



WOLVERINE OPERATING COMPANY
of Utah, LLC

Energy Exploration in Partnership with the Environment

April 17, 2006

Fluid Minerals Group
Bureau of Land Management
Richfield Field Office
150 East 900 North
Richfield, Utah 84701

Re: Application for Permit to Drill - Wolverine Operating Company of Utah, LLC
Wolverine Federal Denmark Wash 15-1
Surface and Target Location: 702' FNL, 1815' FEL, NW/4 NE/4, Section 15
T21S, R2W, SLB&M, Sevier County, Utah

Dear Fluid Minerals Group:

Wolverine Operating Company of Utah, LLC (Wolverine) respectfully submits the enclosed original and two copies of the *Application for Permit to Drill (APD)*, Form 3160-3, for the referenced well. Included with this APD is the following supplemental information:

- Exhibit "A" – Survey plat and layout of the proposed well site;
- Exhibit "B" – Road design and cross-section;
- Exhibit "C" – Proposed location maps and access corridor;
- Exhibit "D" – Drilling prognosis with BOPE diagram and H2S contingency plan;
- Exhibit "E" – Surface use plan.

Please accept this letter as Wolverine's written request for confidential treatment of all information contained in and pertaining to this application.

The access road and drill site for this well are situated entirely on Federal Lease UTU-81397 and BLM administered land. Water for drilling and completion operations will be purchased from the City of Salina (Water System 21014).

Also included with this APD package is a revised Surface Use Plan (Exhibit "E") for the recently submitted Wolverine Federal Glenwood 10-1 well. Along with other minor changes to this document, the Certification statement was corrected to reflect the proper company name and bonding. Please replace the original Exhibit "E" submitted in that APD with this corrected version. We will look forward to your 10-day letter for the Glenwood well in the early May time frame as you mentioned

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Thank you very much for your timely consideration of this application. Please feel free to contact myself or Ed Higuera of this office, or Don Hamilton of Buys & Associates, Inc. at 435-719-2018, if you have any questions or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Ellis M. Peterson". The signature is fluid and cursive, with the first name "Ellis" being the most prominent.

Ellis M. Peterson
Senior Production Engineer
Wolverine Operating Company of Utah, LLC

cc: Diana Whitney, UDOGM
Don Hamilton, Buys & Associates, Inc.
Dawn Martin, Buys & Associates, Inc.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
UTU-81397

6. If Indian, Allottee or Tribe Name
N/A

7. If Unit or CA Agreement, Name and No.
N/A

8. Lease Name and Well No.
Wolv. Fed. Denmark Wash 15-1

9. API Well No.
43-041-30043

1a. Type of work: DRILL REENTER

1b. Type of Well: Oil Well Gas Well Other Single Zone Multiple Zone

2. Name of Operator
Wolverine Operating Company of Utah, LLC

3a. Address **55 Campau, NW
Grand Rapids, Michigan, 49503-2616**

3b. Phone No. (include area code)
616-458-1150

10. Field and Pool, or Exploratory
Wildcat

11. Sec., T. R. M. or Blk. and Survey or Area
Section 15, T21S, R2W, SLB&M

4. Location of Well (Report location clearly and in accordance with any State requirements.)* **38.986811**
At surface **702' FNL, 1815' FEL (NW/4 NE/4) 412860 X - 112.006107**
At proposed prod. zone **702' FNL, 1815' FEL (NW/4 NE/4) 43155864**

14. Distance in miles and direction from nearest town or post office*
5.3 miles northwest of Aurora, Utah

12. County or Parish
Sevier

13. State
UT

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) **702**

16. No. of acres in lease
1965.02

17. Spacing Unit dedicated to this well
40 acres

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. **None**

19. Proposed Depth
14,200'

20. BLM/BIA Bond No. on file
BLM WY3329

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,056' GL, 6082' KB

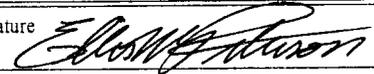
22. Approximate date work will start*
09/01/2006

23. Estimated duration
90 days

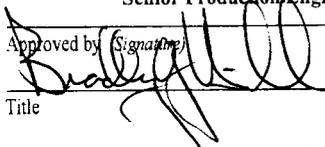
24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature  Name (Printed/Typed) **Ellis M. Peterson** Date **04/17/2006**

Title
Senior Production Engineer

Approved by  Name (Printed/Typed) **BRADLEY G. HILL** Date **04-27-06**
Title **ENVIRONMENTAL MANAGER**

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*(Instructions on page 2)

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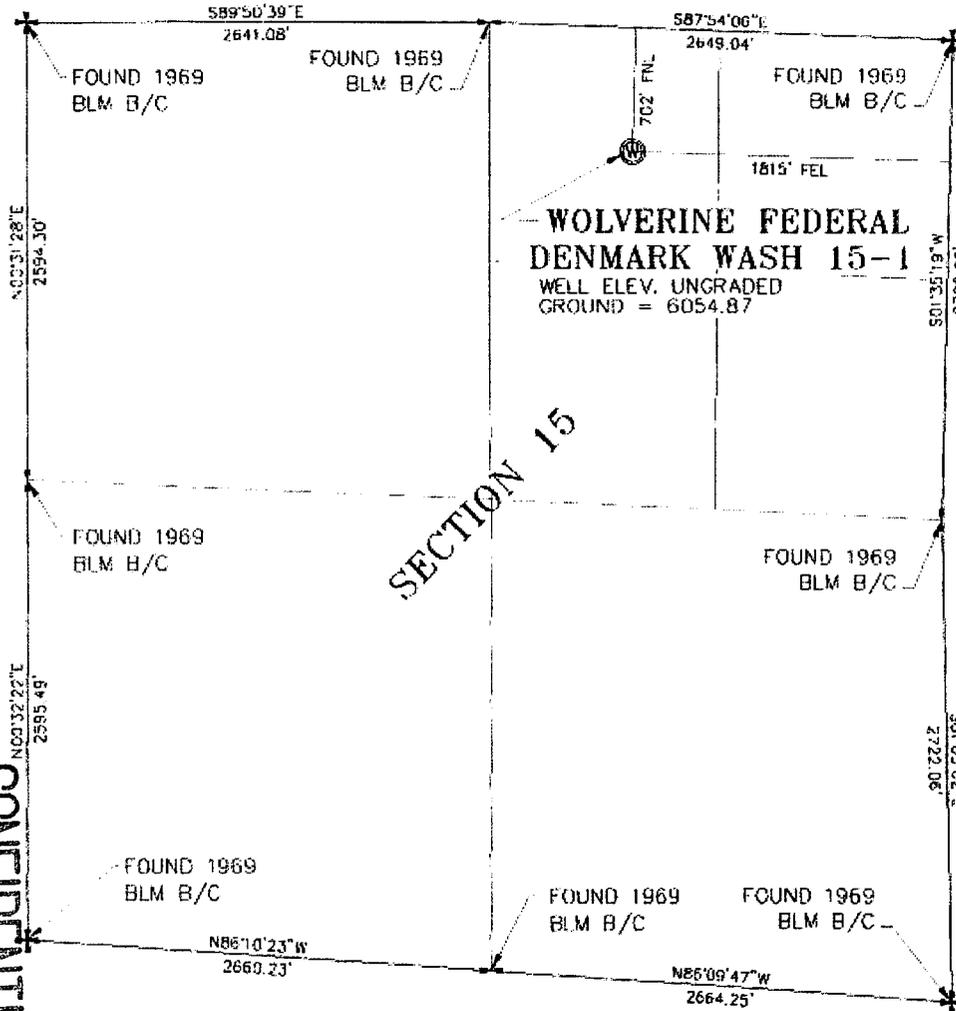
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**Federal Approval of this
Action is Necessary**

APR 18 2006

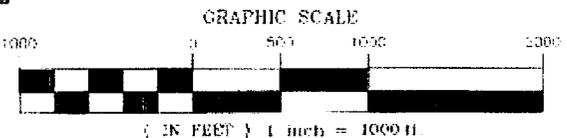
DIV. OF OIL & GAS

SECTION 15, T.21 S., R.2 W., S.L.B. & M.



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Exhibit "A"



PROJECT
WOLVERINE OPERATING COMPANY OF UTAH, LLC
 WELL LOCATION, LOCATED AS SHOWN
 IN THE NW 1/4 OF THE NE 1/4 OF
 SECTION 15, T.21 S., R.2 W., S.L.B. & M.,
 SEWER COUNTY, UTAH

LEGEND
 + SECTION CORNER AS NOTED
 • QUARTER CORNER AS NOTED
 • PROPOSED WELL LOCATION

NOTE: THE PURPOSE OF THIS SURVEY WAS TO PLAT THE WOLVERINE FEDERAL DENMARK WASH 15-1 WELL LOCATED IN THE NW 1/4 OF THE NE 1/4 OF SECTION 15, T.21 S., R.2 W., S.L.B. & M., SEWER COUNTY, UTAH.

BASIS OF ELEVATION

ELEVATION BASED ON USGS BENCH MARK #V50 LOCATED IN THE SOUTHEAST 1/4 OF SECTION 14, T.21 S., R.2 W., S.L.B. & M., ELEVATION USED WAS 5809.00

BASIS OF BEARING

BASIS OF BEARING USED S135°19'W BETWEEN THE NORTHEAST AND THE EAST QUARTER CORNERS OF SECTION 15, T.21 S., R.2 W., S.L.B. & M.

WELL LATITUDE: 38°59'12.17586"N = (38.98671552)
 WELL LONGITUDE: 112°00'24.59536"W = (112.00683204)

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION, AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Ryan W. Savage 4/12/06
 RYAN W. SAVAGE No. 183343 DATE
 RYAN SAVAGE
 STATE OF UTAH

Savage Surveying, INC.
 Ryan W. Savage, PLS
 PO Box 802
 275 S 800 W
 Richfield, UT 84701
 Home: 435-898-8835
 Fax: 435-898-8835
 Cell: 435-201-1345



Well Location Layout for

Wolverine Operating Company of Utah, LLC.

PROPOSED BY	DATE	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
R.W.S.	T.K.S.	1" = 1000'	4/10/06	0512-0085	1

SURFACE USE PLAN

CONDITIONS OF APPROVAL

Attachment for Permit to Drill

Name of Operator:	Wolverine Operating Company of Utah, LLC
Address:	55 Campau NW Grand Rapids, Michigan, 49503-2616
Well Location:	Wolverine Federal Denmark Wash 15-1 NW/4 NE/4, Section 15, Township 21 South, Range 2 West, Sevier County, Utah

State and Fee surface use are not required for construction and drilling of the referenced well, Federal surface use is being requested with this application through the BLM – Richfield Field Office.

The dirt contractor will be provided with an approved copy of the surface use plan of operations before initiating construction.

A Federal onsite inspection was conducted on Tuesday, March 7, 2006 with the following individuals present:

Charlie Irons – Wolverine Operating Company of Utah, LLC
Ryan Savage – Savage Surveying, Inc.
Michael Jackson – BLM Geologist and Team Leader
Wayne Wetzel – BLM Associate Field Manager
Tim Finger – BLM Outdoor Recreation Planner

1. Existing Roads:

- a. The proposed well site is located approximately 8.2 miles west of Salina, Utah and 5.3 miles northwest of Aurora, Utah.
- b. Directions to the proposed well site can be seen on the location map of Exhibit C.
- c. The use of roads under State and County Road Department maintenance are necessary to access the referenced well. A Roadway Encroachment Application will be submitted to Sevier County. However, no upgrades to the State or County Road system are proposed at this time.
- d. All existing roads will be maintained and kept in good repair during all phases of operation.
- e. Vehicle operators will obey posted speed restrictions and observe safe speeds commensurate with road and weather conditions.
- f. Improvements are planned for the access road from the existing county maintained Willow Creek County Road surface to the proposed wellsite.
- g. An off-lease Federal right-of-way is not anticipated for the access corridor because the corridor is located within the existing lease boundary.

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Exhibit "E"

2. Planned Access Roads:

- a. From the existing county maintained Willow Creek County Road graveled surface, an access is proposed trending north approximately 1573' (0.30 miles) to the proposed well site. The access primarily consists of two-track upgrade with a segment of new construction, neither of which crosses any significant drainage. A road alignment plan has been included within this package for the upgraded access road length.
- b. It is anticipated that the access road will be constructed with the minimum surface disturbance necessary to facilitate safe and effective travel during drilling operations. The road will then be further upgraded to the included plan as necessary for longer term year-round access during continued production operations.
- c. The proposed upgraded access road will consist of a 12' travel surface with one truck turnout having a width of 22'. The ROW for the proposed road will accommodate cuts and fills where needed, as such, the total ROW width will vary between 26' and 67' with a 5' buffer area on each side of the proposed disturbance for the road segments.
- d. State or fee surface use approval is not anticipated for the road construction.
- e. A maximum grade of 10% is anticipated along the road length. An acceptable grade will be maintained throughout the project with no major cuts and fills required to access the well.
- f. One truck turnout has been incorporated into the road design package that has been attached to this application.
- g. Drainage structures have been incorporated into the road design package that has been attached to this application. Energy dissipating structures and silt fences will be utilized to minimize erosion that may result from the drainage structures.
- h. No surfacing material will come from Federal lands.
- i. No gates or cattle guards are anticipated at this time.
- j. Surface disturbance and vehicular travel will be limited to the approved location access road.
- k. The operator will be responsible for all maintenance of the access road including drainage structures.

3. Location of Existing Wells:

- a. Following is a list of existing wells within a one mile radius of the proposed well:
 - i. Water wells None
 - ii. Injection wells None
 - iii. Disposal wells None
 - iv. Drilling wells None
 - v. Temp. shut-in wells None
 - vi. Producing wells None
 - vii. Abandon wells None

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4. Location of Production Facilities:

- a. All permanent structures will be painted a flat, non-reflective Olive Black / Juniper Green, or as otherwise approved by the AO to match the surrounding environment. All facilities will be painted within six months of installation. Facilities requiring compliance with the Occupational Safety and Health Act (OSHA) may be excluded.
- b. A temporary testing facility may be constructed on this location and if so, it will be surrounded by a dike of sufficient capacity to contain the storage capacity of the largest tank. All loading lines and valves will be placed inside the berm surrounding the tank battery location.
- c. Any necessary pits will be properly fenced to prevent any wildlife and livestock entry.
- d. All access roads will be upgraded and maintained as necessary to prevent erosion and accommodate year-round traffic. The road will be maintained in a safe useable condition.
- e. The site will require periodic maintenance to ensure that drainages are kept open and free of debris, ice, and snow, and that surfaces are properly treated to reduce erosion, fugitive dust, and impacts to adjacent areas.
- f. A pipeline and possible treater / load-out area will be addressed in a forthcoming EA.

5. Location and Type of Water Supply:

- a. Wolverine intends to purchase water from the City of Salina. Jim Casto with the City of Salina has agreed to provide the water needed which will be municipal (culinary) water and tapped at the hydrant located just north of Pioneer Cemetery (SE/4 NW/4 of Section19, T21S, R1E). The water will be acquired through a direct purchase agreement with Salina City based on quantity.
- b. Water will be trucked to the well site from the hydrant utilizing approved access roads.
- c. No water well is proposed with this application.
- d. Should additional water sources be pursued they will be properly permitted through the State of Utah – Division of Water Rights. Additionally, the BLM and UDOGM will be notified of any changes in water supply.

6. Source of Construction Material:

- a. No construction materials will be removed from Federal lands.
- b. If any gravel is used, it will be obtained from a state approved gravel pit.

7. Methods of Handling Waste Disposal:

- a. All wastes associated with this application will be contained and disposed of utilizing approved facilities.
- b. Drill cuttings will be contained and buried on site.
- c. The reserve pit will be located inboard of the location and near the southwest edge of the pad.
- d. The reserve pit will be constructed so as not to leak, break, or allow any discharge.
- e. The reserve pit will be lined with 12 mil minimum thickness plastic nylon reinforced liner material. The liner will overlay a felt liner pad only if rock is encountered during excavation. The pit liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place. No trash, scrap pipe, etc., that could puncture the liner will be disposed of in the pit. Pit walls will be sloped no greater than 2:1. A minimum 2-foot freeboard will be maintained in the pit at all times during the drilling and completion operation.
- f. The reserve pit has been located in cut material. Three sides of the reserve pit will be fenced before drilling starts. The fourth side will be fenced as soon as drilling is completed, and shall remain until the pit is dry. After the reserve pit has dried, all areas not needed for production will be rehabilitated.
- g. No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completion of the well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of the well.
- h. Trash will be contained in a trash cage and hauled away to an approved disposal site as necessary but no later than at the completion of drilling operations. The contents of the trash container will be hauled off periodically to the approved Sevier County Landfill near Salina, Utah.
- i. Produced fluids from the well other than water will be produced into a test tank until such time as construction of production facilities is completed. Any spills of oil, gas, salt water or other produced fluids will be cleaned up and removed.
- j. Any salts and/or chemicals, which are an integral part of the drilling system, will be disposed of in the same manner as the drilling fluid.
- k. Sanitary facilities will be on site at all times during operations. Sewage will be placed in a portable chemical toilet and the toilet replaced periodically utilizing a licensed contractor to transport the portable chemical toilet by truck so that its contents can be delivered to the Salina Wastewater Treatment Facility in accordance with state and county regulations.

8. Ancillary Facilities:

- a. Garbage Containers and Portable Toilets are the only ancillary facilities proposed in this application.

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9. Well Site Layout: (See Exhibit B)

- a. The well will be properly identified in accordance with BLM and state regulations.
- b. Access to the well pad will be from the southeast.
- c. The pad and road designs are consistent with BLM specifications.
- d. A pre-construction meeting with responsible company representative, contractors and the BLM will be conducted at the project site prior to commencement of surface-disturbing activities. The pad and road will be construction-staked prior to this meeting.
- e. All surface disturbing activities will be supervised by a qualified, responsible company representative who is aware of the terms and conditions of the APD and specifications in the approved plans.
- f. All cut and fill slopes will be such that stability can be maintained for the life of the activity.
- g. Diversion ditches will be constructed as shown around the well site to prevent surface waters from entering the well site area.
- h. The site surface will be graded to drain away from the pit to avoid pit spillage during large storm events.
- i. The stockpiled topsoil (first 6 inches or maximum available) will be stored in a windrow on the uphill side of the location to prevent any possible contamination. All topsoil will be stockpiled for reclamation in such a way as to prevent soil loss and contamination.
- j. Pits will remain fenced until site cleanup.
- k. Water injection may be implemented if necessary to minimize the amount of fugitive dust.

