

# LODESTAR ENERGY, INC

## Horizon Mine

### 2001 Annual Report C/007/020

April, 2002

Prepared by  
Lodestar Energy  
Engineering  
HC 35 Box 370  
Helper, Utah 84526

File in:

Confidential

Shelf

Expandable

Refer to Record No 0023 Date 0322, 2002

In C 0070020, 2002, Incoming E

For additional information confidential





To enter text, click in the box and type your response. If a box already contains an entry select the entry and type the replacement. You can use the **tab** key to move from one field to the next. To select a check box, click in the box or type an x.

## GENERAL INFORMATION

|  |   |
|--|---|
| Permitte Name                              | Lodestar Energy, Inc.                               |
| Mine Name                                  | Horizon Mine  |
| Operator Name<br>(If other then permittee) |   |
| Permit Expiration Date                     | October 11, 2006                                    |
| Permit Number                              | C/007/020   |
| Authorized Representative Title            | David B. Miller, Business Manager                   |
| Phone Number                               | (435) 448-9455                                      |
| Fax Number                                 | (435) 448-9456                                      |
| E-mail Address                             | dave.miller@lodestareng.com or millerdbnrj1@msn.com |
| Mailing Address                            | HC35 Box 370, Helper, UT 84526                      |
| Resident Agent                             | David B. Miller, Business Manager                   |
| Resident Agent Mailing Address             | HC35 Box 370, Helper, UT 84526                      |
| Number of Binders Submitted                | 2 copies (1 binder each)                            |

## IDENTIFICATION OF OTHER PERMITS

Identify other permits that are required in conjunction with mining and reclamation activities.

| Permit Type           | ID Number     | Description                      | Expiration Date |
|-----------------------|---------------|----------------------------------|-----------------|
| MSHA Mine ID(s)       | 42-02074      | Horizon No. 1 Mine               | N/A             |
|                       | 42-02075      | Horizon No. 2 Mine (not started) | N/A             |
| MSHA Impoundment(s)   |               | None                             |                 |
| NPDES/UPDES Permit(s) | UTG040000-001 | Sediment Pond 001                | 2003            |
|                       | UTG040000-002 | Pipe Discharge                   | 2003            |
| PSD Permit(s) (Air)   | DAQE-700-00   | Modification of Approval Order   | N/A             |
|                       |               | BAQE-336-91                      |                 |
| <b>Other</b>          |               |                                  |                 |
|                       |               |                                  |                 |
|                       |               |                                  |                 |
|                       |               |                                  |                 |

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**CERTIFIED REPORTS**

List the certified inspection reports as required by the rules and under the approved plan that must be periodically submitted to the Division. Specify whether the information is included as Appendix A to this report or currently on file with the Division.

| Certified Reports: | Required                            |                                     | Included or on file with DOGM       |                          | Comments |
|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|----------|
|                    | Yes                                 | No                                  | Included                            | On File                  |          |
| Excess Spoil Piles | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |          |
| Refuse Piles       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |          |
| Impoundments       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Other</b>       | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |          |
|                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |          |

**REPORTING OF OTHER TECHNICAL DATA**

List other technical data and information as required under the approved plan, which must be periodically submitted to the Division. Specify whether the information is included as Appendix B to this report or currently on file with the Division.

| Technical Data:                    | Required                            |                                     | Included or on file with DOGM       |                                     | Comments   |
|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|
|                                    | Yes                                 | No                                  | Included                            | On file                             |  |
| Climatological                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Subsidence Monitoring              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |  |
| Vegetation Monitoring              | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Raptor Survey                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Survey of new areas of planned subsidence or planned surface disturbance |
| Soils Monitoring                   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Water Monitoring                   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| First quarter                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |  |
| Second quarter                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |  |
| Third quarter                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |  |
| Fourth quarter                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |  |
| Geological / Geophysical           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| Engineering                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| <b>Other Data</b>                  |                                     |                                     |                                     |                                     |  |
| Underground Discharge Pumping Data | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |  |
| Deer/Elk Fatality Statistics       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |  |
| Macroinvertebrate Baseline Study   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Spring and Fall Report of Results by JBR Environmental                   |
|                                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |

**LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION**

Change in administration or corporate structure can often bring about necessary changes to information found in the mining and reclamation plan. The Division is Requesting that each permittee review





**APPENDIX A**

**Certified Reports**

Excess Spoil Piles  
Refuse Piles  
Impoundments

As required under R645-301-514

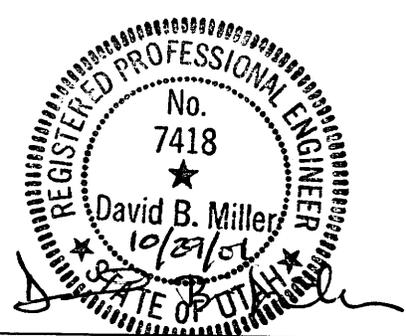
**IMPOUNDMENT INSPECTION AND CERTIFIED REPORT**

|                            |                      |                       |
|----------------------------|----------------------|-----------------------|
| Permit Number              | C/007/020            | Report Date: 10-29-01 |
| Mine Name                  | Horizon              |                       |
| Company Name               | Lodestar Energy, Inc |                       |
| Impoundment Identification | Impoundment Number   | 001                   |
|                            | UPDES Permit Number  | UTG040019             |

**IMPOUNDMENT INSPECTION**

|   |                                      |
|---|--------------------------------------|
| Inspection Date   | 10-24-01                             |
| Inspected By  | Kit Pappas                           |
| Reason for Inspection<br>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction) | Quarterly Inspection / <i>Annual</i> |

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
 No signs of instability noted at this incised pond. There is no evidence of slumping in the pond or on the embankment. No hazardous conditions were noted.

|  |  |
|--|--|
| Required for an impoundment which functions as a SEDIMENTATION POND. | 2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.<br>60% Sediment Storage – 7566.9<br>100 % Sediment Storage – 7569.8<br>The water level was 7 feet below the 60% clean out marker. (7559.9)  |
|  | 3. Principle and emergency spillway elevations.<br>Spillway Elevation - 7573.9 Feet  |
|  | 4. Field Information<br>The water level in the pond has dropped since last inspection. The pond was not discharging at the time of inspection. No flow into the pond during the inspection. The inlets and outlet were stable. No instability was noted on the downstream embankment. The pond has small deltas of sediment near the inlets. |
|  |   |

**IMPOUNDMENT INSPECTION AND CERTIFIED REPORT**

|                            |                      |                      |
|----------------------------|----------------------|----------------------|
| Permit Number              | C/007/020            | Report Date: 9-17-01 |
| Mine Name                  | Horizon              |                      |
| Company Name               | Lodestar Energy, Inc |                      |
| Impoundment Identification | Impoundment Number   | 001                  |
|                            | UPDES Permit Number  | UTG040019            |

**IMPOUNDMENT INSPECTION**

|   |                      |
|---|----------------------|
| Inspection Date   | 9-11-01              |
| Inspected By  | Kit Pappas           |
| Reason for Inspection<br>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction) | Quarterly Inspection |

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.  
 No signs of instability noted at this incised pond. There is no evidence of slumping in the pond or on the embankment. No hazardous conditions were noted.

Required for an impoundment which functions as a SEDIMENTATION POND.

2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.

60% Sediment Storage - 7566.9  
 100 % Sediment Storage - 7569.8  
 The water level was 6 feet below the 60% clean out marker. (7561.9)

3. Principle and emergency spillway elevations.  
 Spillway Elevation - 7573.9 Feet

4. Field Information

The pond was not discharging at the time of inspection. No flow into the pond during the inspection. The inlets and outlet were stable. No instability was noted on the downstream embankment. The pond has small deltas of sediment near the inlets.

