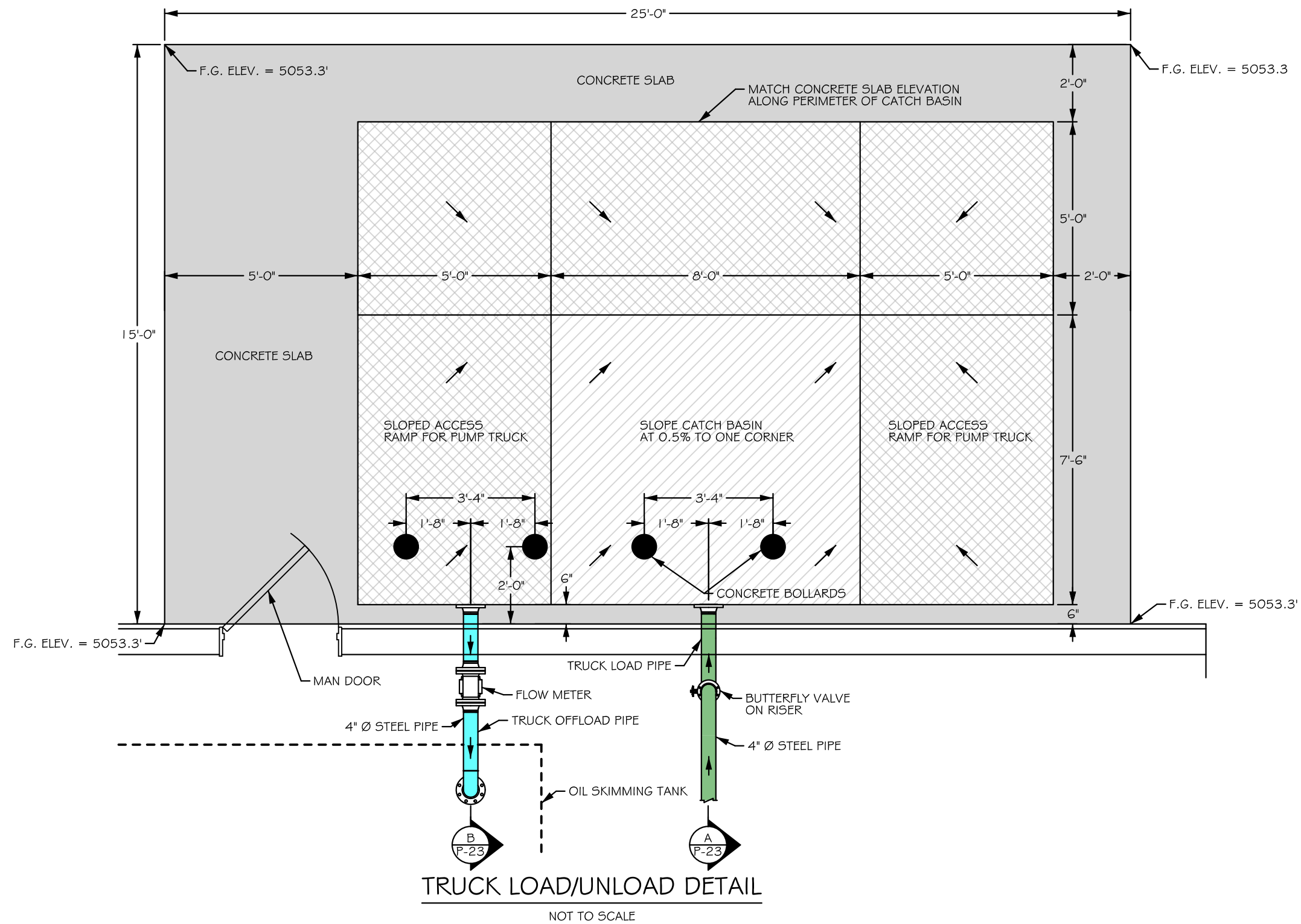
COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Water	W	99.9884	99.9723	99.9532
Nitrogen	NHC	0.0000	0.0000	0.0000
Carbon Dioxide	NHC	0.0000	0.0000	0.0000
Methane	P1	0.0061	0.0054	0.0180
Ethane	P2	0.0002	0.0004	0.0011
Propane	P3	0.0000	0.0000	0.0000
i-Butane	I4	0.0000	0.0000	0.0000
n-Butane	P4	0.0000	0.0000	0.0000
i-Pentane	I5	0.0000	0.0000	0.0000
Acetone	X2	0.0005	0.0016	0.0020
n-Pentane	P5	0.0000	0.0000	0.0000
t-Butanol	X4	0.0047	0.0194	0.0246
n-Nonane	P9	0.0000	0.0001	0.0001
UnknownC9s	U9	0.0001	0.0006	0.0008
n-Tridecane	P13	0.0000	0.0001	0.0001
n-Tetradecane	P14	0.0000	0.0001	0.0001
TOTAL		100.0000	100.0000	100.0000

