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State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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February 7, 2002

TO: Internal File / Citizen Complaint

THRU: Pamela Grubaugh-Littig, Permit Supervisor *PG*

FROM: Peter Hess, Reclamation Specialist III *PH*

RE: Citizen Complaint Concerns, Potential for Adverse Impacts from Surface Blasting, Lodestar Energy, Inc., Mountain Operations, Whiskey Creek Surface Mine, C/007/001

On January 25, 2002 at approximately 1:50 PM, a verbal citizen complaint was filed by Mr. Steve Tanner with the Division relative to the fact that the permittee operating the Whiskey Creek surface mine in Carbon County, Utah was operating without having a reclamation bond in place. Mr. Tanner also contended that without an adequate reclamation bond in place, that the permittee does not have a permit to mine, in reference to R645-301-812.700. The permittee is Lodestar Energy, Inc.

On January 28, 2002, at 8 AM, Mr. Tanner filed a formal written complaint at the Division's Price Field Office with Peter Hess, which not only addressed the bond issue, but which expressed concern over several secondary issues.

This memo will only address the issues raised by Mr. Tanner relative to hydrology and the potential for affect to the Madsen well and the stability of pond 004, which is the Mine site sediment containment.

**Citizen Concern #1**

The citizen complaint registered with the Division by Mr. Tanner raised the following concern; **"the ability to protect and maintain the quality of the water being discharged from the seeps and springs associated with both coal seams while the mining operation is being conducted prior to being discharged into Whiskey Creek"**.

INTERNAL MEMO

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**Division Response to Concern #1**

(This Division response was authored by Mr. Gregg Galecki, Reclamation Hydrologist with the Division's Salt Lake technical staff, and lead hydrologist for the permitting of the Whiskey Creek surface mine.)

The Division's response is as follows:

- There are no seeps or springs that regularly discharge in the area designated for surface mining. The geology generally dips away from the surface and towards the mine workings, which also reduces the likelihood of springs or seeps emanating from the area of surface mining.
- The material/rock to be disturbed during surface mining has been tested for Acid/Toxic potential, and any potentially toxic units have been identified. The disturbed areas will also be tested on a regular basis to ensure water quality is maintained.

**Citizen Concern #2**

Mr. Tanner's January 28, 2002 complaint raised issue over **"sediment pond size due to the redisturbance of the soil horizons on the upper pad and the removal of structures and surface stabilizing features for the re-mining being conducted."**

**Division Response to Concern #2**

(This response was also authored by Mr. Galecki.)

The Division's response is as follows:

- All water entering the area disturbed by surface mining will be treated prior to discharging into Whiskey Creek. Sediment Ponds Dugout D-1 and Pond 004A have the design capacity to store runoff for the entire surface disturbance area, even though contemporaneous reclamation is planned and the entire area should not be disturbed all at once. The designs of the Ponds were based on a 10-year, 24-hour storm event. To demonstrate the capacity of the sediment ponds, SEDCAD 4.0 was used (with the appropriate variables; acreage, weighted curve numbers, and designed storm event).

### Citizen Concern #3

Mr. Tanner also raised the following concern relative to the stability of pond 004 and the adjacent Madsen well. **“.....there is a question of the stability of the sediment pond and the adjacent water well on the Madison (Madsen) property. Since both are, as the State well knows, within a fault zone, what will the seismic affect of blasting have on these two structures?”**

### Division Response to Concern #3

(This response was co-authored by Messrs. Galecki and Peter Hess, Reclamation Specialist III.)

The Division's response is as follows:

- Pond Dugout D-1 has a stability factor of 2.8, which exceeds the 1.3 minimum requirements. Since the pond is incised, the Permittee should be able to keep the pond stable during construction. The pond has a safety factor of 7.02 against sudden draw down, and will be subject to inspections by a qualified individual on a quarterly basis and by a registered professional engineer on a quarterly basis.

The surface elevation at the toe of the impounding embankment for pond 004 is 8,850 feet above sea level. The elevation of the spillway is 8,874.5 feet.

- Mr. Tanner's concerns are relative to the potential affect of ground vibration from the blasting operations on pond 004 and the Madsen well. The elevation of the wellhead is at 8,828 feet. Both the pond and the Madsen well are below the floor elevation of the lower O'Connor coal seam (8,945 feet), which will be the lowest point of borehole depth. Ammonium nitrate works in the following manner; upon detonation, a detonation wave travels up the borehole. As this occurs, a compression wave fans out away from the borehole in a radial fashion, with the majority of the energy traveling the path of least resistance (toward the free faces, i.e. the bench area). When the compression wave reaches air, it encounters a huge amount of resistance, which causes it to rebound into the burden material. This rebound has converted the compression wave into a tensile wave, which breaks the burden as it travels back through it.

During a January 10, 2002 meeting with the Division, Lodestar Energy, Inc., Questar, and Bradley Safety Consultants, Mr. C.W. Bradley calculated the maximum peak particle velocity which would develop during the utilization of ammonium nitrate and fuel oil blasting agents at the Whiskey Creek site. The permittee has contracted Wolfe Management, Inc. to conduct the surface blasting activities. Using a 6.75 inch borehole diameter and a maximum

INTERNAL MEMO

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explosive column height of eighty feet (average amount of interburden between the upper and lower O'Connor coal seams), Mr. Bradley determined that a maximum peak particle velocity of 0.3 inches/second would be developed per 8 millisecond delay, using a scaled distance factor of 55, which is the factor to be applied **without** seismic monitoring for a distance separating the blasting site from the nearest potentially affected structure (301 to 5000 feet). The closest distance separating the Questar transmission line from the blasting area is approximately 1,000 feet.

The allowable maximum peak particle velocity for the Whiskey Creek site, as determined through the utilization of R645-301-524.642, and a distance of 1,000 feet from the blast site (use 301 to 5,000 foot distance from blast site) is 1.00 inch per second per 8 millisecond delay. Thus, the utilization of the blasting agent on a 16 X 25 foot pattern will generate a maximum peak particle velocity which is one-third the maximum allowable limit as approved within the R645 coal rules, and the United States Department of the Interior, Office of Surface Mining.

The path of least resistance and the amount of energy that will travel toward the free faces is the issue at this point. Only a minimum amount, if any, would travel below the pit area, through any ground. Upon reaching air, it would rebound into the rocky areas. As the Madsen well and pond 004 are below the floor elevation of the lower O'Connor seam, virtually no effect from ground vibration will be felt by either structure.

A concern relative to the fact that both the aforementioned structures are within a fault zone is appreciated, but creates no major issue as the State of Utah experiences on the average some two hundred seismic tremors each day. As the Mine's permit area is crossed by several faults, each probably moves a minimal amount in numerous directions in order to relieve the energy generated via the shifting of the earth's plates. It is when the faulted areas do not relieve the energy, that seismologists develop major concerns due to the buildup of huge amounts of energy. This energy buildup may accumulate to a point, that when released may create a major seismologic event within the Wasatch Plateau. This area has also experienced numerous man-made seismic events from the secondary extraction of coal via longwall mining methods at the Canyon Fuel Company Skyline Mine.

The quarterly impoundment inspections that are required for pond 004 have not revealed any abnormal or hazardous conditions with the impounding embankment. Thus, the numerous seismic events which have occurred in the area have had no affect on this structure.