| IMPOUNDMENT INSPECTION AND CERTIFIED REPORT  |   | Page 1 of 1          |
|--|---|----------------------|
| Permit Number  | C 007/020   | Report Date: 6-01-01 |
| Mine Name  | Horizon   |                      |
| Company Name   | Lodestar Energy, Inc  |                      |
| Impoundment Identification   | Impoundment Number  | 001                  |
|  | UPDES Permit Number   | UTG040019            |
| <b>IMPOUNDMENT INSPECTION</b>  |   |                      |
| Inspection Date  | 5-31-01   |                      |
| Inspected By   | David B. Miller   |                      |
| Reason for Inspection<br>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)  | Quarterly Inspection  |                      |
| <p>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</p> <p>No signs of instability noted at this incised pond. There is no evidence of slumping in the pond or on the embankment. No hazardous conditions were noted.</p> |   |                      |
| Required for an impoundment which functions as a SEDIMENTATION POND.   | <p>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</p> <p>60% Sediment Storage – 7566.9<br/> 100 % Sediment Storage – 7569.8<br/> The water level was 5 feet below the 60% clean out marker. (7562.9)</p>                            |                      |
|  | <p>3. Principle and emergency spillway elevations.</p> <p>Spillway Elevation - 7573.9 Feet</p>  |                      |
|  | <p>4. Field Information</p> <p>The pond was not discharging at the time of inspection. No flow into the pond during the inspection. The inlets and outlet were stable. No instability was noted on the downstream embankment. The pond has small deltas of sediment near the inlets. Deer tracks noted along the edge of the water.</p> |                      |
|  |   |                      |

| IMPOUNDMENT INSPECTION AND CERTIFIED REPORT   |   | Page 1 of 1          |         |
|---|---|----------------------|---------|
| Permit Number   | ACT 007/020   | Report Date:         | 3-08-01 |
| Mine Name   | Horizon   |                      |         |
| Company Name  | Lodestar Energy, Inc  |                      |         |
| Impoundment Identification  | Impoundment Number  | 001                  |         |
|   | UPDES Permit Number   | UTG040019            |         |
| IMPOUNDMENT INSPECTION  |   |                      |         |
| Inspection Date   | 3-07-01   |                      |         |
| Inspected By  | David B. Miller   |                      |         |
| Reason for Inspection<br>(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)   |   | Quarterly Inspection |         |
| <p>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.<br/>No signs of instability noted at this incised pond. There is no evidence of slumping in the pond or on the embankment. No hazardous conditions were noted.</p> |   |                      |         |
| Required for an impoundment which functions as a SEDIMENTATION POND.  | <p>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</p> <p>60% Sediment Storage – 7566.9<br/>100 % Sediment Storage – 7569.8<br/>The water level was 5 feet below the 60% clean out marker. (7562.9)</p>  |                      |         |
|   | <p>3. Principle and emergency spillway elevations.</p> <p>Spillway Elevation - 7573.9 Feet</p>  |                      |         |
|   | <p>4. Field Information</p> <p>The pond was not discharging at the time of inspection. Small flow into the pond from snow melt during the inspection. The inlets and outlet were stable. No instability was noted on the downstream embankment. Banks were partially snow covered. The water was frozen over 98% of the water surface. The pond has small deltas of sediment near the inlets.</p> |                      |         |
|   |   |                      |         |

**APPENDIX B**

**Reporting of Technical Data**

Including monitoring data, reports, maps, and other information  
As required under the approved plan or as required by the Division