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# **ATTACHMENT F**

## **TRUCK LOAD OUT DETAILS**





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HELENA, MT 59601  
(406) 443-3962

Black Hills Exploration & Production  
A Black Hills Corporation Enterprise  
2350 G Road, Suite 101  
Grand Junction, CO 81505

DSGN	DATE	CKD	STH
DDP	09/14	CKD	STH
REV	DATE	CKD	STH
DDP	10/14	CKD	STH
MRS	10/14	STH	

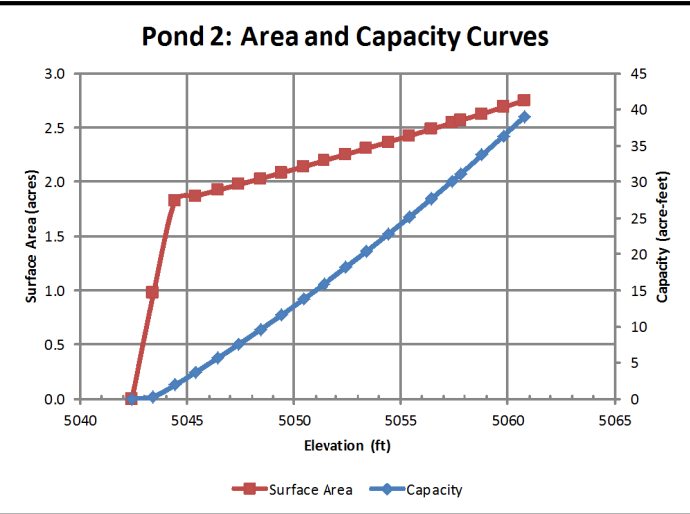
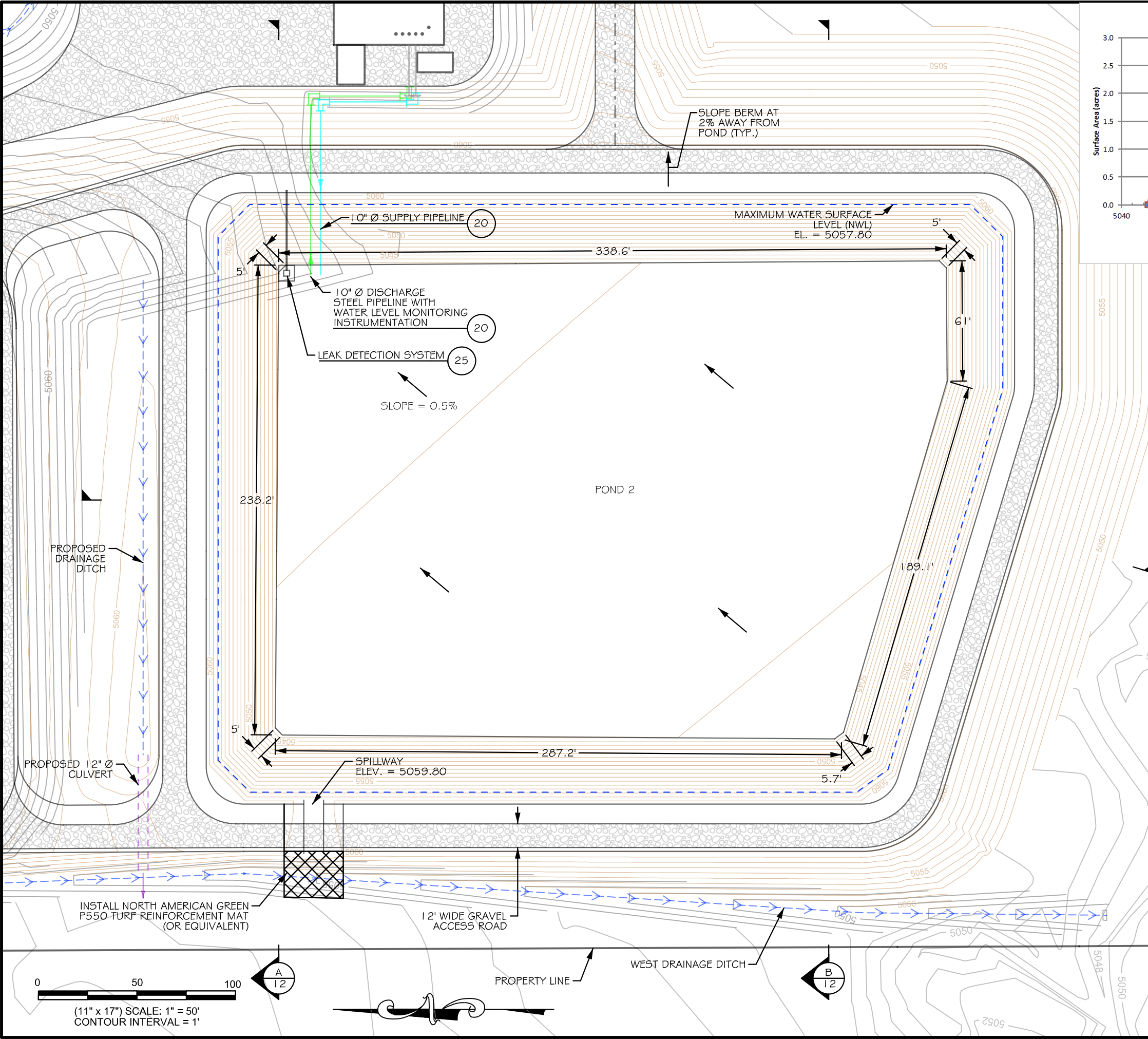
JOB # 2013-134