10. Plans for Restoration of the Surface:

- a. Site reclamation for a producing well will be accomplished for portions of the site not required for the continued operation of the well.
- b. The Operator will control noxious weeds along access road use authorizations, well sites, or other applicable facilities by spraying or mechanical removal. A list of noxious weeds may be obtained from the BLM or the appropriate County Extension Office.
- c. Upon well completion, any hydrocarbons in the pit shall be removed in accordance with BLM and state regulations. Once the reserve pit is dry, the plastic nylon reinforced liner shall be torn and perforated before backfilling of the reserve pit. The reserve pit and that portion of the location not needed for production facilities/operations will be recontoured to the approximate natural contours.
- d. The cut and fill slopes and all other disturbed areas not needed for the production operation will be top soiled and re-vegetated. The stockpiled topsoil will be evenly distributed over the disturbed area.
- e. Prior to reseeding the site, all disturbed areas, including the access road, will be scarified and left with a rough surface. The site will then be seeded and/or planted as prescribed by the

BLM.

11. Surface and Mineral Ownership:

- a. Surface Ownership -- United States of America under the management of the BLM – Richfield Field Office, 150 East 900 North, Richfield, Utah 84701; 435-896-1500.
- b. Mineral Ownership – United States of America under the management of the BLM – Richfield Field Office, 150 East 900 North, Richfield, Utah 84701; 435-896-1500.

12. Other Information:

- a. Western Land Services has conducted a Class III archeological survey. A copy of the report has been submitted under separate cover to the appropriate agencies by Western Land Services.
- b. Buys & Associates, Inc. will conduct a T&E survey and prepare an EA for the proposed well site. A copy of the T&E report and EA will be submitted under separate cover to the appropriate agencies by Buys & Associates, Inc.
- c. Additional information:
 - a. No drainage crossings that require additional State or Federal approval are being crossed.
 - b. No raptor nests are known to exist within one mile of the proposed wellsite.
 - c. A paleontological clearance is not required since suitable formations do not exist within the project area.

13. Operator's Representative and Certification

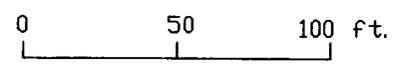
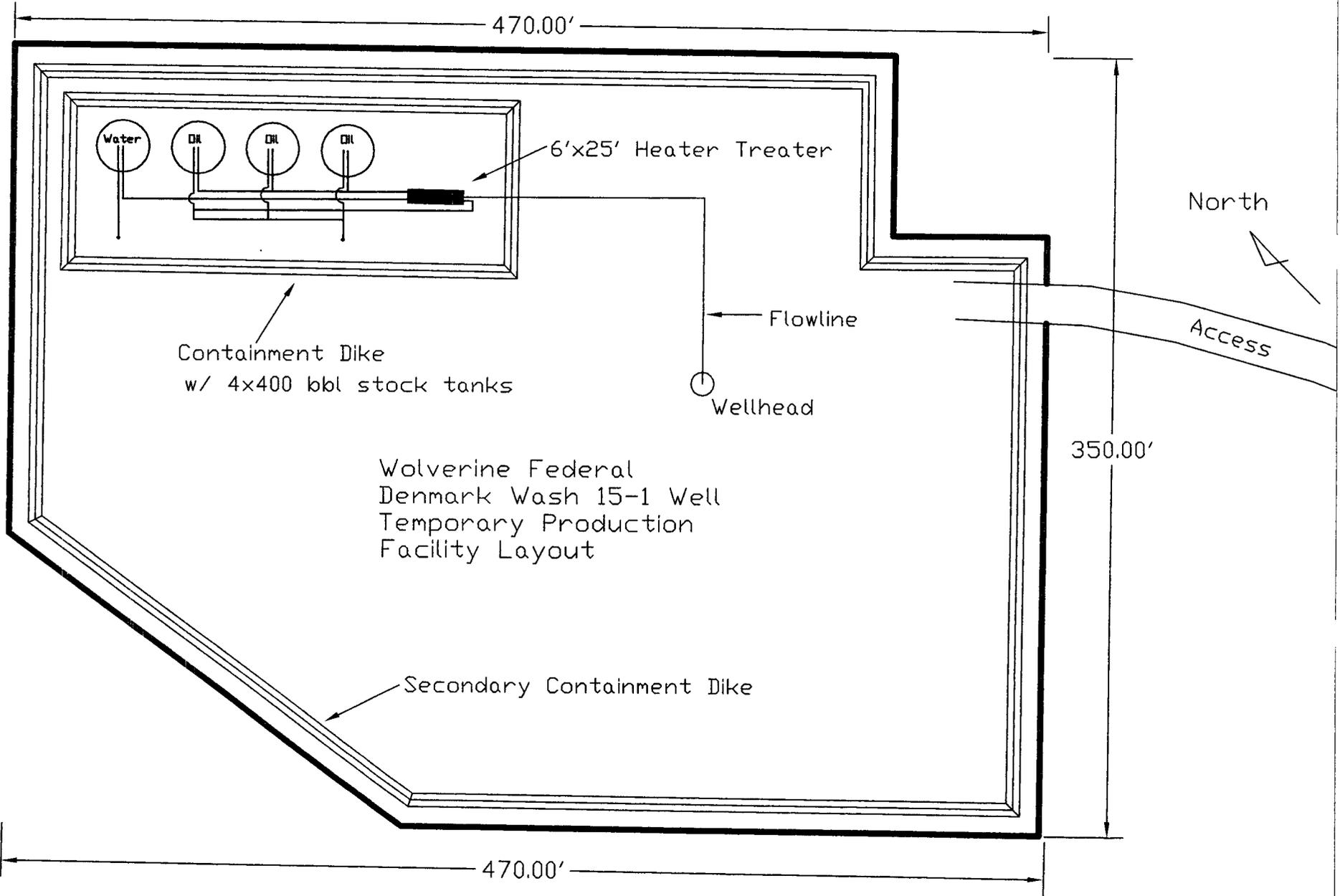
<u>Title</u>	<u>Name</u>	<u>Office Phone</u>
Company Representative (Richfield)	Charlie Irons	1-435-896-1943
Company Representative (Grand Rapids)	Edward Higuera	1-616-458-1150
Agent for Wolverine	Don Hamilton	1-435-719-2018

Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Wolverine Operating Company of Utah, LLC and its contractors and subcontractors in conformity with this APD package and the terms and conditions under which it is approved. I also certify responsibility for the operations conducted on that portion of the leased lands associated with this application, with bond coverage being provided under Wolverine's pending existing BLM Bond. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Signature:  Date: 4/17/06

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04/17/2006

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WOLVERINE OPERATING COMPANY OF UTAH, LLC

DRILLING PLAN

Wolverine Federal Denmark Wash 15-1 NW/4 NE/4, Section 15, Township 21 South, Range 2 West, S.L.B.&M. Sevier County, Utah

Plan Summary:

It is planned to drill this confidential exploratory well as a vertical bore hole. The well will be drilled to a depth of 14,200' to test the Navajo, Kaibab, and Toroweap Formations. Well path deviation caused by subsurface geologic irregularities is expected to be the primary drilling concern in this area. No abnormal pressure is anticipated. No significant volume of H₂S is expected, but an H₂S contingency plan will be in effect and necessary precautions will be taken before drilling below the Chinle Formation.

The planned location is as follows:

Surface & Bottom-Hole Location: 702' FNL, 1815' FEL, Section 15, T21S, R2W, S.L.B. & M.

Conductor casing will be set at approximately 120 feet and cemented to surface. A 17-1/2" hole will be drilled to 3000' where 13-3/8" surface casing will be set and cemented to surface. A 12-1/4" hole will be drilled through the Navajo to 10,900' where the well will be logged and 9-5/8" casing will be set and cemented. Then, an 8-1/2" hole will be drilled through the Chinle, Moenkopi, Kaibab, and Toroweap to approximately 14,200' and the well will be logged. If significant porosity and hydrocarbon shows are encountered in the Kaibab or Toroweap, 7" casing will be set and cemented at TD.

Drilling activities at this well are expected to commence as early as September, 2006.

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Well Name: Wolverine Federal Denmark Wash 15-1

Surface Location: 702' FNL, 1815' FEL
 NW/4 NE/4 Section 15, T21S, R2W, S.L.B. & M.
 Sevier County, Utah

TD Bottom-Hole Location: Same as Surface

Elevations: 6056' GL, 6082' KB

I. Geology:

Tops of important geologic markers and anticipated water, oil, gas, and mineral content are as follows:

Formation	TVD Interval (KB)	MD Interval (KB)	Contents	Pressure Gradient
Tertiary (Surface)	26' – 2091'	26' – 2091'		
Cretaceous	2091' – 4803'	2091' – 4803'		
Arapien	4803' – 9409'	4803' – 9409'		
Twin Creek	9409' – 9782'	9409' – 9782'	Water/Oil	0.44 psi/ft
Navajo	9782' – 10834'	9782' – 10834'	Water/Oil	0.44 psi/ft
Chinle	10834' – 11324'	10834' – 11324'		
Moenkopi	11324' – 13282'	11324' – 13282'		
Kaibab	13282' – 13397'	13282' – 13397'	Water/Oil/Gas	0.44 psi/ft
Toroweap	13397' – 14200'	13397' – 14200'	Water/Oil/Gas	0.44 psi/ft
Total Depth	14200'	14200'		

II. Well Control:

The contracted drilling rig has a 10M BOP system but conditions only require a 5M BOP system. BOPE will be in place and tested as a minimum to 5M system standards prior to drilling out the surface casing shoe. Pressures are not expected to approach the working pressure of a 5M system. See attached schematic of BOPE.

The BOPE will as a minimum include the following:

Wellhead Equipment (5M Min.):

BOPE Item	Flange Size and Rating
Rotating Head (Below Chinle)	13-5/8" 5M
Annular Preventer	13-5/8" 5M
Double Rams (5" Pipe - top, Blind - bottom)	13-5/8" 10M
Drilling Spool w/ 2 side outlets (4" Choke Line, 4" Kill Line)	13-5/8" 10M x 13-5/8" 10M
Single Ram (Pipe)	13-5/8" 10M
Spacer Spool	13-5/8" 10M x 13-5/8" 10M
Casing Spool (Multi-Bowl)	13-5/8" 10M x 13-5/8" 5M
Casing Head (13-5/8" SOW, w/ two 2-1/16" SSO's)	13-5/8" 5M

Auxiliary Equipment (5M Min.):

BOPE Item
Choke Line with 2 valves (3" minimum)
Kill Line with 2 valves and one check valve (2" Minimum)
2 Chokes with one remotely controlled at a location readily accessible to the driller
Upper and lower kelly cock valves with handles
Safety Valves to fit all drill string connections in use
Inside BOP or float sub

Pressure gauge on choke manifold
Fill-up line above the uppermost preventer
All BOPE connections subject to well pressure will be flanged, welded, or clamped
Wear bushing in casing head

- A. **Choke manifold** will be functionally equipped and sized at a minimum as shown on the attached diagram. All chokes will be straight lines, or use tee blocks or be targeted with running tees if there are turns, and all choke lines will be anchored. All valves (except chokes) in the kill line choke manifold and choke line will be full opening and allow straight through flow.
- B. **System accumulator** will have sufficient capacity to open the hydraulically-controlled gate valve and close all rams plus the annular preventer (3 ram system will have added 50 percent safety factor to compensate for any fluid loss in the control system or preventers) and retain a minimum pressure of 200 psi above pre-charge on the closing manifold without use of the closing unit pumps. The fluid reservoir capacity shall be double the usable fluid volume of the accumulator system capacity and the fluid level of the reservoir shall be maintained at the manufacturer's recommendations. The accumulator will have two (2) independent power sources available to close the preventers. Nitrogen bottles may be one of those sources, and if so, will have charge maintained per manufacturer's specifications.
- C. **Accumulator pre-charge pressure test** will be conducted prior to connecting the closing unit to the BOP stack and at least once every 6 months. The accumulator pressure will be corrected if the measured precharge pressure is found to be above or below the maximum or minimum specified limits. Only nitrogen gas will be used to precharge.
- D. **Power for the closing unit pumps** will be available to the unit at all times so that the pumps will automatically start when the closing valve manifold pressure has decreased to the pre-set level.
- E. **Accumulator pump capacity** will be such that, with the accumulator system isolated from service, the pumps will be capable of opening the hydraulically-operated gate valve (if so equipped), plus closing the annular preventer on the smallest size drill pipe to be used within 2 minutes, and retaining a minimum of 200 psi above the specified accumulator pre-charge pressure.
- F. **Locking devices**, either manual (i.e., hand wheels) or automatic, will be installed on the ram type preventers. A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.
- G. **Remote controls** will be readily accessible to the driller and will be capable of both opening and closing all preventers. Master controls will be at the accumulator and will be capable of opening and closing all preventers and the choke line valve.
- H. **Well control equipment testing** will be performed using clear water when the equipment is initially installed, whenever any seal subject to test pressure is broken, following related repairs, and as a minimum, every 30-day interval. The tests will apply to all related well control equipment.

Ram type preventers and associated equipment will be isolated and tested to 5000 psi. The annular preventer will be tested to 2500 psi. Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer, for all tests. A casing head valve will be open below the test plug during testing of the BOP stack. Valves will be tested from the working pressure side with all down-stream valves open. Kill line valves will be tested with the check valve held open or the ball removed.

Pipe and blind rams will be activated each trip, but not more than once a day. The annular preventers will be functionally operated at least weekly. A pit level drill will be conducted weekly for each crew. All BOPE drills and tests will be recorded in the IADC driller's log.

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III. Casing and Cementing:

A. Casing Program (all new casing):

<u>Hole Size</u>	<u>Casing Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Connection</u>	<u>Coupling Diameter</u>	<u>Setting Depth</u>
30"	24"		Conductor			120' GL
17.50"	13.375"	68.0	J-55	BTC	14.375"	3000' KB
12.25"	9.625"	47.0	HCP-110	LTC	10.625"	10900' KB
8.50"	5.500"	20.0	P-110	LTC	6.050"	14200' KB

	<u>Surface</u>	<u>Production</u> <u>1</u>	<u>Production</u> <u>2</u>
Casing O. D. (in)	13.375	9.625	5.500
Casing Grade	J-55	HCP-110	P-110
Weight of Pipe (lbs/ft)	68.0	47.0	20.0
Connection	BTC	LTC	LTC
Top Setting Depth - MD (ft)	0	0	0
Top Setting Depth - TVD (ft)	0	0	0
Bottom Setting Depth - MD (ft)	3000	10900	14200
Bottom Setting Depth - TVD (ft)	3000	10900	14200
Maximum Mud Weight - Inside (ppg)	10.5	10.5	10.5
Maximum Mud Weight - Outside (ppg)	9.2	10.5	10.5
Design Cement Top - TVD (ft)	0	8900	10500
Design Cement Top - MD (ft)	0	8900	10500
Max. Hydrostatic Inside w/ Dry Outside (psi)	1638	5951	7753
Casing Burst Rating (psi)	3450	9440	12630
Burst Safety Factor (1.10 Minimum)	2.11	1.59	1.63
Max. Hydrostatic Outside w/ Dry Inside (psi)	1435	5951	7753
Collapse Rating	1950	7100	11100
Collapse Safety Factor (1.125 Minimum)	1.36	1.19	1.43
Casing Weight in Air (kips)	204.0	512.3	284.0
Body Yield (kips)	1069	1453	641
Joint Strength (kips)	1140	1213	548
Tension Safety Factor (1.80 Minimum)	5.24	2.37	1.93

Casing with same or greater burst, collapse, and tension rating may be substituted for any of the planned casing sizes depending on availability and actual conditions.

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B. Cementing Program

<u>Casing Size</u>	<u>Cement Slurry</u>	<u>Quantity (sks)</u>	<u>Density (ppg)</u>	<u>Yield (ft³/sk)</u>
13.375"	Lead: CBM Lite	650	10.5	4.12
13.375"	Tail: Premium Plus	450	15.6	1.19
9.625"	Tail: 50:50 POZ	470	13.0	1.71
5.500"	Tail: 50:50 POZ	900	14.35	1.21

Surface: 13-3/8" surface casing will be cemented from setting depth (3000') to surface and topped out with premium cement if necessary. Hardware will include a guide shoe, float collar, top plug, and a minimum of one centralizer per joint on the bottom three (3) casing joints. Water or other preflush fluid spacer pumped ahead of the slurry will separate cement from the drilling fluids.

Production 1: 9-5/8" production casing will be cemented in one stage from setting depth (10900') to 8900' (at least 500' above the Twin Creek top). A minimum of 20 percent silica will be added to the cement slurry if bottom-hole temperature exceeds 230 °F. Actual slurry volume will be based on calipered hole size plus 25% excess. Hardware will include a guide shoe, float collar, top plug, and centralizers on bottom and as needed across any pay zones. Water and preflush fluid spacer pumped ahead of the slurry will separate cement from the drilling fluids.

Production 2: 5-1/2" production casing will be cemented in one stage from setting depth (14200') to 10500' (at least 400' into 9-5/8" casing). A minimum of 20 percent silica will be added to the cement slurry if bottom-hole temperature exceeds 230 °F. Actual slurry volume will be based on calipered hole size plus 25% excess. Hardware will include a guide shoe, float collar, top plug, and centralizers as needed across any pay zones. Water and preflush fluid spacer pumped ahead of the slurry will separate cement from the drilling fluids.

- Other:
- The BLM will be notified at least twenty-four hours prior to running and cementing the surface and production casing strings.
 - Actual cement slurries for all casing will be based on final service company recommendations.
 - The size, weight, grade, type of thread, number of joints, and footage of all casing run will be recorded in the IADC driller's log. The amount and type of all cement pumped will be recorded in the IADC driller's log.
 - Adequate time will be allowed before drilling out below casing for the cement at the casing shoe to achieve a minimum 500-psi compressive strength.
 - All casing strings will be tested to 1500 psi before drilling out and if pressure declines by more than 10 percent in 30 minutes, corrective action will be taken.
 - Before drilling more than 20 feet of new hole below each casing string, a pressure integrity test of the casing shoe will be performed to a minimum of the mud weight equivalent anticipated to control the pore pressure to the next casing depth or at total depth of the well.