In accordance with the requirement of R645-310-130 and R645-301-140



## HORIZON MINE DISCHARGE

| <u>DATE</u> | <u>GALLONS PUMPED</u> | <u>MINUTES</u> | <u>AVERAGE G.P.M.</u> |                 |              |                 |
|-------------|-----------------------|----------------|-----------------------|-----------------|--------------|-----------------|
| 29-Dec-00   |                       |                |                       |                 |              |                 |
| 03-Jan-01   | 2010500               | 7290           | 275.79                |                 |              |                 |
| 09-Jan-01   | 2389100               | 8640           | 276.52                |                 |              |                 |
| 10-Jan-01   | 360200                | 1320           | 272.88                |                 |              |                 |
| 11-Jan-01   | 418800                | 1610           | 260.12                |                 |              |                 |
| 12-Jan-01   | 364400                | 1460           | 249.59                |                 |              |                 |
| 16-Jan-01   | 1526000               | 5635           | 270.81                |                 |              |                 |
| 17-Jan-01   | 407800                | 1545           | 263.95                |                 |              |                 |
| 18-Jan-01   | 377700                | 1410           | 267.87                | <b>7854500</b>  | <b>28910</b> | <b>271.688</b>  |
| 02-Feb-01   | 5144400               | 21530          | 238.94                |                 |              |                 |
| 05-Feb-01   | 1173800               | 4490           | 261.43                |                 |              |                 |
| 06-Feb-01   | 379200                | 1350           | 280.89                |                 |              |                 |
| 07-Feb-01   | 496500                | 1770           | 280.51                |                 |              |                 |
| 08-Feb-01   | 302700                | 1350           | 224.22                |                 |              |                 |
| 12-Feb-01   | 1336700               | 5550           | 240.85                |                 |              |                 |
| 14-Feb-01   | 536700                | 2820           | 190.32                |                 |              |                 |
| 16-Feb-01   | 691000                | 2910           | 237.46                |                 |              |                 |
| 19-Feb-01   | 1154600               | 4260           | 271.03                |                 |              |                 |
| 20-Feb-01   | 395900                | 1440           | 274.93                |                 |              |                 |
| 21-Feb-01   | 377100                | 1500           | 251.40                |                 |              |                 |
| 22-Feb-01   | 393100                | 1470           | 267.41                |                 |              |                 |
| 23-Feb-01   | 386600                | 1560           | 247.82                |                 |              |                 |
| 27-Feb-01   | 1473900               | 5975           | 246.68                |                 |              |                 |
| 28-Feb-01   | 336100                | 1405           | 239.22                | <b>14578300</b> | <b>59380</b> | <b>245.5086</b> |
| 01-Mar-01   | 314500                | 1335           | 235.58                |                 |              |                 |
| 02-Mar-01   | 384700                | 1545           | 249.00                |                 |              |                 |
| 05-Mar-01   | 1011500               | 4230           | 239.13                |                 |              |                 |
| 06-Mar-01   | 449100                | 1550           | 289.74                |                 |              |                 |
| 07-Mar-01   | 352500                | 1510           | 233.44                |                 |              |                 |
| 08-Mar-01   | 365300                | 1415           | 258.16                |                 |              |                 |
| 09-Mar-01   | 414800                | 1405           | 295.23                |                 |              |                 |
| 12-Mar-01   | 725200                | 4330           | 167.48                |                 |              |                 |
| 13-Mar-01   | 460300                | 1400           | 328.79                |                 |              |                 |
| 14-Mar-01   | 262600                | 1320           | 198.94                |                 |              |                 |
| 15-Mar-01   | 345200                | 1320           | 261.52                |                 |              |                 |
| 16-Mar-01   | 381200                | 1600           | 238.25                |                 |              |                 |
| 19-Mar-01   | 1131600               | 4370           | 258.95                |                 |              |                 |
| 20-Mar-01   | 332600                | 1440           | 230.97                |                 |              |                 |
| 21-Mar-01   | 755500                | 1500           | 503.67                |                 |              |                 |
| 22-Mar-01   | 7600                  | 1410           | 5.39                  |                 |              |                 |
| 23-Mar-01   | 296500                | 1440           | 205.90                |                 |              |                 |
| 26-Mar-01   | 886500                | 4285           | 206.88                |                 |              |                 |
| 27-Mar-01   | 242600                | 1370           | 177.08                |                 |              |                 |
| 28-Mar-01   | 255100                | 1470           | 173.54                |                 |              |                 |
| 29-Mar-01   | 445200                | 1425           | 312.42                |                 |              |                 |
| 30-Mar-01   | 698700                | 1485           | 470.51                | <b>10518800</b> | <b>43155</b> | <b>243.7446</b> |
| 02-Apr-01   | 1095100               | 4365           | 250.88                |                 |              |                 |
| 04-Apr-01   | 698700                | 2865           | 243.87                |                 |              |                 |
| 05-Apr-01   | 381600                | 1425           | 267.79                |                 |              |                 |
| 09-Apr-01   | 1155200               | 5910           | 195.47                |                 |              |                 |
| 10-Apr-01   | 412000                | 1470           | 280.27                |                 |              |                 |
| 11-Apr-01   | 463800                | 1440           | 322.08                |                 |              |                 |
| 12-Apr-01   | 364700                | 1350           | 270.15                |                 |              |                 |
| 16-Apr-01   | 1436300               | 5730           | 250.66                |                 |              |                 |
| 17-Apr-01   | 326700                | 1320           | 247.50                |                 |              |                 |
| 18-Apr-01   | 338900                | 1620           | 209.20                |                 |              |                 |
| 19-Apr-01   | 261400                | 1410           | 185.39                |                 |              |                 |
| 23-Apr-01   | 1492600               | 5700           | 261.86                |                 |              |                 |
| 24-Apr-01   | 307700                | 1500           | 205.13                |                 |              |                 |
| 25-Apr-01   | 0                     | 1410           | 0.00                  |                 |              |                 |