DE BEQUE WATER STATION  
PUMP STATION

Truck Load/Unload Details  
SHEET  
P-23

# **ATTACHMENT G**

## **ENGINEERING PLANS**



POND 2 ELEVATION-STORAGE TABLE			
ELEVATION	CAPACITY (AC-FT)	CUMULATIVE CAPACITY (AC-FT)	SURFACE AREA (ACRES)
5042.42	0.00	0.00	0.00
5043.42	0.34	0.34	0.97
5044.42	1.56	1.90	1.82
5045.42	1.84	3.74	1.87
5046.42	1.90	5.64	1.92
5047.42	1.95	7.59	1.98
5048.42	2.00	9.59	2.03
5049.42	2.06	11.65	2.09
5050.42	2.11	13.76	2.14
5051.42	2.17	15.93	2.20
5052.42	2.22	18.15	2.25
5053.42	2.28	20.43	2.31
5054.42	2.34	22.77	2.37
5055.42	2.40	25.17	2.43
5056.42	2.45	27.62	2.48
5057.42	2.51	30.14	2.54
5057.80	0.97	31.11	2.57
5058.80	2.60	33.70	2.63
5059.80	2.66	36.36	2.69
5060.80	2.72	39.08	2.75

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2350 G Road, Suite 101  
Grand Junction, CO 81505

DSGN	DATE	CKD	STH
DDP	09/14	STH	
REV	DATE	CKD	STH
DDP	02/15	STH	

JOB # 2013-134

**DE BEQUE WATER STATION**

**POND 2**

**Plan View**

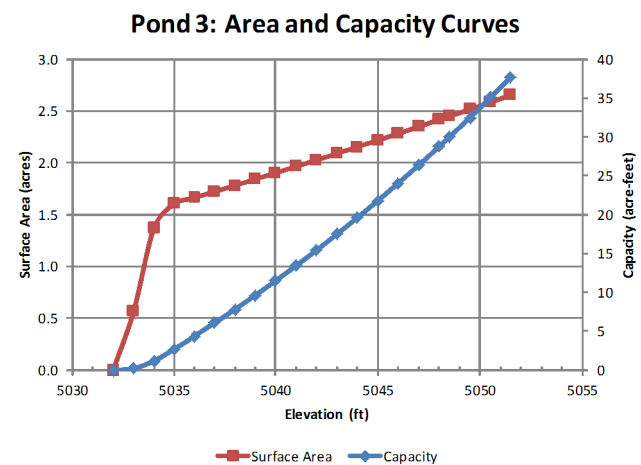
**SHEET**

**11 OF 29**

CONSTRUCTION FILE NUMBER

C-2030





POND 3 ELEVATION-STORAGE TABLE			
ELEVATION	CAPACITY (AC-FT)	CUMULATIVE CAPACITY (AC-FT)	SURFACE AREA (ACRES)
5032	0.00	0.00	0.00
5033	0.22	0.22	0.57
5034	0.97	1.18	1.37
5035	1.55	2.73	1.61
5036	1.63	4.37	1.66
5037	1.69	6.06	1.72
5038	1.75	7.81	1.78
5039	1.81	9.63	1.84
5040	1.88	11.50	1.90
5041	1.94	13.44	1.97
5042	2.00	15.44	2.03
5043	2.06	17.50	2.09

POND 3 ELEVATION-STORAGE TABLE			
ELEVATION	CAPACITY (AC-FT)	CUMULATIVE CAPACITY (AC-FT)	SURFACE AREA (ACRES)
5044	2.13	19.63	2.16
5045	2.19	21.82	2.22
5046	2.26	24.08	2.28
5047	2.32	26.40	2.35
5048	2.39	28.79	2.42
5048.5	1.22	30.01	2.45
5049.5	2.49	32.50	2.52
5050.5	2.56	35.06	2.59
5051.5	2.63	37.69	2.65