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IV. Mud Program:

<u>Depth</u>	<u>Mud Weight (ppg)</u>	<u>Mud Type</u>	<u>Viscosity</u>	<u>Fluid Loss</u>
0 – 3000'	8.4 – 9.2	Fresh Water	26 - 50	N/C to 12 cc
3000' – 10900'	9.2 – 10.5	Salt Mud	36 - 50	N/C to 8 cc
10900' – 14200'	9.2 – 10.5	Salt Mud	36 - 42	8 – 10 cc

- A. After mudding up, slow pump rates will be taken daily and recorded in the IADC driller's log.
- B. Visual and other possible mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. The hole will be kept full at all times.
- C. Abnormal pressures are not anticipated. In the event such pressures are to be anticipated, electronic/mechanical mud monitoring equipment will be in place and include as a minimum; pit volume totalizer (PVT); stroke counter; and flow sensor.
- D. A mud test will be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- E. The 10M BOPE system is not required for conditions on this well and use of the trip tank is not anticipated.
- F. Gas detecting equipment will be installed in the mud return system, and hydrocarbon gas shall be monitored for pore pressure changes.
- G. Hydrogen Sulfide (H₂S) safety and monitoring equipment will be installed, tested and operational a minimum of 500 feet or three days (which ever comes first) before the first zone containing or reasonably expected to contain H₂S (Kaibab) is penetrated.
- H. A flare system designed to gather and burn all gas will be available when drilling below intermediate casing. The flare line discharge will be located more than 100 feet from the well head and it will be positioned downwind of the prevailing wind direction (from south to south-west). The flare line will have straight lines unless turns are targeted with running tees and it will be anchored. The flare system will have an effective method for ignition. The presence of noncombustible gas is not likely or expected.
- I. Abnormal pressure is not expected. If abnormal pressure is to be anticipated, a mud-gas separator (gas buster) will be installed and operable beginning at a point at least 500 feet above any anticipated hydrocarbon zone of interest.
- J. Sufficient mud inventory will be maintained on location during drilling operations to handle any adverse conditions that may occur, including weighting materials and LCM for lost circulation.

V. Evaluation:

- A. Mud Log: A mud logging unit will be in operation from a depth of approximately 3000 feet to TD. Cutting samples will be caught, cleaned, bagged, and marked as required.
- B. Drill Stem Tests: No DST's are expected.
- C. Coring: No whole coring is planned. Rotary side-wall cores may be taken at select intervals in conjunction with open-hole logging operations.
- D. Wireline Logs: Wireline logs will be run as hole conditions allow from total depth to surface casing to assist in determining lithology and evaluating potential for hydrocarbon recovery. The logging tools will at a minimum survey resistivity, gamma radiation, and sonic velocity.

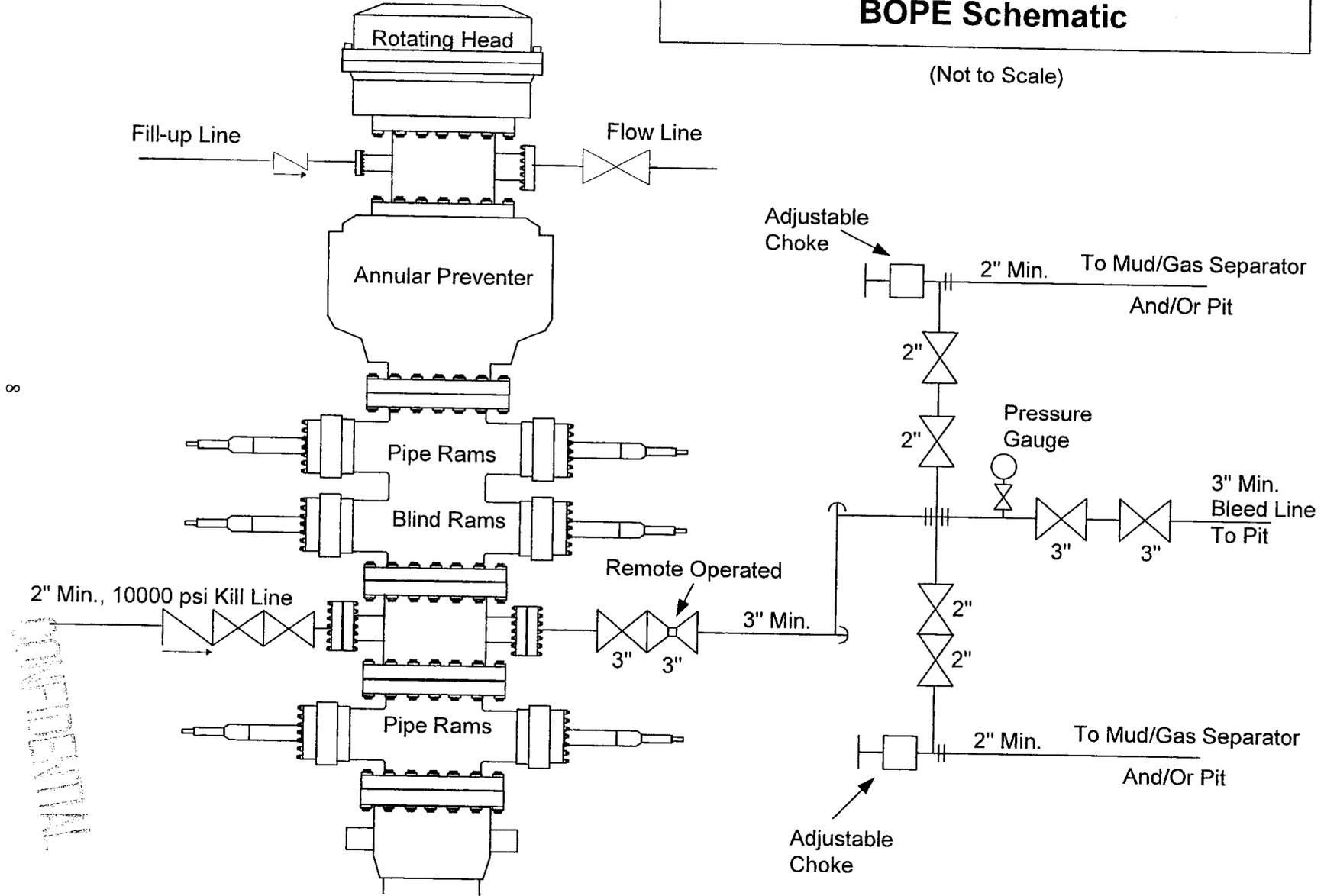
VI. Expected Bottom-Hole Pressure and Abnormal Conditions:

- A. Hydrogen Sulfide: There has been no evidence of H₂S gas in other wells drilled in this area, but the presence of H₂S is possible in deep carbonate formations. The Kaibab is the first such carbonate to be penetrated. Therefore, precautionary preparations will be taken for this exploratory well and a Hydrogen Sulfide (H₂S) contingency plan will be in affect before penetrating the Moenkopi Formation.
- B. Pressure: No abnormally pressured zones are expected in this well. The pressure gradient for all potentially productive formations is expected to be approximately 0.44 psi/ft.
- C. Temperature: No abnormally high temperatures are expected. Bottom-hole temperature is expected to be approximately 220 °F.

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Wolverine Federal Denmark Wash 15-1 BOPE Schematic

(Not to Scale)



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H2S Contingency Plan

for

Wolverine Operating Company of Utah, LLC

Wolverine Federal Denmark Wash 15-1

**Section 15
Township 21S - Range 02W
Sevier Co, Utah**

Elevation 6056 ft

**Wolverine Operating Company of Utah, LLC
One Riverfront Plaza
55 Campus, NW
Grand Rapids, Michigan 49503-2616**

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Introduction

It is the policy of WOLVERINE OPERATING COMPANY OF UTAH, LLC to provide a safe and healthful work environment for all of its employees as well as contractors that may work on WOLVERINE OPERATING COMPANY OF UTAH, LLC leases. WOLVERINE OPERATING COMPANY OF UTAH, LLC makes a continued effort to comply with laws and regulations relative to worker safety and health, and to manage all operations in a manner to reduce risk.

The following is a H2S contingency plan for the WOLVERINE OPERATING COMPANY OF UTAH, LLC Wolverine Federal Denmark Wash 15-1 well. It is designed for personnel working on this project to follow in case of an accidental release of hydrogen sulfide during drilling and or completion operations. For the plan to be effective, all personnel must review and be familiar with onsite duties as well as the safety equipment involved.

The purpose of this plan is to act as a guideline for personnel working on the wellsite in the event of a sudden release of hydrogen sulfide. All personnel working on the wellsite as well as service personnel that may travel to location on an unscheduled basis must be familiar with this program. The cooperation and participation of all personnel involved with the drilling operation is necessary for this plan to be effective.

Directions to location:

From junction of highway 50 and Hwy 256 north of Aurora, travel 4 miles northwest on Hwy 50, then turn west on dirt road $\frac{3}{4}$ mile to location.

I. Duties & Responsibilities

In order to assure proper execution of the contingency plan, it is essential that one person be responsible for and in complete charge of implementing the procedures outlined in this plan. The order of responsibility will be as follows:

1. WOLVERINE OPERATING COMPANY OF UTAH, LLC representative on location - if unable to perform his/ her duties
2. Alternate WOLVERINE OPERATING COMPANY OF UTAH, LLC representative - if unable to perform his/ her duties
3. Rig Toolpusher/ Supervisor - if unable to perform his/ her duties
4. Safety consultant representative- if available

A. All Personnel

1. Always be alert for possible H2S alarms- both audible and visual.
2. Be familiar with location of Safe Briefing Areas (SBA) and protective breathing equipment.
3. Develop a "wind awareness". Be aware of prevailing wind direction as well as nearby uphill areas, should there be no wind.
4. Familiarize yourself with nearest escape routes for safe evacuation
5. Should H2S alarm sound, DON'T PANIC - Remain calm and follow instructions of person in charge.
6. If the H2S alarms sound:
 - a. Essential personnel shall don the appropriate respiratory protective equipment and follow company procedures. Essential personnel will continue to wear respiratory protective equipment until the area is deemed safe (H2S concentration less than 10 PPM)
 - b. Non-essential personnel shall evacuate to the appropriate safe briefing area using escape-breathing systems. Wait there for further instructions from WOLVERINE OPERATING COMPANY OF UTAH, LLC drilling representative.

C. Initiate rescue protocol if necessary- following training procedures.

B. WOLVERINE OPERATING COMPANY OF UTAH, LLC - Foreman

1. The WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman will confirm that all personnel on location at any time are trained in H2S safety and aware of above list of duties.

2. The WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman will ensure that all personnel observe all safety and emergency procedures.

3. The WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman will make an effort to keep the number of personnel on location to a minimum and to ensure that only essential personnel are on location during critical operations.

4. Should and extreme danger condition exist, the WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman will:

- a. Assess the situation and advise all personnel by appropriate means of communication.
- b. Be responsible for determining that the extreme danger condition is warranted and the red flag shall be posted at location entrance.
- c. Go to safe briefing area and give clear instructions relative to hazard on location, and actions for personnel to follow.
- d. Notify company and regulatory groups of current situation as outlined in company protocol. Follow appropriate emergency procedures for emergency services notification.
- e. Proceed to rig floor and supervise operations with rig supervisor. Take action to control and reduce the H2S hazard.
- f. Ensure that essential personnel are properly protected with supplied air breathing equipment and that non-essential personnel are in a "poison gas free" area.
- g. Be responsible for authorizing evacuation of persons/ residents in area surrounding the drilling location.
- h. Commence any ignition procedures if ignition criteria are met.

C. Rig Supervisor- Toolpusher

1. If the WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman is unable to perform his/ her duties, and the alternate foreman is also unable or unavailable to perform his duties, the drilling rig toolpusher will assume command of wellsite operations and all responsibilities listed above for drilling foreman.

2. Ensure that all rig personnel are properly trained to work in H2S environment and fully understand purpose of H2S alarms, and actions to take when alarms activate. Ensure that all crew personnel understand the buddy system, safe briefing areas, and individual duties as well as emergency evacuation procedures.

3. Should any extreme danger operational condition arise, the rig toolpusher shall assist the WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman by:

- a. Proceeding to the rig floor and assist in supervising rig operations.
- b. Ensure that only essential working personnel remain in hazardous areas.
- c. Ensure that all crewmembers that remain in hazardous area, wear respiratory protective equipment until notified that area is "clear" of any toxic gases.
- d. Assign rig crewmember or other service representative to block entrance to location. No unauthorized personnel will be allowed entry to location.
- e. Help to determine hazardous "danger zones" on location using portable detection equipment and position electric fans to move gas in any high concentration areas.

D. Safety Consultant

1. During normal operations (no H2S present), the safety consultant will be responsible for the following:

- a. Ensure that all wellsite safety equipment is in place and operational.
- b. Ensure that all wellsite personnel are familiar with location safety layout and operation of all safety equipment.
- c. Assist the WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman in performing weekly H2S drills for location personnel.

2. When an operational condition is classified as extreme danger, the safety consultant will be responsible for the following:

- a. Account for all wellsite personnel
- b. Assess any injuries and direct first aid measure.
- c. Ensure that all safety and monitoring equipment is functioning properly and available.
- d. Monitor the safety of wellsite personnel
- e. Maintain a close communication with WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman.
- f. Be prepared to assist WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman with support for rig crew or other personnel using breathing equipment.
- g. Be prepared to assist WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman with emergency procedures including possible well ignition.
- h. Be prepared to assist with evacuation of any area residents or other personnel working in the immediate area.

E. Operation Center Foreman

1. The WOLVERINE OPERATING COMPANY OF UTAH, LLC Operations Center Foreman will be responsible for notifying and maintaining contact with company production manager as well as other company supervisory personnel.

2. Maintain communication with the WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman to proceed with any other assistance that might be required.

3. Travel to wellsite if appropriate

4. Assist WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman with all other notifications - both company and regulatory.

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II. Well Location Layout

A. Location

1. All respiratory protective equipment and H₂S detection equipment will be rigged up prior to drilling the production casing hole section beginning at 10,900' or once the Chinle formation has been encountered. The rig crews and other service personnel will be trained at this time. All rig crews will be trained and all safety equipment in place and functioning prior to drilling below this depth.
2. The drilling rig will be situated on location to allow for the prevailing winds to blow across the rig toward the circulation tanks or at right angles to the lines from the B.O.P.s to the circulation tanks or as near this configuration as possible.
3. The entrance to the location is designed so that it can be barricaded if a hydrogen sulfide emergency condition arises. An auxiliary exit route will be available so that in case of an emergency, a shift in wind direction would not prevent escape from the location.
4. A minimum of 2 safe briefing areas (SBA) shall be designated for assembly of personnel during emergency conditions. These will be located at least 150 ft. or as practical, from the wellbore and in such a location that at least one area will be upwind of the well at all times. Upon recognition of an emergency situation, all personnel will be trained to assemble at the designated briefing area for instructions.
5. Smoking areas will be established and "No Smoking" signs will be posted around the location.
6. Reliable 24 hour telephone communications will be available at the drilling foremen's office.
7. A mud-gas separator will be rigged up and manifolded to the choke system.
8. All equipment that might come in to contact with hydrogen sulfide - drill pipe, drill stem test tools, blowout preventers, casing, choke system will meet WOLVERINE OPERATING COMPANY OF UTAH, LLC's metallurgy requirements for H₂S service.
9. The drilling rig will have a continuous electronic H₂S detection system that automatically with activate visible and audible alarms if hydrogen sulfide is detected. The visible light will activate if 10 ppm H₂S is present. The audible siren will activate if 15 ppm H₂S or higher concentration is present. There will be at least 4 H₂S sensors in place on the drilling rig. They will be located to detect the presence of hydrogen sulfide in areas where it is most likely to come to surface. The sensor head locations will be: 1) rig floor by driller's console, 2) substructure area near the bell nipple, 3) the shale shaker, 4) the mud mixing area. Additional sensors will be positioned at the discretion of the drilling foreman. At least 1 light and 1 siren will be placed on the rig to indicate the

presence of hydrogen sulfide. The light and siren will be strategically placed to be visible to all personnel on the drill site. Additional alarm lights & sirens may be added to ensure that all personnel on the drill site are able to notice the alarms at any time.

10. The H₂S detection equipment will be calibrated as recommended by the manufacturer. Calibration records will be maintained on location.

11. A least 4 windsocks will be placed around the drill site to ensure that everyone on the drilling location can readily determine wind direction. One windsock will be mounted on or near the rig floor to be readily visible to rig crews when tripping pipe.

12. All respiratory protective equipment will be NIOSH/ MSHA approved positive pressure type and maintained according to manufacturer's guidelines. All breathing air used for this equipment will be CGA type Grade D breathing air.

13. Both 30-minute self-contained breathing apparatuses (SCBA) and workline units with escape cylinders will be available on location. There will be sufficient numbers of this supplied air breathing equipment on location to ensure that all personnel on location have 1 piece of equipment available to them. All respiratory protective equipment will use nose cups to prevent fogging in temperatures below 32 F. Spectacle kits will be available for personnel that require corrective lenses when working under mask.

14. Electric explosion- proof ventilating fans (bug blowers) will be available to provide air movement in enclosed areas where gas might accumulate.

15. H₂S drills will be conducted at least weekly to ensure that all well site personnel are competent in emergency donning procedures. These drills will be recorded in the driller's log, as well as in the safety trailer logbook.

16. Electronic voice-mikes will be available for essential personnel to use when working under mask to facilitate communication.

17. Additional breathing equipment will be provided for non routine operations that require additional service personnel on the well location to ensure that all personnel on the well location have a dedicated supplied air respirator.

18. Location access will be monitored and controlled during "non- routine" operations such as perforating, pressurized pumping, and well testing. The number of personnel on location will be restricted to "essential" personnel only.

III. Safety Procedures

A. Training

All personnel who come onto the location must be properly trained in hydrogen sulfide, nitrogen, and oxygen deficient atmospheres safety. The personnel shall carry documentation with them indicating that the training has occurred within the previous 12 months. All training will comply with federal and state regulatory guidelines.

Training topics shall include at a minimum:

1. Hazards and characteristics of hydrogen sulfide, nitrogen, and oxygen deficient atmospheres and symptoms of exposure to these gases.
2. Proper use, care and limitations of respiratory protective equipment with hands on practice.
3. Use of both fixed and portable detection toxic gas equipment.
4. Work practices to reduce opportunities for toxic gas exposure as well as confined space procedures.
5. First aid for toxic gas exposure and resuscitation equipment.
6. The buddy system
7. Emergency evacuation procedures
8. A review of the contingency plan for the well.

B. Operating Conditions

A three color- flag warning system will be used to notify personnel approaching the drill site as to operating conditions on the wellsite. This system is in compliance with BLM OO#6 and follows industry standards.

Green Flag - Potential Danger

Yellow Flag - Moderate Danger

Red Flag- Extreme Danger - Do Not approach if red flag is flying.



C. Evacuation Plan

There are no permanent residents within a 2-mile radius of the drill site. The prevailing wind is from the southwest. WOLVERINE OPERATING COMPANY OF UTAH, LLC will conduct any evacuation in coordination with the WOLVERINE OPERATING COMPANY OF UTAH, LLC Operations Center and with the direction of the WOLVERINE OPERATING COMPANY OF UTAH, LLC drilling foreman.