## HORIZON MINE DISCHARGE

| <u>DATE</u> | <u>GALLONS PUMPED</u> | <u>MINUTES</u> | <u>AVERAGE G.P.M.</u> |                 |              |                 |
|-------------|-----------------------|----------------|-----------------------|-----------------|--------------|-----------------|
| 26-Apr-01   | 610700                | 1440           | 424.10                |                 |              |                 |
| 27-Apr-01   | 404200                | 1460           | 276.85                |                 |              |                 |
| 30-Apr-01   | 878200                | 4330           | 202.82                | <b>10627800</b> | <b>44745</b> | <b>237.5193</b> |
| 01-May-01   | 497100                | 1440           | 345.21                |                 |              |                 |
| 02-May-01   | 431000                | 1440           | 299.31                |                 |              |                 |
| 03-May-01   | 377300                | 1410           | 267.59                |                 |              |                 |
| 04-May-01   | 378600                | 1470           | 257.55                |                 |              |                 |
| 09-May-01   | 1469800               | 7200           | 204.14                |                 |              |                 |
| 11-May-01   | 1089200               | 2820           | 386.24                |                 |              |                 |
| 14-May-01   | 1144300               | 4350           | 263.06                |                 |              |                 |
| 15-May-01   | 311200                | 1440           | 216.11                |                 |              |                 |
| 16-May-01   | 367900                | 1470           | 250.27                |                 |              |                 |
| 17-May-01   | 356900                | 1440           | 247.85                |                 |              |                 |
| 18-May-01   | 376900                | 1410           | 267.30                |                 |              |                 |
| 21-May-01   | 923600                | 4290           | 215.29                |                 |              |                 |
| 23-May-01   | 870300                | 2880           | 302.19                |                 |              |                 |
| 29-May-01   | 2206900               | 9510           | 232.06                |                 |              |                 |
| 30-May-01   | 356500                | 1440           | 247.57                | <b>11157500</b> | <b>44010</b> | <b>253.5219</b> |
| 01-Jun-01   | 1276700               | 2880           | 443.30                |                 |              |                 |
| 04-Jun-01   | 423700                | 4290           | 98.76                 |                 |              |                 |
| 05-Jun-01   | 51700                 | 1470           | 35.17                 |                 |              |                 |
| 06-Jun-01   | 797900                | 1440           | 554.10                |                 |              |                 |
| 07-Jun-01   | 256500                | 1470           | 174.49                |                 |              |                 |
| 08-Jun-01   | 368000                | 1440           | 255.56                |                 |              |                 |
| 11-Jun-01   | 173600                | 4290           | 40.47                 |                 |              |                 |
| 12-Jun-01   | 620000                | 1470           | 421.77                |                 |              |                 |
| 13-Jun-01   | 708900                | 1440           | 492.29                |                 |              |                 |
| 14-Jun-01   | 719100                | 1410           | 510.00                |                 |              |                 |
| 15-Jun-01   | 177800                | 1470           | 120.95                |                 |              |                 |
| 18-Jun-01   | 1325200               | 1430           | 926.71                |                 |              |                 |
| 19-Jun-01   | 325800                | 1440           | 226.25                |                 |              |                 |
| 22-Jun-01   | 663500                | 4350           | 152.53                |                 |              |                 |
| 25-Jun-01   | 975100                | 4290           | 227.30                |                 |              |                 |
| 26-Jun-01   | 321500                | 1380           | 232.97                |                 |              |                 |
| 28-Jun-01   | 663600                | 2910           | 228.04                | <b>9848600</b>  | <b>38870</b> | <b>253.3728</b> |
| 05-Jul-01   | 1892500               | 10140          | 186.64                |                 |              |                 |
| 06-Jul-01   | 424800                | 1380           | 307.83                |                 |              |                 |
| 09-Jul-01   | 1160100               | 4380           | 264.86                |                 |              |                 |
| 10-Jul-01   | 248700                | 1410           | 176.38                |                 |              |                 |
| 11-Jul-01   | 465000                | 1440           | 322.92                |                 |              |                 |
| 12-Jul-01   | 510000                | 1440           | 354.17                |                 |              |                 |
| 16-Jul-01   | 850000                | 5790           | 146.80                |                 |              |                 |
| 18-Jul-01   | 345500                | 2850           | 121.23                |                 |              |                 |
| 19-Jul-01   | 890800                | 1440           | 618.61                |                 |              |                 |
| 25-Jul-01   | 1890500               | 8250           | 229.15                |                 |              |                 |
| 26-Jul-01   | 445700                | 1590           | 280.31                |                 |              |                 |
| 27-Jul-01   | 453600                | 1700           | 266.82                |                 |              |                 |
| 30-Jul-01   | 799500                | 4330           | 184.64                | <b>10376700</b> | <b>46140</b> | <b>224.896</b>  |
| 01-Aug-01   | 591200                | 2850           | 207.44                |                 |              |                 |
| 02-Aug-01   | 120900                | 1350           | 89.56                 |                 |              |                 |
| 03-Aug-01   | 419800                | 1545           | 271.72                |                 |              |                 |
| 06-Aug-01   | 1159200               | 4335           | 267.40                |                 |              |                 |
| 07-Aug-01   | 373800                | 1420           | 263.24                |                 |              |                 |
| 08-Aug-01   | 345800                | 1430           | 241.82                |                 |              |                 |
| 09-Aug-01   | 349800                | 1435           | 243.76                |                 |              |                 |
| 10-Aug-01   | 387800                | 1445           | 268.37                |                 |              |                 |
| 13-Aug-01   | 1144100               | 4310           | 265.45                |                 |              |                 |
| 14-Aug-01   | 150300                | 1450           | 103.66                |                 |              |                 |
| 15-Aug-01   | 456400                | 1470           | 310.48                |                 |              |                 |
| 16-Aug-01   | 379800                | 1425           | 266.53                |                 |              |                 |

## HORIZON MINE DISCHARGE

| <u>DATE</u> | <u>GALLONS PUMPED</u> | <u>MINUTES</u> | <u>AVERAGE G.P.M.</u> |                 |              |                 |
|-------------|-----------------------|----------------|-----------------------|-----------------|--------------|-----------------|
| 17-Aug-01   | 1259500               | 1200           | 1049.58               |                 |              |                 |
| 20-Aug-01   | 84600                 | 4555           | 18.57                 |                 |              |                 |
| 21-Aug-01   | 471000                | 1430           | 329.37                |                 |              |                 |
| 24-Aug-01   | 986900                | 4320           | 228.45                |                 |              |                 |
| 27-Aug-01   | 1086100               | 4320           | 251.41                |                 |              |                 |
| 28-Aug-01   | 351000                | 1410           | 248.94                |                 |              |                 |
| 29-Aug-01   | 674500                | 1440           | 468.40                |                 |              |                 |
| 30-Aug-01   | 32700                 | 1440           | 22.71                 |                 |              |                 |
| 31-Aug-01   | 316400                | 1470           | 215.24                | <b>11141600</b> | <b>46050</b> | <b>241.9457</b> |
| 04-Sep-01   | 1414900               | 5775           | 245.00                |                 |              |                 |
| 05-Sep-01   | 359100                | 1435           | 250.24                |                 |              |                 |
| 06-Sep-01   | 323600                | 1430           | 226.29                |                 |              |                 |
| 07-Sep-01   | 374400                | 1440           | 260.00                |                 |              |                 |
| 10-Sep-01   | 656900                | 4320           | 152.06                |                 |              |                 |
| 11-Sep-01   | 711300                | 1455           | 488.87                |                 |              |                 |
| 12-Sep-01   | 346900                | 1445           | 240.07                |                 |              |                 |
| 13-Sep-01   | 335000                | 1430           | 234.27                |                 |              |                 |
| 14-Sep-01   | 296100                | 1440           | 205.63                |                 |              |                 |
| 17-Sep-01   | 1063900               | 4310           | 246.84                |                 |              |                 |
| 18-Sep-01   | 403900                | 1440           | 280.49                |                 |              |                 |
| 19-Sep-01   | 313500                | 1440           | 217.71                |                 |              |                 |
| 20-Sep-01   | 182400                | 1410           | 129.36                |                 |              |                 |
| 21-Sep-01   | 455900                | 1470           | 310.14                |                 |              |                 |
| 24-Sep-01   | 1073800               | 4290           | 250.30                |                 |              |                 |
| 25-Sep-01   | 571000                | 1480           | 385.81                |                 |              |                 |
| 26-Sep-01   | 196200                | 1480           | 132.57                |                 |              |                 |
| 27-Sep-01   | 291100                | 1390           | 209.42                | <b>7272300</b>  | <b>30240</b> | <b>240.4861</b> |
| 01-Oct-01   | 289800                | 5730           | 50.58                 |                 |              |                 |
| 02-Oct-01   | 704400                | 1440           | 489.17                |                 |              |                 |