All regulatory agencies will be notified as soon as possible.

D. Emergency Rescue Procedures

Well site personnel should not attempt emergency rescues unless they have been properly trained. A trained person who discovers another person overcome by hydrogen sulfide **should not attempt to rescue without donning the proper breathing equipment**. When making an emergency rescue always use the following procedures:

1. Don rescue breathing equipment before attempting to rescue someone.
2. Remove the victim from the contaminated area to an area free of toxic gas by traveling upwind or cross wind. Be certain that you are in a safe area before removing your breathing equipment.
3. If the victim is not breathing, initiate mouth- to mouth resuscitation immediately. Follow CPR guidelines and replace mouth to mouth with a bag mask resuscitator if available.
4. Treat the victim for shock, keeping the victim warm and calm. Never leave the victim alone.
5. Any personnel who experience hydrogen sulfide exposure must be taken to a hospital for examination and their supervisor notified of the incident.
6. Their supervisor shall follow the company Emergency Preparedness plan.

IV. H2S Safety Equipment on Drilling Location

Item	Amount	Description
1.	1	safety trailer with a cascade system of 10-300 cu. ft bottles of compressed breathing air complete with high-pressure regulators
2.	At least 1000 ft.	Low-pressure airline equipped with Hanson locking fittings. This airline will be rigged up with manifolds to supply breathing air to the rig floor, substructure, derrick, shale shaker area, and mud mixing areas. Three high-pressure refill hoses will be attached to cascade systems for cylinder refill.
3.	Twelve (12)	Scott 30 minute self-contained breathing apparatuses (SCBA).
4.	Twelve (12)	Scott airline units with emergency escape cylinders.
5.	One (1)	4- channel continuous electronic H2S monitor with audible and visual alarms. The set points for these alarms are 10 ppm for the low alarm and 15 ppm for the high alarm.
6.	Two (2)	Sensidyne portable hand operated pump type detection units with tubes for hydrogen sulfide and sulfur dioxide.
7.	One (1)	oxygen resuscitator with spare oxygen cylinder.
8.	One (1)	trauma first aid kit
9.	One (1)	stokes stretcher and one (1) KED.
10.	Four	windsocks
11.	At least one (1)	well condition sign with 3 flag system.
12.	Two (2)	Safe Briefing Area (SBA) signs
13.	One (1)	fire blanket

- | | | |
|-----|-----------|---|
| 14. | One (1) | set air splints |
| 15. | Two (2) | electric explosion proof fans |
| 16. | One (1) | bullhorn and chalk board |
| 17. | Three (3) | 300 cu. ft. air bottles for the safe briefing area. |
| 18. | Two (2) | 30 # fire extinguishers |
| 19. | Six (6) | battery powered voice mikes for communication when wearing air masks. |
| 20. | One (1) | battery powered combustible gas meter |

V. Well Ignition Procedures

If it should become apparent that an uncontrolled release of hydrogen sulfide to the atmosphere might endanger the health and safety of the public or well site personnel, the WOLVERINE OPERATING COMPANY OF UTAH, LLC drilling foreman will make a decision to ignite the well. The following procedure should be followed before attempting to ignite the well.

A. Ignition equipment - The following equipment will be available for on-site for use by the ignition team.

1. 2-12 gauge flare guns with flare shells
2. 2-500 ft. Fire resistant retrieval ropes
3. 1 portable combustible gas meter
4. Self contained breathing apparatus (SCBA) for each member of the ignition team.
5. 1 backup vehicle with communication equipment

B. Ignition Procedures

1. The WOLVERINE OPERATING COMPANY OF UTAH, LLC drilling foreman will ensure that well site personnel are evacuated to a safe area upwind of the well bore prior to any ignition action.
2. The WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman and a designated partner "buddy" backed up by well site safety personnel will comprise the ignition team. All team members will be wearing 30 minute SCBAs.
3. The backup crew will be positioned near a radio-equipped vehicle at a safe distance from the sour gas release. They will standby to rescue the actual team igniting the well.
4. The partner of the ignition team will carry a combustible gas/ hydrogen sulfide meter to continuously monitor the area in which they are working and define the perimeter of the gas cloud.
5. The WOLVERINE OPERATING COMPANY OF UTAH, LLC foreman will carry the flare gun and shells.
6. The ignition team will determine the hazardous area and establish safe working perimeters. Once this is identified the team will proceed upwind of the leak and fire into the area with flare gun. If trouble is encountered in trying to light the leak, retry to ignite by firing the flare shells at 45 and 90 angles to the gas source, but DO NOT approach closer to the leak.
7. After ignition, monitor for sulfur dioxide and work with the support group to restrict access to the contaminated area.

VI. Residents - Public in R.O.E.

There are no permanent residents within a 2-mile radius of the well site. WOLVERINE OPERATING COMPANY OF UTAH, LLC may have personnel working in the area and their contact numbers will be included. The surrounding area is federally and privately owned and maintained. This land may be used for recreational purposes including hunting and recreational vehicles any time during the drilling or completion of this well.

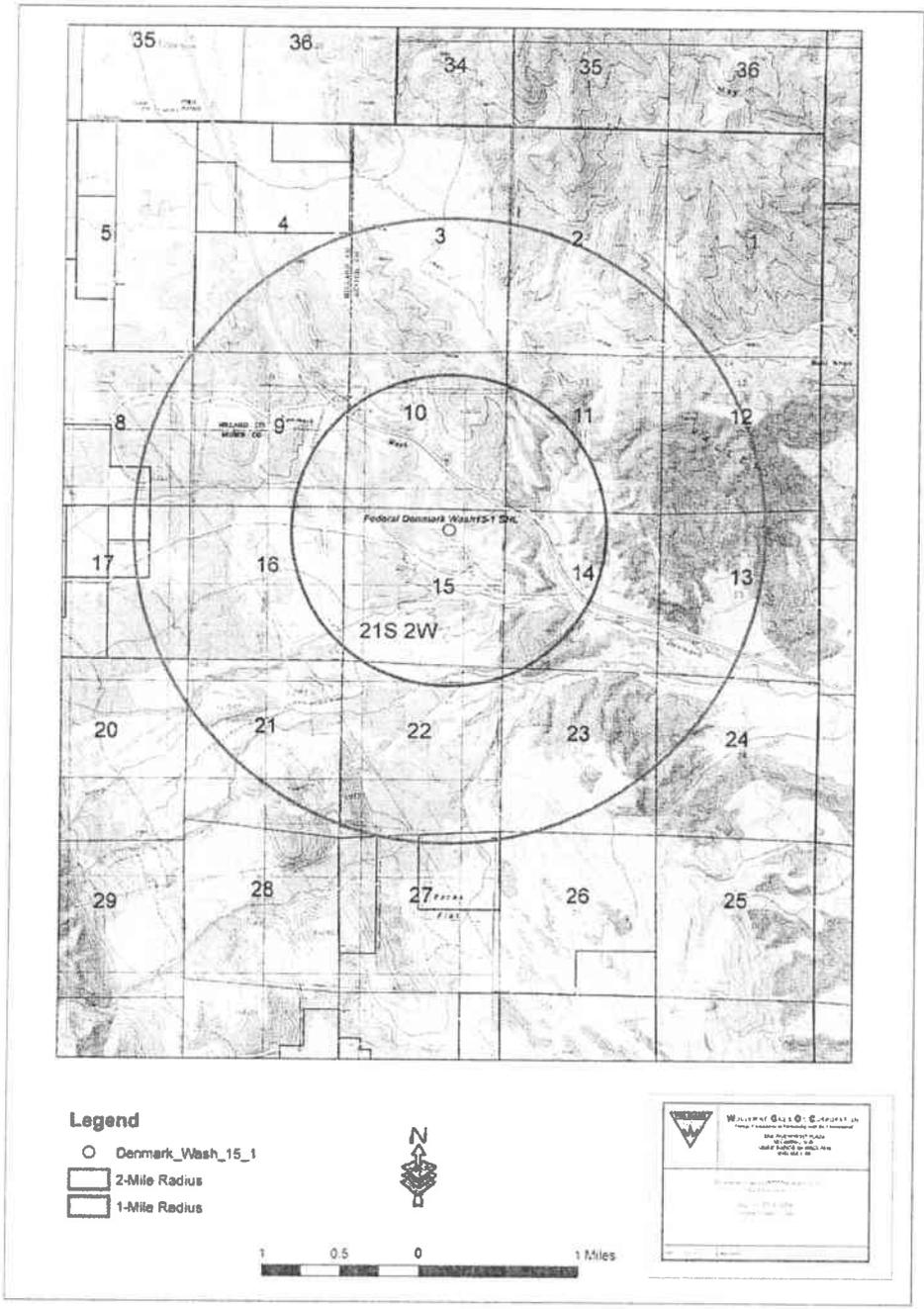
VII. Emergency Phone Directory

WOLVERINE OPERATING COMPANY OF UTAH, LLC

Steven R Hash	(Drilling Mgr – EXACT Engineering, Inc)	office 918-599-9400 cell 918-599-9801
Doc Asay	(Drilling Mgr – SST Drilling)	office 307-235-3529 cell 307-259-1242
Darren Naylor	(On Site Rep – Wolverine Operating Co)	cell 918-645-6671
Ed Higuera	(Operations Manager – Wolverine)	office 616-458-1150

B. Emergency Services Phone List

1. Sevier Valley Medical Center, Sevier County Utah 435-896-8271
2. Ambulance Services – Sevier County Utah 911
3. Sheriff Department- Sevier County Utah 911 or 435-896-2600
4. Highway Patrol - Sevier County Utah 911 or 435-896-6471
5. Fire Department – Sevier County Utah 911 or 435-896-2600
6. Bureau of Land Management – Richfield, Utah 911 or 435-896-1500
7. Medical Helicopter – Sevier County Utah 911 or 435-896-2600
- 8 Burn Center, Sevier County Utah 911 or 435-896-2600
9. Utah OSHA (Mark LeBlanc) 801-530-6862



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II A. Location Layout for Workover/ Completion

1. If H₂S is previously determined during drilling operations to exist, all H₂S safety equipment will be available at the time that personnel first move onto the well site. Respiratory protection equipment as well as detection equipment will be on hand should any H₂S gas be detected during the initial rig up period.

PROPERTY OF GAS

If gas should be produced, it could be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methane.

TOXICITY OF VARIOUS GASES

<u>Common Name</u>	<u>Chemical Formula</u>	<u>Specific Gravity of Air=1</u>	<u>1 Threshold Limit</u>	<u>2 Hazardous Limit</u>	<u>3 Lethal Concern</u>
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H ₂ S	1.18	10 ppm	250 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21	2 ppm	-----	1,000 ppm
Chloride	CL ₁	2.45	1 ppm	4 ppm/hr	1,000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1,000 ppm
Carbon Dioxide	CO ₂	1.52	5,000 ppm	5%	10%
Methane	CH ₄	0.55	90,000 ppm	Combustible Above 5% in Air	-----

1 **Threshold**=Concentration at which it is believed that all workers may repeatedly be exposed, day after day, without adverse side effects.

2 **Hazardous**=Concentration that may cause death.

3 **Lethal**=Concentration that will cause death with short-term exposure.

HYDROGEN SULFIDE

GENERAL PROPERTIES

Hydrogen Sulfide itself is a colorless and transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

Although the slightest presence of H₂S in the air is normally detectable by its characteristic "Rotten Egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide, which is more toxic than Carbon Monoxide.

COMMON NAMES: Sour Gas, Rotten Egg Gas, Sulphurated Hydrogen, Hydrogen sulfide, Stink Damp, H₂S, Acid Gas, Sweet Gas*

PHYSICAL-CHEMICAL PROPERTIES

- Chemical Formula H₂S
1. Specific Gravity (Air = 1.000)..... 1.193 (@ 77°F)
2. Color None
3. Odor Compared to Rotten Eggs
4. Odor Threshold 0.13 part of 1 ppm
5. Corrosivity Reacts with metals, plastics, tissues and nerves.
6. Solubility in Water..... 4.0 to 1 in H₂O @ 32°F
2.6 to 1 in H₂O @ 68°F
7. Effects on Humans..... Olfactory nerves, respiratory nerves, irritates sensitive membranes in eyes, nose, and throat.
8. Vapor Pressure 19.6 atmospheres at 25°C
9. Explosive Limits 4.3% to 46% by volume in air.

* H₂S is a sweet tasting Gas, but often the word "tasting" is left out.



- | | |
|-------------------------------|---|
| 10. Ignition Temperature..... | 18°F (Burns with a pale blue flame) |
| 11. Molecular Weight..... | 34.08 |
| 12. Conversion Factors..... | 1 mg/1 of air = 717 ppm (at 25°C and 760 mm HG). 1 ppm = 0.00139 mg/1 of air. |
| 13. pH..... | 3 in water |

INDUSTRIAL OCCURRENCES

Hydrogen Sulfide exposures occur in certain processes in the petroleum industry, chemical plants, chemical laboratories, sulfur and gypsum mines, viscose rayon and rubber industries, tanneries, and in the manufacture of some chemicals, dyes, and pigments. It may be encountered in excavations in the swampy or filled ground. It is produced when sulfur-containing organic matter decomposes, and it can therefore be found in sewage or organic-waste treatment plants. A common sewer gas, it may find its way into utility manhole, particularly dangerous when encountered in tanks, vessels, and other enclosed spaces.

TOXIC PROPERTIES

Hydrogen Sulfide is an extremely toxic and irritating gas. Free Hydrogen Sulfide in the blood reduces its oxygen carrying capacity, thereby depressing the nervous system. Sufficiently high concentrations can cause blockage of the phrenic nerve, resulting in immediate collapse and death due to respiratory failure and asphyxiation.

Because Hydrogen Sulfide is oxidized quite rapidly to sulfates in the body, no permanent after effects occur in cases of recovery from acute exposures unless oxygen deprivation of the nervous system is prolonged. However, in cases of acute exposures, there is always the possibility that pulmonary edema may develop. It is also reported that symptoms such as nervousness, dry nonproductive coughing, nausea, headache, and insomnia, lasting up to about 3 days have occurred after acute exposures to Hydrogen Sulfide.

At low concentrations the predominant effect of Hydrogen Sulfide is on the eyes and respiratory tract. Eye irritation, conjunctivitis, pain, lacrimation, keratitis, and photophobia may persist for several days. Respiratory tract symptoms include coughing, painful breathing, and pain in the nose and throat.



There is no evidence that repeated exposures to Hydrogen Sulfide results in accumulative or systemic poisoning. Effects such as eye irritation, respiratory tract irritation, slow pulse rate, lassitude, digestive disturbances, and cold sweats may occur, but these symptoms disappear in a relatively short time after removal from the exposure. Repeated exposures to Hydrogen Sulfide does not appear to cause any increase or decrease in susceptibility to this gas.

The paralytic effect of Hydrogen Sulfide on the olfactory nerve is probably the most significant property of the gas. This paralysis may create a false sense of security. A worker can be overcome after the typical rotten-egg odor has disappeared. Rather than the characteristic Hydrogen Sulfide odor, some victims of sudden acute overexposure have reported a brief sickeningly sweet odor just prior to unconsciousness.

Subjective olfactory responses to various concentrations of Hydrogen Sulfide have be summarized as follows:

0.02 ppm	No odor
0.13 ppm	Minimal perceptible odor
0.77 ppm	Faint, but readily perceptible odor
4.60 ppm	Easily detectable, moderate odor
27.0 ppm	Strong, unpleasant odor, but not intolerable

Physiological responses to various concentrations of Hydrogen Sulfide have been reported as follows:

10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes, and drowsiness after 15-30 minutes, followed by throat irritation after 1 hour. Several hours ¹ exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours.
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour exposure
500-700 ppm	Loss of consciousness and possibly death in 30 minutes.
700 ppm	Raped unconsciousness, cessation of respiration, and death.
1000-2000 ppm	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

ACCEPTABLE CONCENTRATIONS

ACCEPTABLE EIGHT-HOUR TIME-WEIGHTED AVERAGE

To avoid discomfort, the Time-Weighted average concentration of Hydrogen Sulfide Shall not exceed 10 ppm.

ACCEPTABLE CEILING CONCENTRATION

The acceptable concentration for protection of health for an eight-hour, five-day week shall be 20 ppm, Fluctuations are to occur below this concentration.

ACCEPTABLE MAXIMUM FOR PEAKS ABOVE ACCEPTABLE BASE LINE FOR CONTINUOUS EXPOSURE

A single-peak concentration not exceeding 50 ppm for a maximum of 10 minutes is allowable provided that the daily time-weighted average is not exceeded.

H₂S EQUIVALENTS

<u>Parts Per Million</u>	<u>Percents</u>	<u>Grains per 100 cu. Ft.</u>
1	.0001	.055
10	.001	.55
18	.0018	1.0
100	.01	5.5
1000	.1	55.5
10000	1.0	555.5

Grains per 100 cu. Ft. = % by volume Mole 636.4
1% by volume = 10,000 ppm

SULFUR DIOXIDE

Sulfur Dioxide (SO₂) is a colorless, transparent gas and is non-flammable.

Sulfur Dioxide is produced during the burning of H₂S. Although SO₂ is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures, While Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect.

CONCENTRATIONS

EFFECTS

<u>%SO₂</u>	<u>ppm</u>	
.0002	2	Safe for eight (8) hour exposure
.0005	5	Pungent odor-normally a person can detect SO ₂ in this range.
.0012	12	Throat irritation, coughing, constriction of the chest, tearing and smarting of the eyes.
.015	150	So irritating that it can only be endured for a few minutes.
.05	500	Causes a sense of suffocation, even with the first breath.

PHYSICAL PROPERTIES AND CHARACTERISTICS

Chemical Formula	SO ₂
1. Specific Gravity	2.212
2. Color	None
3. Flammable	No
4. Odor	Characteristic, pungent, gives ample warning of its presence.
5. Corrosivity	Dry---not corrosive to ordinary metals. Wet---corrosive to most common metals.
6. Allowable Concentrations	2 ppm (ACGIH) 2 ppm (OSHA)
7. Effects on Humans	Irritates eyes, throat and upper Respiratory system.

TOXIC PROPERTIES

Sulfur Dioxide is an irritating gas in its vapor form and the odor is so intensely irritating that concentrations of 3 to 5 parts per million in the air are readily detectable by the normal person. In higher concentrations, the severely irritating effect of the gas makes it unlikely that any person would be able to remain in a Sulfur Dioxide contaminated atmosphere unless they were unconscious or trapped.

Sulfur Dioxide gas is intensely irritating to the eyes, throat, and upper respiratory system. Inhalation of this gas in concentrations of 8 to 12 parts per million in air causes throat irritation, coughing, constriction of the chest, tearing and smarting of the eyes. 150 parts per million is so extremely irritating that it can be endured only for a few minutes. 500 parts per million is so acutely irritating to the upper respiratory tract that it causes a sense of suffocation, even with the first breath.

Out of numerous reported exposures to Sulfur Dioxide, there are few references that would indicate pneumonia as an after effect.

**Wolverine Operating Company
of Utah, LLC**

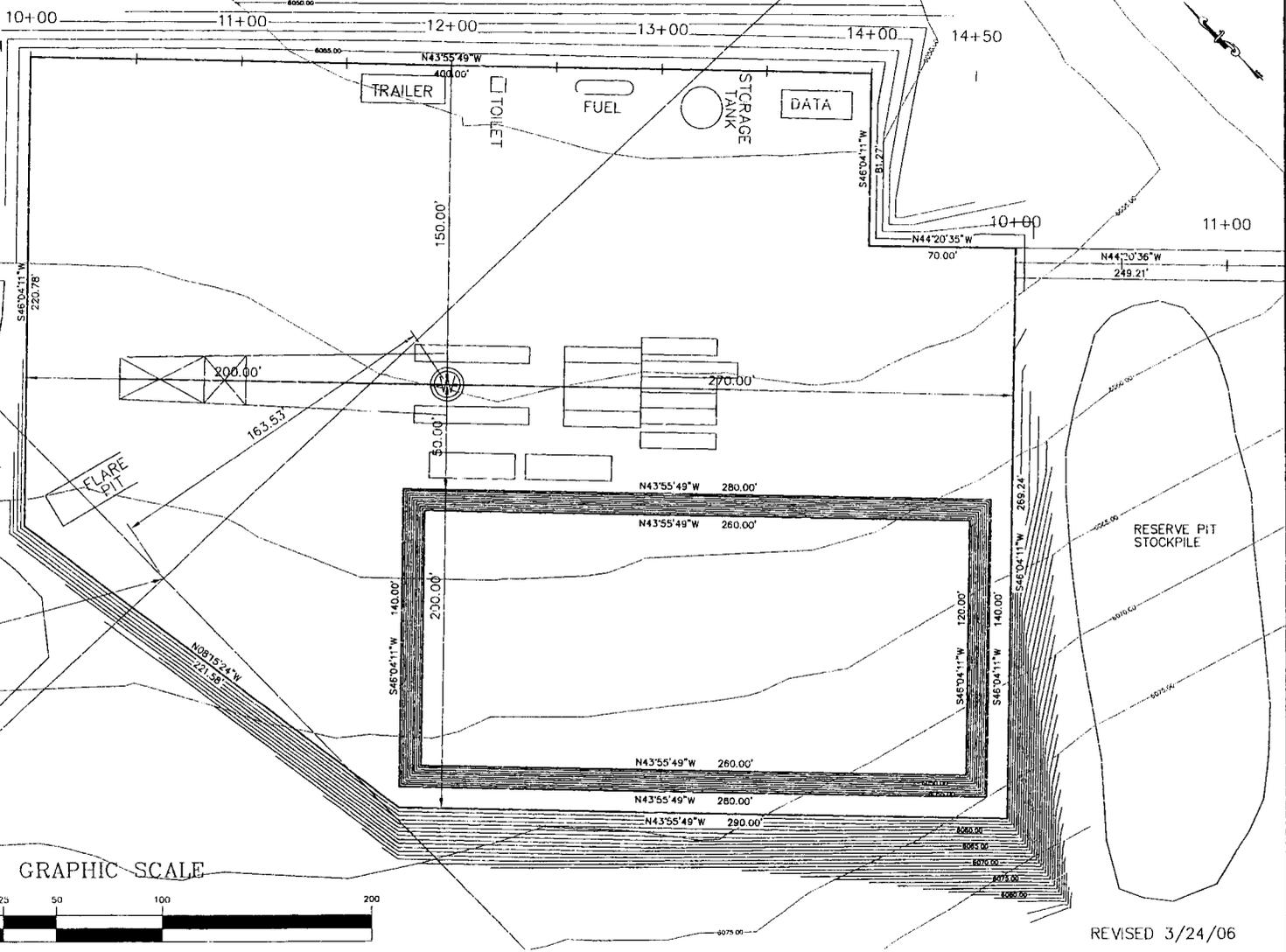
WOLVERINE FEDERAL DENMARK WASH 15-1
SECTION 15, T.21 S., R.2 W., S.L.B. & M.

ELEV. UNGRADED GROUND AT WELL = 6054.87
ELEV. GRADED GROUND AT WELL = 6056.00

APPROXIMATE YARDAGE
(6") TOPSOIL STRIPPING = 2,800
RESERVE PIT = 13,000
REMAINING LOCATION = 15,870
TOTAL CUT = 28,870
TOTAL FILL = 9,531
*FILL IS UNADJUSTED

TOTAL PIT CAPACITY WITH
2' FREEBOARD = 50,015 bbls
TOTAL PIT VOLUME = 13,000 CU. YDS.

SE COR OF THE NW 1/4 OF THE
NW 1/4 OF THE NE 1/4 OF SECTION
15, T.21 S., R.2 W., S.L.B. & M.



REVISED 3/24/06

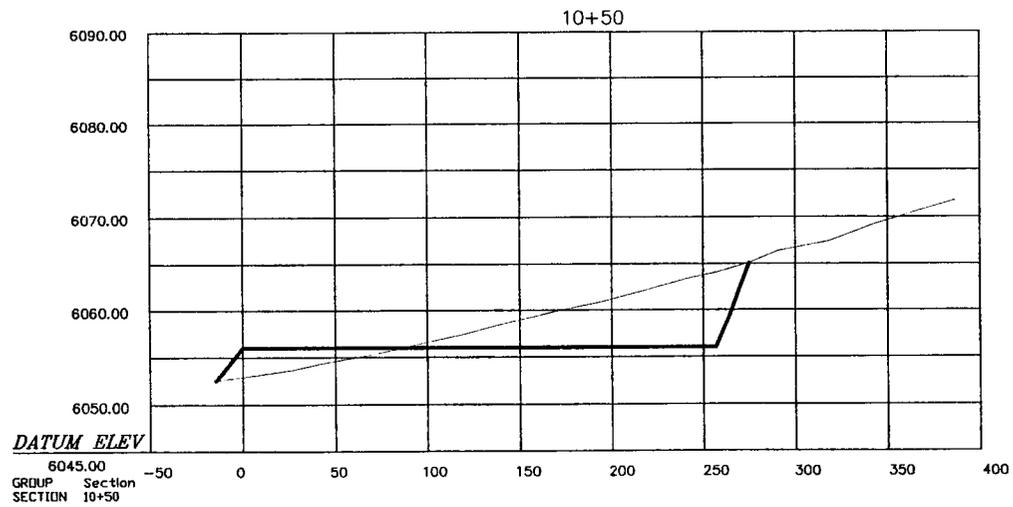
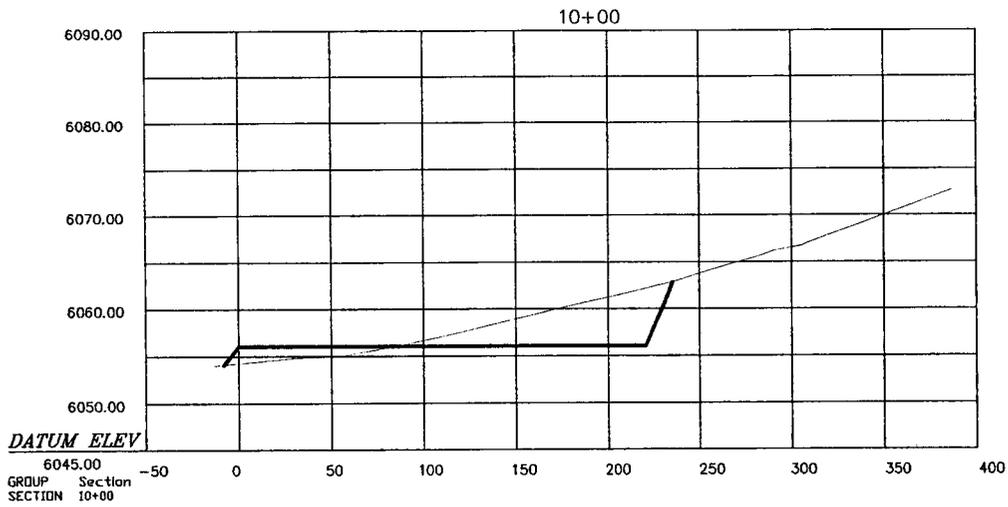
Savage Surveying, INC.
Ryan W. Savage, PLS
PO Box 892
275 S 800 W
Richfield UT 84701
Phone: 435-898-3635
Fax: 435-898-8635
Cell: 435-201-1345



**Well Location Layout of Wolverine Federal Denmark Wash 15-1 for
Wolverine Operating Company of Utah, LLC.**

ENGINEER T.M.	SCALE 1" = 50'	SHEET NO
CHECKED R.W.S.	PROJ# 0512-008S DWG.NM 0512-008S	1
DRAWN R.W.S.	DATE 02/14/06	

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Savage Surveying, Inc.

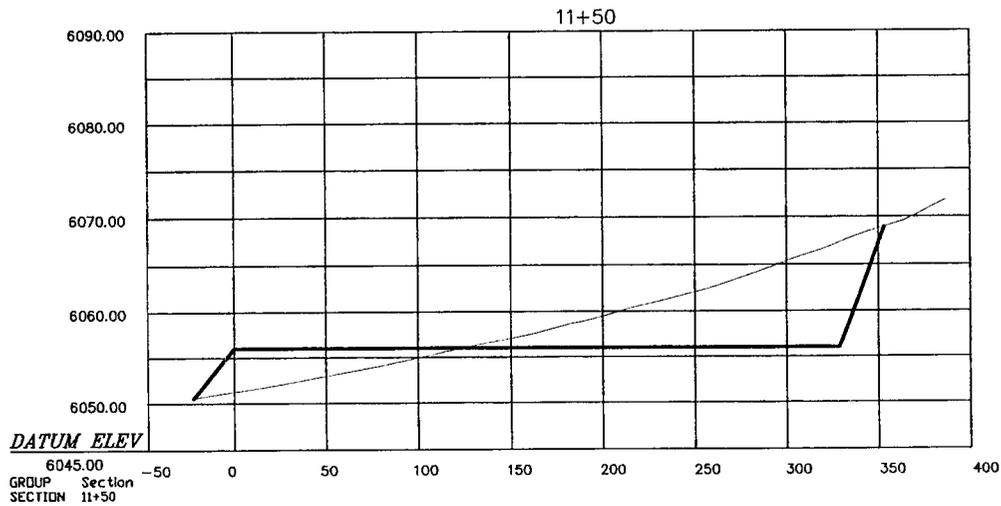
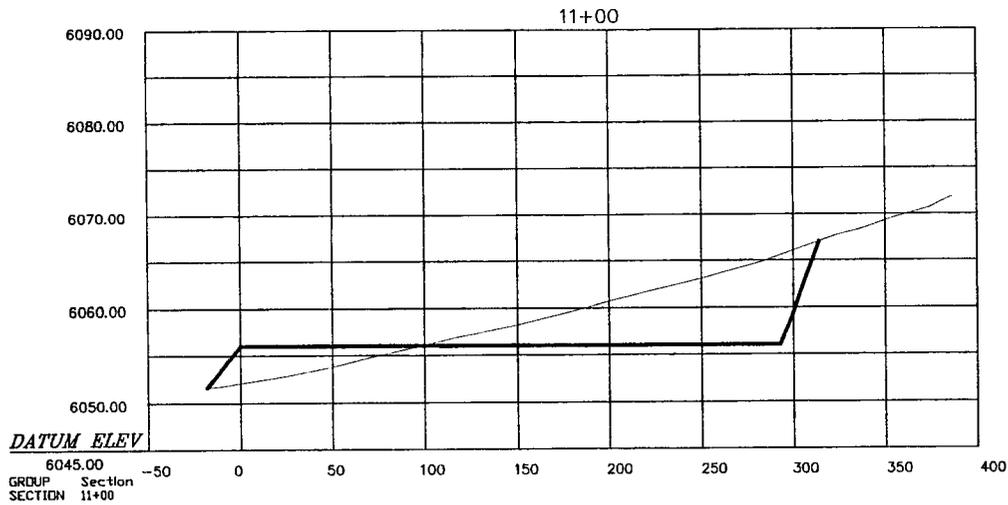
Ryan W. Savage, PLS
 PO Box 892
 275 S 600 W
 Richfield, UT 84701
 Home: 435-896-8635
 Fax: 435-896-8635
 Cell: 435-201-1345



Wolverine Federal Denmark Wash 15-1

Wolverine Operating Company of Utah, LLC

DESIGNED BY:	SURVEYED BY:	CHECKED BY:	DRAWN BY:	PROJECT NUMBER	SHEET NUMBER
T.M.	T.K.S.	R.W.S.	R.W.S.	0512-008S	1



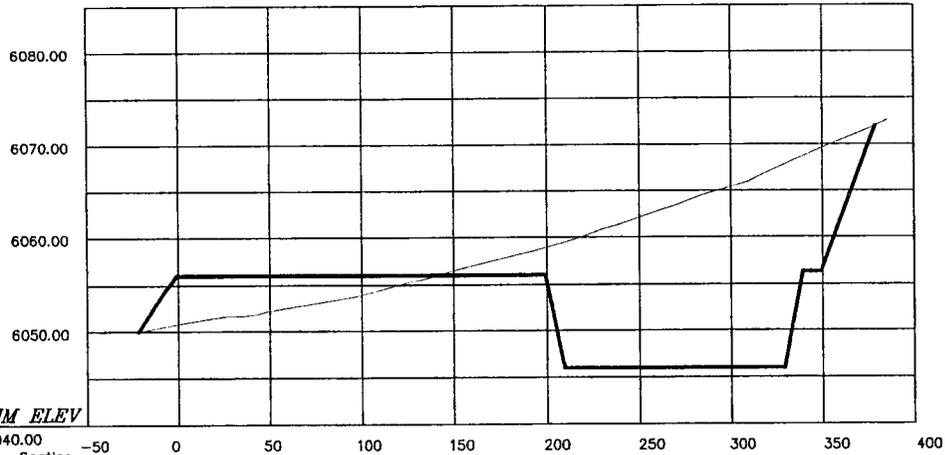
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Savage Surveying, Inc.
 Ryan W. Savage, PLS
 PO Box 892
 275 S 800 W
 Richfield, UT 84701
 Home: 435-896-8635
 Fax: 435-896-8635
 Cell: 435-201-1345



Wolverine Federal Denmark Wash 15-1					
Wolverine Operating Company of Utah, LLC					
DESIGNED BY:	DRAWING NAME:	SCALE:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
T.M.	0512-008S	1" = 100'	02/20/06	0512-008S	2
	SURVEYED BY:	CHECKED BY:	DRAWN BY:		
	T.K.S.	R.W.S.	R.W.S.		

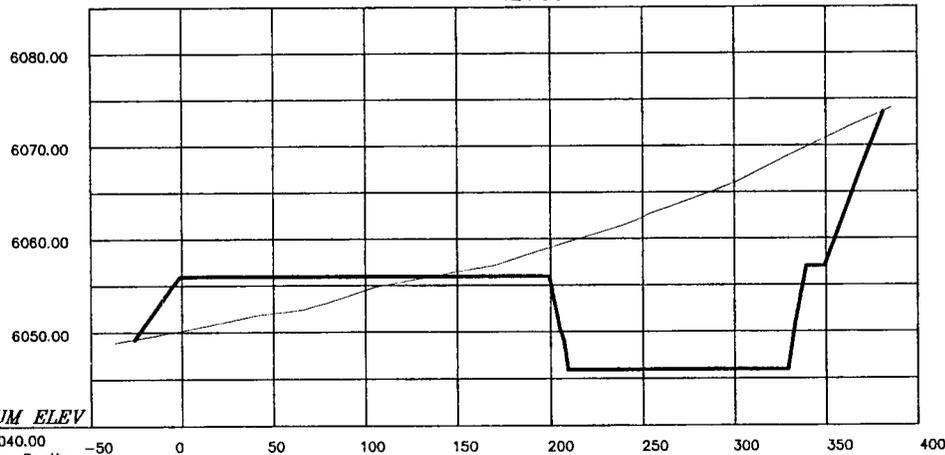
12+00



DATUM ELEV

6040.00
GROUP Section
SECTION 12+00

12+50



DATUM ELEV

6040.00
GROUP Section
SECTION 12+50

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Savage Surveying, Inc.

Ryan W. Savage, PLS
PO Box 892
275 S 600 W
Richfield, UT 84701
Home: 435-896-8635
Fax: 435-896-8635
Cell: 435-201-1345

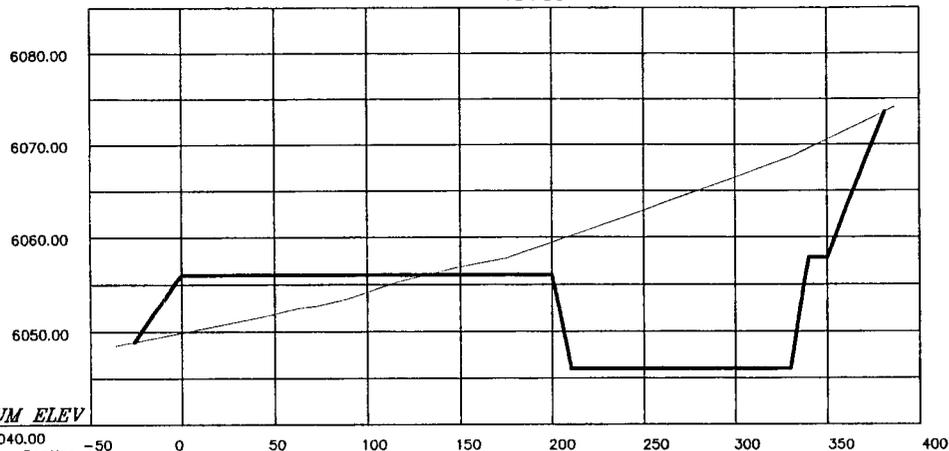


Wolverine Federal Denmark Wash 15-1

Wolverine Operating Company of Utah, LLC

DESIGNED BY:	SURVEYED BY:	CHECKED BY:	DRAWN BY:	PROJECT NUMBER	SHEET NUMBER
T.M.	T.K.S.	R.W.S.	R.W.S.	0512-008S	3

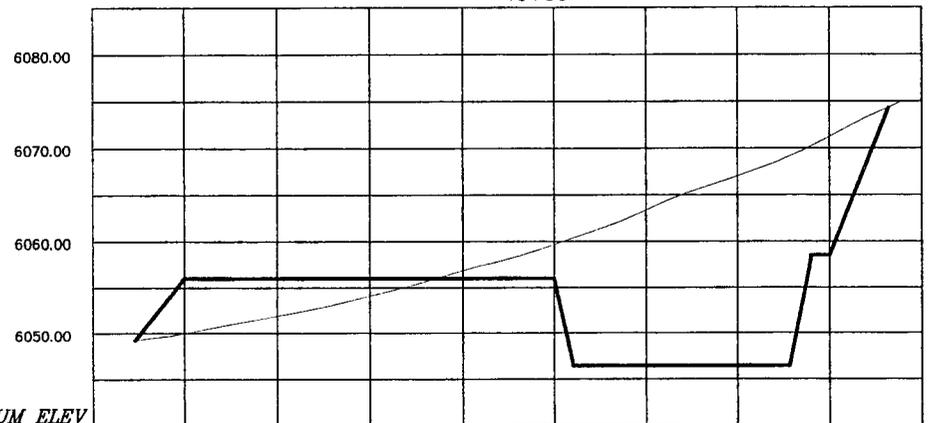
13+00



DATUM ELEV

6040.00
GROUP Section
SECTION 13+00

13+50



DATUM ELEV

6040.00
GROUP Section
SECTION 13+50

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Savage Surveying, Inc.

Ryan W. Savage, PLS
PO Box 892
275 S 600 W
Richfield, UT 84701
Home: 435-896-8635
Fax: 435-896-8635
Cell: 435-201-1345

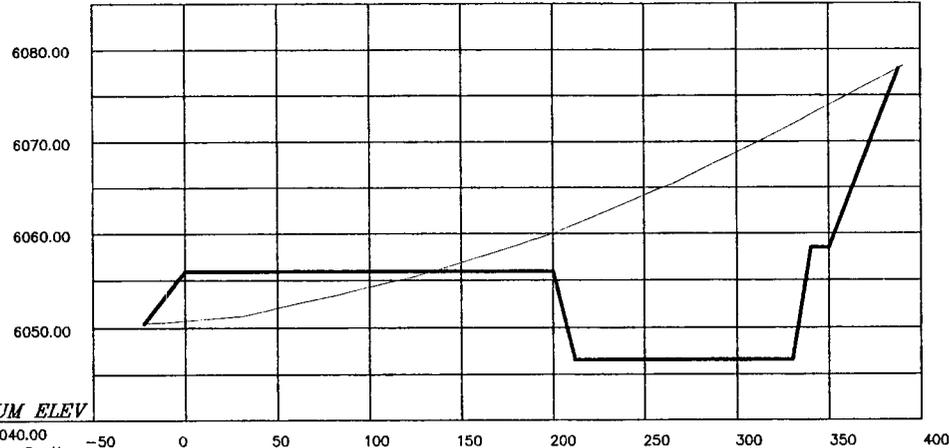


Wolverine Federal Denmark Wash 15-1

Wolverine Operating Company of Utah, LLC

DESIGNED BY:	SURVEYED BY:	CHECKED BY:	DRAWN BY:	PROJECT NUMBER	SHEET NUMBER
T.M.	T.K.S.	R.W.S.	R.W.S.	0512-008S	4

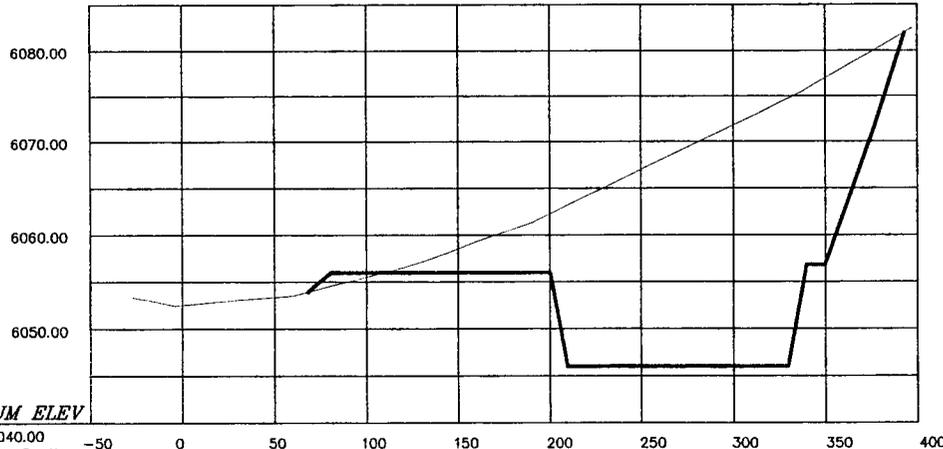
14+00



DATUM ELEV

6040.00
GROUP Section
SECTION 14+00

14+50



DATUM ELEV

6040.00
GROUP Section
SECTION 14+50

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Savage Surveying, Inc.

Ryan W. Savage, PLS
PO Box 892
275 S 600 W
Richfield, UT 84701
Home: 435-896-8635
Fax: 435-896-8635
Cell: 435-201-1345

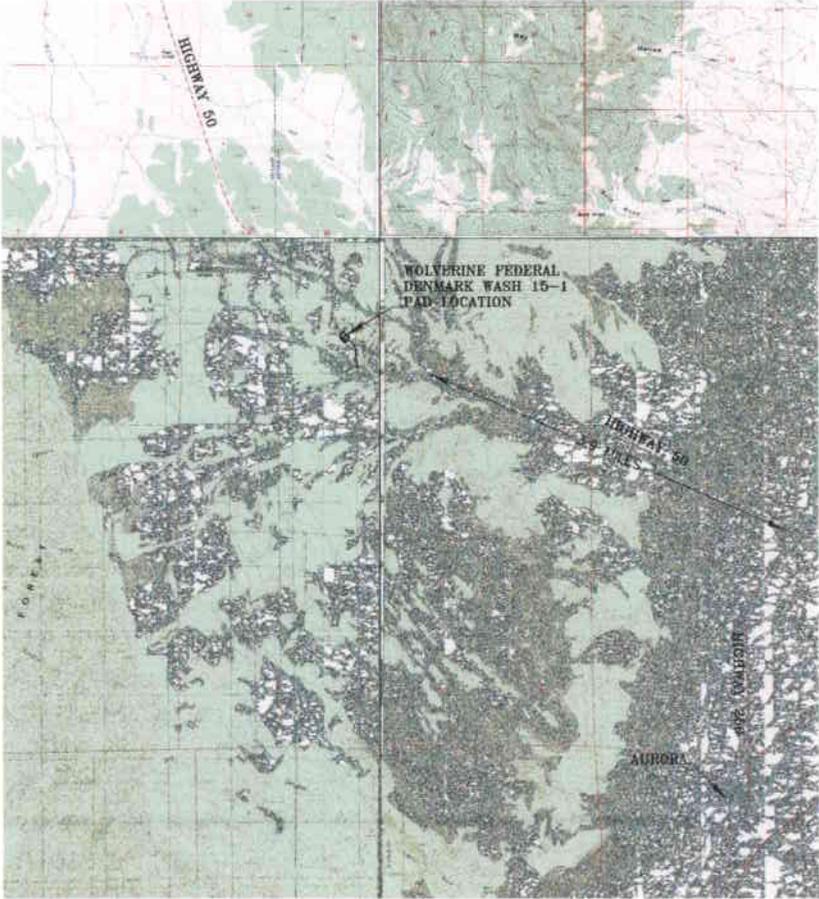


Wolverine Federal Denmark Wash 15-1

Wolverine Operating Company of Utah, LLC

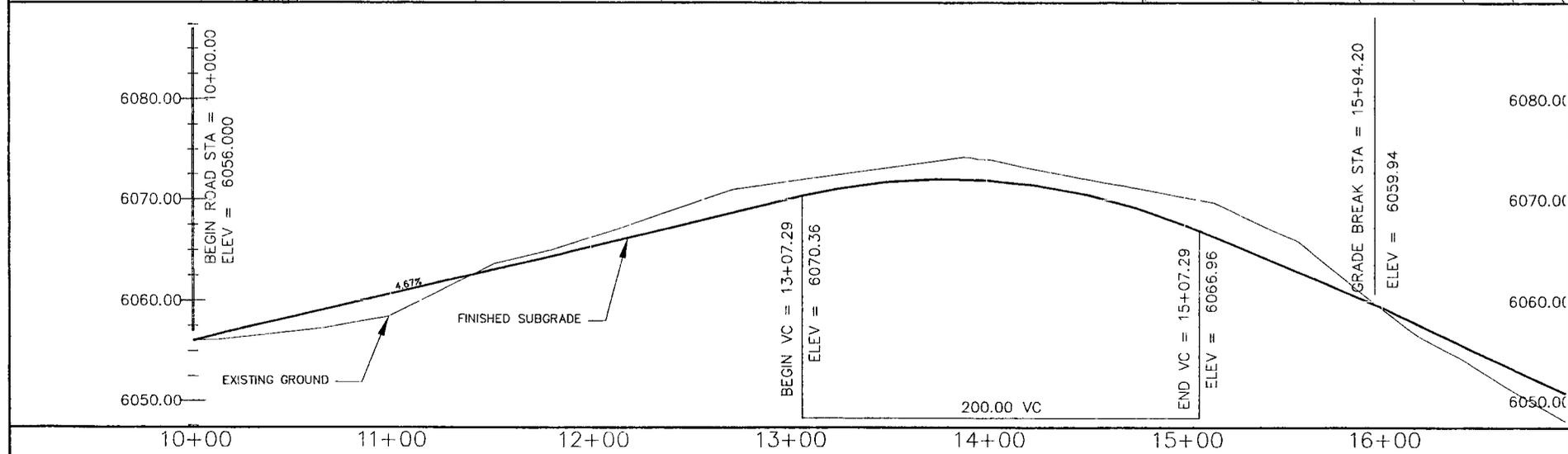
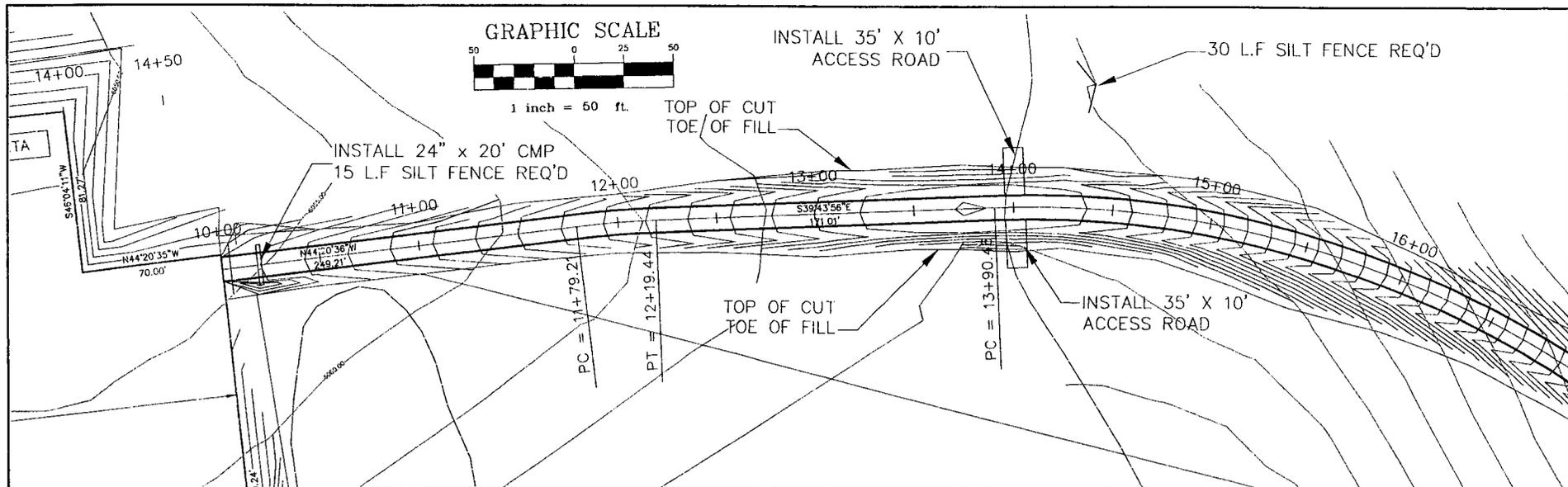
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T.M.	T.K.S.	R.W.S.	R.W.S.	0512-008S	5

**Wolverine Operating Company
of Utah, LLC
Wolverine Federal Denmark Wash
Access Road & Pad Design**



Savage Surveying, Inc.
 Ryan W. Savage, PLS
 PO Box 892
 275 S 600 W
 Richfield, UT 84701
 Home: 435-896-8635
 Fax: 435-896-8635
 Cell: 435-201-1345



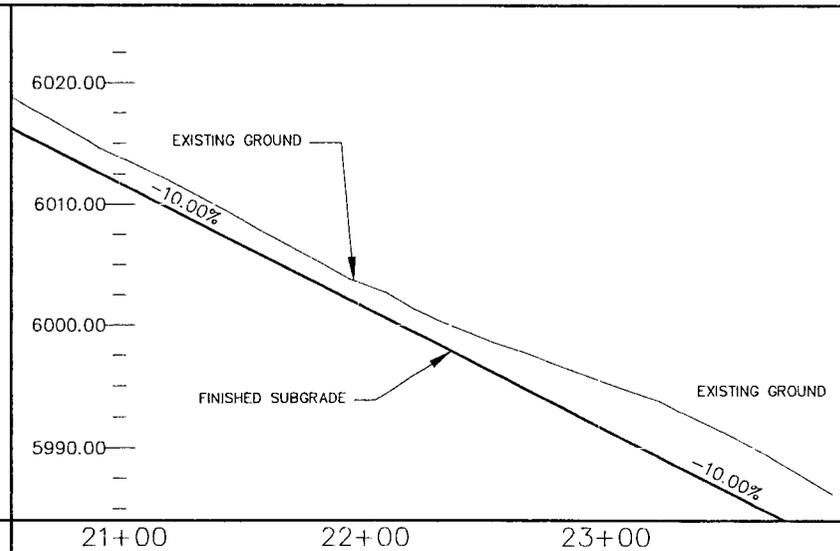
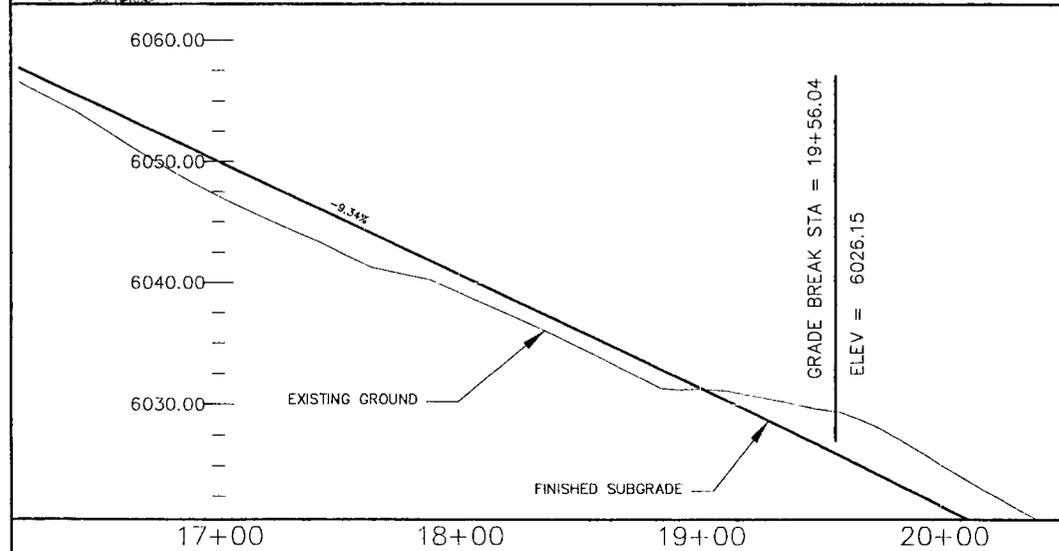
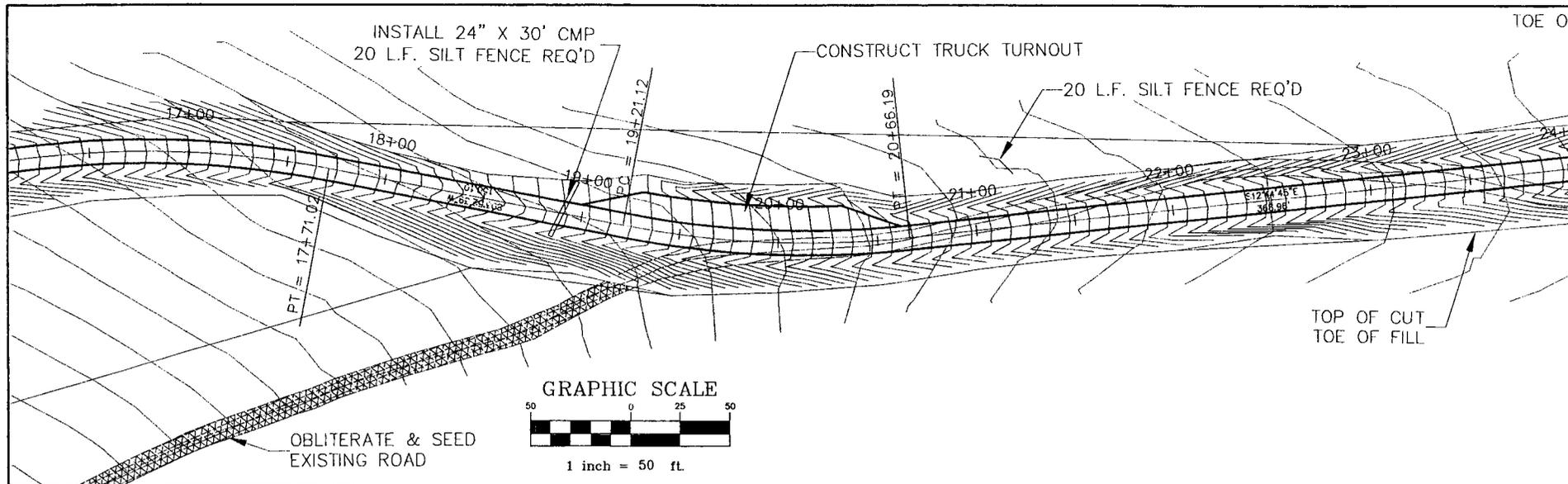


Savage Surveying, Inc.
 Ryan W. Savage, PLS
 PO Box 892
 275 S 800 W
 Richfield, UT 84701
 Phone: 435-896-9635
 Fax: 435-896-9635
 Cell: 435-201-1245

**Wolverine Federal Denmark Wash 15-1 Access Road Design for
 Wolverine Operating Company of Utah, LLC**

ENGINEER T.M.	SCALE 1" = 50'H 1" = 5'V	SHEET NO. PP-1
CHECKED R.W.S.	PROJ# 0512-0085 DWG. NM ACCESS RD	
DRAWN R.W.S.	DATE 01/14/06	

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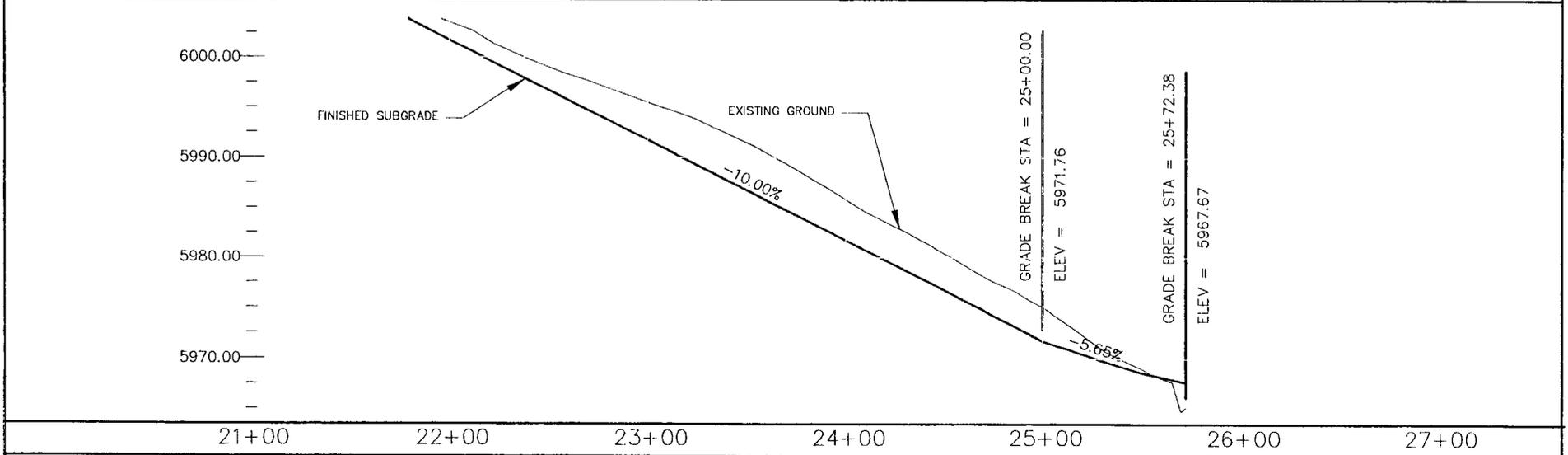
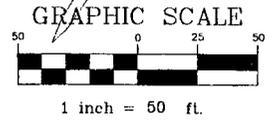
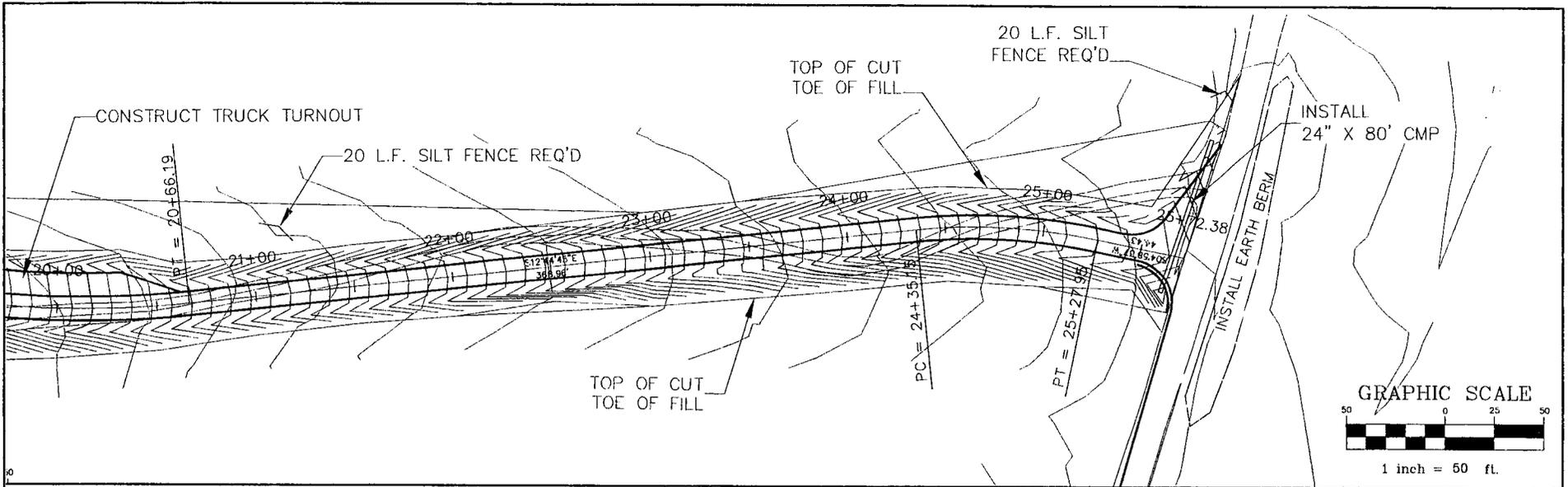
Savage Surveying, Inc.
 Ryan W. Savage, PLS
 PO Box 892
 275 S 800 W
 Panguitch, UT 84701
 Home: 435-896-8535
 Fax: 435-896-8525
 Cell: 435-201-1345



**Wolverine Federal Denmark Wash 15-1 Access Road Design for
 Wolverine Operating Company of Utah, LLC**

ENGINEER T.M.	SCALE 1" = 50'H 1" = 5'V	SHEET NO PP-2
CHECKED R.W.S.	PROJ.#: 0512-008S DWG NM: ACCESS RD	
DRAWN R.W.S.	DATE 01/14/08	

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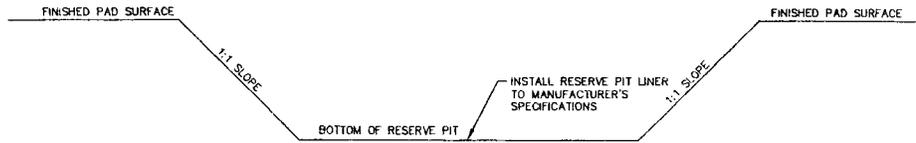
Savage Surveying, Inc.
 Ryan W. Savage, PLS
 90 Star 892
 275 S 600 W
 Richfield, UT 84701
 Home: 435-896-8635
 Fax: 435-806-8635
 Cell: 435-201-1345



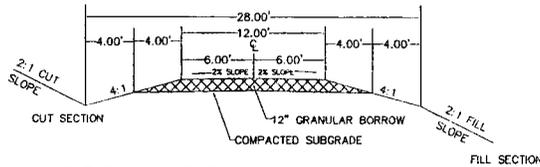
**Wolverine Federal Denmark Wash 15-1 Access Road Design for
 Wolverine Operating Company of Utah, LLC**

ENGINEER T.M.	SCALE 1" = 50'H 1" = 5'V	SHEET NO PP-3
CHECKED R.W.S.	PROJ# 0512-008S DWG.NM.ACCESS HD	
DRAWN R.W.S.	DATE 01/14/06	

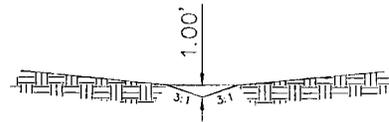
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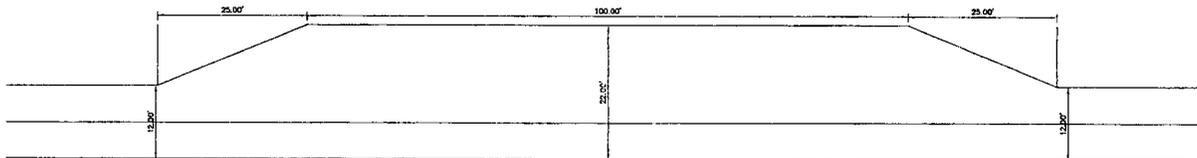
TYPICAL RESERVE PIT



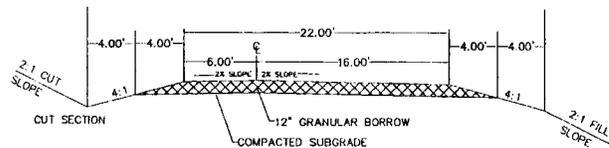
TYPICAL ACCESS ROAD CROSS SECTION
STATION 10+00 TO 25+72.38



TYPICAL WING DITCH



TYPICAL TRUCK TURNOUT
PLAN VIEW



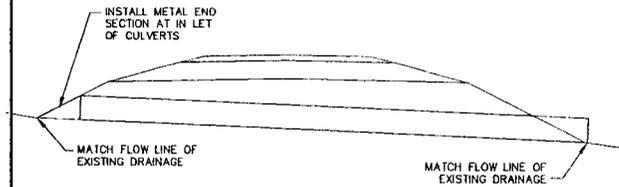
TYPICAL TRUCK TURNOUT CROSS SECTION
STATION 10+00 TO 25+72.38

CULVERT CONSTRUCTION DETAILS

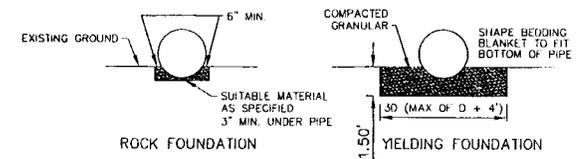
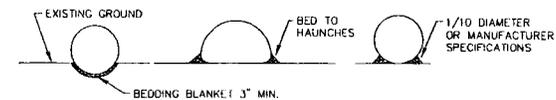
THE PLANS SHOW AN ESTIMATE OF THE NUMBER AND THE SIZE OF THE CULVERTS TO BE PLACED ON THE ROAD. THERE MAY NEED TO BE SOME FIELD ADJUSTMENTS MADE BY THE CONTRACTOR, BLM, AND/OR INSPECTOR/ENGINEER TO THE PLACEMENT AND LENGTH OF THE CULVERTS AND WING DITCHES.

CULVERT INGRESS AND EGRESS DITCH LENGTHS ARE TO BE DETERMINED DURING CONSTRUCTION. ALL DITCHES ARE TO BE CONSTRUCTED WITH SUFFICIENT SLOPE SO THAT WATER WILL EXIT THE DOWNSTREAM SIDE AND NOT POND IN THE DITCH.

ALL CULVERTS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT AN HS-20 LOADING OR HEAVIER. CHECK WITH MANUFACTURER FOR INFORMATION ABOUT MINIMUM COVER AND LOAD RATINGS. IN NO CASE SHALL COVER OVER CULVERTS BE LESS THAN 1'. CULVERT LENGTHS ARE ESTIMATED ON THE PLANS BUT THERE MAY NEED TO BE SOME ADJUSTMENTS MADE TO THE LENGTH OF THE CULVERTS DURING CONSTRUCTION.



TYPICAL CULVERT CROSS SECTION



Savage Surveying, Inc.
Ryan W. Savage, PLS
PO Box 892
273 S 500 W
Richfield, UT 84701
Phone: 435-896-8535
Fax: 435-898-9635
Cell: 435 201 1345



Wolverine Federal Denmark Wash 15-1 Access Road Design for
Wolverine Operating Company of Utah, LLC

ENGINEER T.M.	SCALE NONE	SHEET NO. TS-1
CHECKED R.W.S.	PROJ# 0512-008S DWG.NM.TYPICAL	
DRAWN R.W.S.	DATE 04/14/06	

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GENERAL NOTES

ALL MATERIALS FOR CONSTRUCTION OF THE COMPLETE PROJECT INCLUDING BUT NOT LIMITED TO WATER FOR DUST CONTROL AND COMPACTION, CULVERTS, BEDDING MATERIALS FOR CULVERTS, GRANULAR BORROW, UNTREATED BASE COURSE, ETC., ARE TO BE PROVIDED BY THE CONTRACTOR AT HIS BID PRICE UNLESS OTHER ARRANGEMENTS ARE MADE.

SAVAGE SURVEYING, INC. ASSUMES NO LIABILITY WRITTEN OR IMPLIED AS TO THE LOCATION OF PIPELINES OR CABLE LINES IN THE VICINITY OF THIS ROAD AND PAD DESIGN. BLUE STAKES (PUBLIC LINES) AND OR THE OWNER OF THE TRANSPORTATION LINE (PRIVATE/CORPORATE LINES) MUST BE CONTACTED FOR IDENTIFICATION AND LOCATION BEFORE CONSTRUCTION BEGINS. TRANSPORTATION LINES THAT MAY BE IDENTIFIED ON THESE PLANS MAY NOT BE THE ONLY TRANSPORTATION LINES. EXTREME CAUTION SHALL BE USED WHEN CONSTRUCTING THE ROAD AND PAD NEAR OR OVER TRANSPORTATION LINES.

EXPLANATIONS:

PLAN & PROFILE SHEETS SHOW THE HORIZONTAL ALIGNMENT OF THE ROAD, SIGN PLACEMENT IF ANY, TURNOUT PLACEMENT IF ANY, ESTIMATED CULVERT PLACEMENTS AND SIZES, ESTIMATED WING DITCHES, HORIZONTAL AND VERTICAL CURVE DATA, AND THE PERCENT OF SUPER FOR CONSTRUCTION OF HORIZONTAL CURVES.

SCOPE OF WORK:

SHAPING THE ROADWAY

THE ROADWAY IS TO BE SHAPED TO THE DIMENSIONS SHOWN ON THE TYPICAL CROSS SECTION INCLUDED IN THIS DOCUMENT. CARE SHALL BE GIVEN TO INSURE THAT THE TRAVEL WAY WIDTH IS NOT LESS OR SIGNIFICANTLY MORE THAN THE DIMENSIONS GIVEN ON THE TYPICAL CROSS SECTION. WHERE TURNOUTS ARE INDICATED, THE TYPICAL SECTION WIDTHS SHOWN ON THE TYPICAL CROSS SECTION WILL NEED TO BE MODIFIED BY THE AMOUNTS SHOWN ON THE TYPICAL TURN-OUT DETAIL. WHERE THERE ARE HORIZONTAL CURVES, SUPER-ELEVATIONS WILL BE CONSTRUCTED TO THE PERCENTAGES SHOWN ON THE PLAN AND PROFILE SHEETS. ONE-THIRD OF THE SUPER TRANSITION OCCURS ON THE CURVE AND TWO-THIRDS ON THE TANGENT.

TOPSOIL WILL BE HANDLED IN THE MANNER AGREED UPON AND STATED WITHIN THE APD AND THE CONDITIONS OF APPROVAL. IF TOPSOIL IS TO BE MOVED.

THE ROAD SHALL HAVE A CROWN AS SHOWN ON THE TYPICAL CROSS SECTION TO INSURE THAT THE WATER WILL DRAIN OFF OF THE TRAVEL SURFACE.

Savage Surveying, Inc.

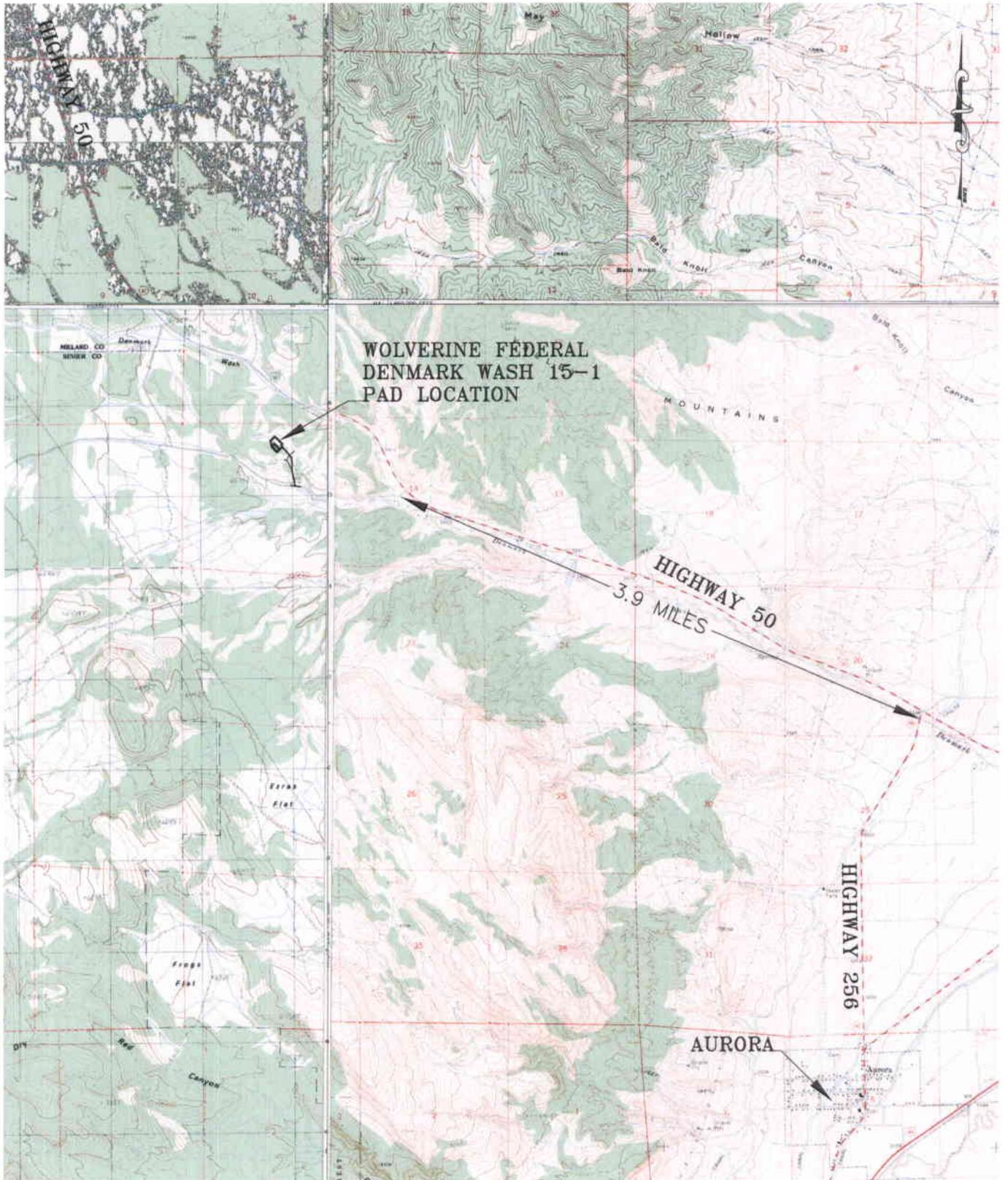
Ryan W. Savage, PLS
 PO BOX 897
 275 S 500 W
 RICHMOND, UT 84701
 PHONE: 435-896-8635
 FAX: 435-896-8635
 CELL: 435-201-1345



**Wolverine Federal Denmark Wash 15-1 Access Road Design for
 Wolverine Operating Company of Utah, LLC**

ENGINEER T.M.	SCALE NONE	SHEET NO. TS-2
CHECKED R.W.S.	PROJ# : 0512-006S DWG.NM: TYPICAL	
DRAWN R.W.S.	DATE 04/14/06	

CONFIDENTIAL



Savage Surveying, Inc.
 Ryan W. Savage, PLS
 PO Box 692
 275 S 600 W
 Richfield, UT 84701
 Home: 435-896-8635
 Fax: 435-896-8635
 Cell: 435-204-1345



Wolverine Federal Denmark Wash 15-1					
Wolverine Operating Company of Utah, LLC					
DRAWING NAME	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER	
LOCATION	1" = 5000'	2/20/06	0512-008S	1	
DESIGNED BY	SURVEYED BY	CHECKED BY	DRAWN BY		
---	---	R.W.S.	R.W.S.		

Exhibit "C"

**WORKSHEET
APPLICATION FOR PERMIT TO DRILL**

APD RECEIVED: 04/18/2006

API NO. ASSIGNED: 43-041-30043

WELL NAME: WOLV FED DENMARK WASH 15-1
 OPERATOR: WOLVERINE GAS & OIL CO (N1655)
 CONTACT: ELLIS PETERSON

PHONE NUMBER: 616-458-1150

PROPOSED LOCATION:

NWNE 15 210S 020W
 SURFACE: 0702 FNL 1815 FEL
 BOTTOM: 0702 FNL 1815 FEL
 COUNTY: SEVIER
 LATITUDE: 38.98681 LONGITUDE: -112.0061
 UTM SURF EASTINGS: 412860 NORTHINGS: 4315586
 FIELD NAME: WILDCAT (1)

INSPECT LOCATN BY: / /		
Tech Review	Initials	Date
Engineering		
Geology		
Surface		

LEASE TYPE: 1 - Federal
 LEASE NUMBER: UTU-81397
 SURFACE OWNER: 1 - Federal

PROPOSED FORMATION: MNKP
 COALBED METHANE WELL? NO

RECEIVED AND/OR REVIEWED:

- Plat
- Bond: Fed[1] Ind[] Sta[] Fee[]
(No. WY3329)
- Potash (Y/N)
- Oil Shale 190-5 (B) or 190-3 or 190-13
- Water Permit
(No. 21014)
- RDCC Review (Y/N)
(Date: _____)
- Fee Surf Agreement (Y/N)
- Intent to Commingle (Y/N)

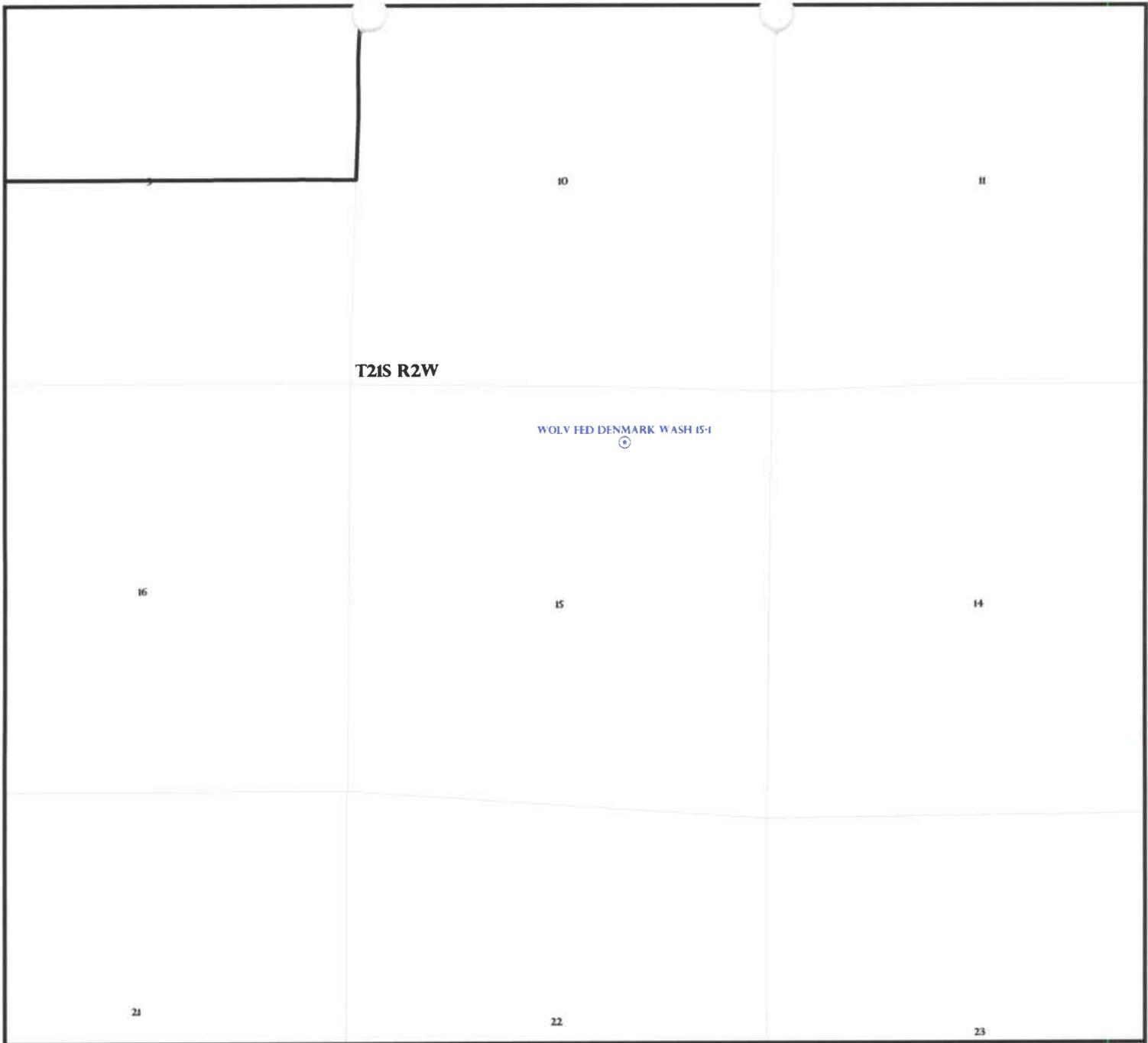
LOCATION AND SITING:

- R649-2-3.
Unit: _____
- R649-3-2. General
Siting: 460 From Qtr/Qtr & 920' Between Wells
- R649-3-3. Exception
- Drilling Unit
Board Cause No: _____
Eff Date: _____
Siting: _____
- R649-3-11. Directional Drill

COMMENTS: _____

STIPULATIONS: 1- Federal Approval

2- Spacing Step



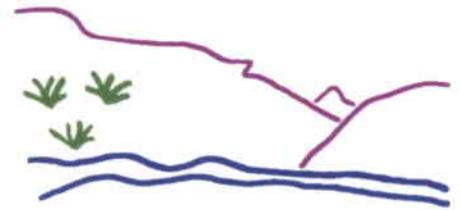
OPERATOR: WOLVERINE OPER CO (N1655)

SEC: 15 T. 21S R. 2W

FIELD: WILDCAT (001)

COUNTY: SEVIER

SPACING: R649-3-2 / GENERAL SITING



Utah Oil Gas and Mining

- Field Status**
- ABANDONED
 - ACTIVE
 - COMBINED
 - INACTIVE
 - PROPOSED
 - STORAGE
 - TERMINATED

- Unit Status**
- EXPLORATORY
 - GAS STORAGE
 - NF PP OIL
 - NF SECONDARY
 - PENDING
 - PI OIL
 - PP GAS
 - PP GEOTHERML
 - PP OIL
 - SECONDARY
 - TERMINATED

- Wells Status**
- ✂ GAS INJECTION
 - ✂ GAS STORAGE
 - ✂ LOCATION ABANDONED
 - ⊙ NEW LOCATION
 - ⊙ PLUGGED & ABANDONED
 - ✂ PRODUCING GAS
 - PRODUCING OIL
 - ✂ SHUT-IN GAS
 - SHUT-IN OIL
 - ✂ TEMP. ABANDONED
 - TEST WELL
 - ⊙ WATER INJECTION
 - ⊙ WATER SUPPLY
 - ⊙ WATER DISPOSAL
 - ⊙ DRILLING



PREPARED BY: DIANA WHITNEY
DATE: 27-APRIL-2006



State of Utah

**Department of
Natural Resources**

MICHAEL R. STYLER
Executive Director

**Division of
Oil, Gas & Mining**

JOHN R. BAZA
Division Director

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

April 27, 2006

Wolverine Operating Company of Utah, LLC
55 Campau, NW
Grand Rapids, MI 49503-2616

Re: Wolverine Federal Denmark Wash 15-1 Well, 702' FNL, 1815' FEL, NW NE,
Sec. 15, T. 21 South, R. 2 West, Sevier County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-041-30043.

Sincerely,

A handwritten signature in black ink, appearing to read "Gil Hunt".

Gil Hunt
Associate Director

pab
Enclosures

cc: Sevier County Assessor
Bureau of Land Management, Moab District Office

Operator: Wolverine Operating Company of Utah, LLC
Well Name & Number Wolverine Federal Denmark Wash 15-1
API Number: 43-041-30043
Lease: UTU-81397

Location: NW NE **Sec.** 15 **T.** 21 South **R.** 2 West

Conditions of Approval

1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

2. Notification Requirements

Notify the Division within 24 hours of spudding the well.

- Contact Carol Daniels at (801) 538-5284.

Notify the Division prior to commencing operations to plug and abandon the well.

- Contact Dan Jarvis at (801) 538-5338

3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. State approval of this well does not supersede the required federal approval, which must be obtained prior to drilling.

5. This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, and if the analysis suggests an area larger than the quarter-quarter section upon which the well is located is being drained, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS		5. LEASE DESIGNATION AND SERIAL NUMBER: UTU-81397
Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA
1. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER _____		7. UNIT or CA AGREEMENT NAME: NA
2. NAME OF OPERATOR: Wolverine Operating Company of Utah, LLC		8. WELL NAME and NUMBER: Wolv. Fed. Denmark Wash 15-1
3. ADDRESS OF OPERATOR: 55 Campau NW CITY: Grand Rapids STATE: MI ZIP: 49503-2616		9. API NUMBER: 4304130043
4. LOCATION OF WELL FOOTAGES AT SURFACE: 702' FNL, 1815' FEL		10. FIELD AND POOL, OR WILDCAT: Wildcat
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: NWNE 15 21S 2W S		COUNTY: Sevier
		STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: Request Permit Extension
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

The original APD for the subject well was approved by UDOGM on 04/27/06. A one-year extension to the original drilling permit is hereby requested.

**Approved by the
Utah Division of
Oil, Gas and Mining**

Attachment: APD Request for Permit Extension Validation

Date: 04-11-07
By: [Signature]

COPY SENT TO OPERATOR
Date: 4.12.07
Initials: [Signature]

NAME (PLEASE PRINT) <u>Ellis M. Peterson</u>	TITLE <u>Senior Production Engineer</u>
SIGNATURE <u>[Signature]</u>	DATE <u>4/5/2007</u>

(This space for State use only)

RECEIVED

APR 11 2007

CONFIDENTIAL

DIV. OF OIL, GAS & MINING
(See Instructions on Reverse Side)



**Application for Permit to Drill
Request for Permit Extension
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

API: 43-041-30043
Well Name: Wolverine Federal Denmark Wash 15-1
Location: 702' FNL, 1815' FEL, Section 15, T21S, R2W
Company Permit Issued to: Wolverine Operating Company of Utah, LLC
Date Original Permit Issued: 4/27/2006

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision.

Following is a checklist of some items related to the application, which should be verified.

If located on private land, has the ownership changed, if so, has the surface agreement been updated? Yes No

Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? Yes No

Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? Yes No

Have there been any changes to the access route including ownership, or right-of-way, which could affect the proposed location? Yes No

Has the approved source of water for drilling changed? Yes No

Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? Yes No

Is bonding still in place, which covers this proposed well? Yes No



Signature

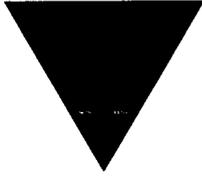
4/5/2007
Date

Title: Senior Production Engineer

Representing: Wolverine Operating Company of Utah, LLC

RECEIVED
APR 11 2007

CONFIDENTIAL



WOLVERINE OPERATING COMPANY
of Utah, LLC

Energy Exploration in Partnership with the Environment

April 5, 2007

Mr. Gil Hunt
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Re: Wolverine Federal Denmark Wash 15-1,
702' FNL, 1815' FEL, (NW/4 NE/4),
Section 15, T. 21 South, R. 2 West, SLB&M,
Sevier County, Utah

Dear Mr. Hunt:

Wolverine Operating Company of Utah, LLC (Wolverine) respectfully submits the accompanying Sundry Notice with attachment in duplicate requesting an extension to the drilling permit for the subject well.

Please accept this letter as Wolverine's written request for continued confidential treatment of all information included in this and previous correspondence relating to this well.

Thank you for your consideration of this request. Please feel free to contact me or Ed Higuera of this office at 616-458-1150 if you have any questions or need additional information.

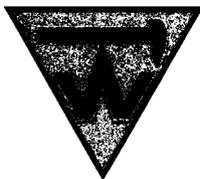
Sincerely,

Ellis M. Peterson
Wolverine Operating Company of Utah, LLC

RECEIVED

APR 11 2007

DIV. OF OIL, GAS & MINING



WOLVERINE OPERATING COMPANY
of Utah, LLC

Energy Exploration in Partnership with the Environment

April 2, 2008

Mr. Gil Hunt
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

Re: Wolverine Federal Denmark Wash 15-1,
702' FNL, 1815' FEL, (NW/4 NE/4),
Section 15, T. 21 South, R. 2 West, SLB&M,
Sevier County, Utah

Dear Mr. Hunt:

Wolverine Operating Company of Utah, LLC (Wolverine) respectfully submits the accompanying Sundry Notice with attachment in duplicate requesting an extension to the drilling permit for the subject well.

Please accept this letter as Wolverine's written request for continued confidential treatment of all information relating to this well.

Thank you for your consideration of this request. Please feel free to contact me or Ed Higuera of this office at 616-458-1150 if you have any questions or need additional information.

Sincerely,

Ellis M. Peterson
Wolverine Operating Company of Utah, LLC

RECEIVED

APR 09 2008

DIV. OF OIL, GAS & MINING

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS		5. LEASE DESIGNATION AND SERIAL NUMBER: UTU-81397
Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA
1. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER _____		7. UNIT or CA AGREEMENT NAME: NA
2. NAME OF OPERATOR: Wolverine Operating Company of Utah, LLC		8. WELL NAME and NUMBER: Wolv. Fed. Denmark Wash 15-1
3. ADDRESS OF OPERATOR: 55 Campau NW CITY Grand Rapids STATE MI ZIP 49503-2616		9. API NUMBER: 4304130043
		10. FIELD AND POOL, OR WILDCAT: Wildcat
4. LOCATION OF WELL FOOTAGES AT SURFACE: 702' FNL, 1815' FEL		COUNTY: Sevier
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: NWNE 15 21S 2W S		STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: <u>Request Permit Extension</u>
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.
The original APD for the subject well was approved by UDOGM on 04/27/06. A second one-year extension to the original drilling permit is hereby requested.

**Approved by the
Utah Division of
Oil, Gas and Mining**

Attachment: APD Request for Permit Extension Validation

COPY SENT TO OPERATOR
Date: 4.14.2008
Initials: KS

Date: 04-10-08
By: [Signature]

NAME (PLEASE PRINT) <u>Ellis M. Peterson</u>	TITLE <u>Senior Production Engineer</u>
SIGNATURE <u>[Signature]</u>	DATE <u>4/2/2008</u>

(This space for State use only)

RECEIVED
APR 09 2008



**Application for Permit to Drill
Request for Permit Extension
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

API: 43-041-30043
Well Name: Wolverine Federal Denmark Wash 15-1
Location: 702' FNL, 1815' FEL, Section 15, T21S, R2W
Company Permit Issued to: Wolverine Operating Company of Utah, LLC
Date Original Permit Issued: 4/27/2006

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision.

Following is a checklist of some items related to the application, which should be verified.

If located on private land, has the ownership changed, if so, has the surface agreement been updated? Yes No

Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? Yes No

Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? Yes No

Have there been any changes to the access route including ownership, or right-of-way, which could affect the proposed location? Yes No

Has the approved source of water for drilling changed? Yes No

Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? Yes No

Is bonding still in place, which covers this proposed well? Yes No



 Signature

4/2/2008

 Date

Title: Senior Production Engineer

Representing: Wolverine Operating Company of Utah, LLC

RECEIVED

APR 09 2008

DIV. OF OIL, GAS & MINING



JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

July 1, 2009

Wolverine Operating Co. of Utah, LLC
55 Campau, NW
Grand Rapids, MI 49503-2616

Re: APD Rescinded – Wolverine Fed Denmark Wash 15-1,
Sec. 15, T. 21S, R. 2W, Sevier County, Utah API No. 43-041-30043

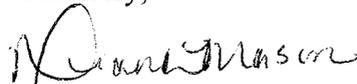
Ladies and Gentlemen:

The Application for Permit to Drill (APD) for the subject well was approved by the Division of Oil, Gas and Mining (Division) on April 27, 2006. On April 11, 2007 and April 10, 2008, the Division granted a one-year APD extension.

No drilling activity at this location has been reported to the division. Therefore, approval to drill the well is hereby rescinded, effective July 1, 2009. A new APD must be filed with this office for approval prior to the commencement of any future work on the subject location.

If any previously unreported operations have been performed on this well location, it is imperative that you notify the Division immediately.

Sincerely,


Diana Mason
Environmental Scientist

cc: Well File
Bureau of Land Management, Moab