| 03-Oct-01   | 946300                | 1760           | 537.67                |                 |              |                 |
| 04-Oct-01   | 279800                | 1180           | 237.12                |                 |              |                 |
| 05-Oct-01   | 440000                | 1440           | 305.56                |                 |              |                 |
| 08-Oct-01   | 1320000               | 4290           | 307.69                |                 |              |                 |
| 09-Oct-01   | 440000                | 1440           | 305.56                |                 |              |                 |
| 15-Oct-01   | 1359400               | 8760           | 155.18                |                 |              |                 |
| 17-Oct-01   | 59500                 | 2730           | 21.79                 |                 |              |                 |
| 18-Oct-01   | 968300                | 1530           | 632.88                |                 |              |                 |
| 19-Oct-01   | 356200                | 1455           | 244.81                |                 |              |                 |
| 22-Oct-01   | 1060800               | 4335           | 244.71                |                 |              |                 |
| 24-Oct-01   | 687000                | 2930           | 234.47                |                 |              |                 |
| 29-Oct-01   | 1487500               | 7165           | 207.61                |                 |              |                 |
| 30-Oct-01   | 537000                | 1500           | 358.00                | <b>13706400</b> | <b>59205</b> | <b>231.5075</b> |
| 01-Nov-01   | 688800                | 2755           | 250.02                |                 |              |                 |
| 06-Nov-01   | 1688100               | 7150           | 236.10                |                 |              |                 |
| 07-Nov-01   | 318000                | 1440           | 220.83                |                 |              |                 |
| 09-Nov-01   | 778400                | 2930           | 265.67                |                 |              |                 |
| 12-Nov-01   | 1188300               | 4330           | 274.43                |                 |              |                 |
| 13-Nov-01   | 378900                | 1405           | 269.68                |                 |              |                 |
| 14-Nov-01   | 398500                | 1475           | 270.17                |                 |              |                 |
| 15-Nov-01   | 388100                | 2875           | 134.99                |                 |              |                 |
| 16-Nov-01   | 397800                | 1465           | 271.54                |                 |              |                 |
| 26-Nov-01   | 3502600               | 14360          | 243.91                |                 |              |                 |
| 28-Nov-01   | 776700                | 2880           | 269.69                |                 |              |                 |
| 29-Nov-01   | 643600                | 1500           | 429.07                |                 |              |                 |
| 30-Nov-01   | 117300                | 1455           | 80.62                 | <b>11265100</b> | <b>46020</b> | <b>244.787</b>  |
| 03-Dec-01   | 1037800               | 4290           | 241.91                |                 |              |                 |
| 04-Dec-01   | 358200                | 1380           | 259.57                |                 |              |                 |
| 05-Dec-01   | 391200                | 1515           | 258.22                |                 |              |                 |
| 10-Dec-01   | 1755700               | 7125           | 246.41                |                 |              |                 |
| 11-Dec-01   | 398600                | 1470           | 271.16                |                 |              |                 |

**HORIZON MINE DISCHARGE**

| <u>DATE</u> | <u>GALLONS PUMPED</u> | <u>MINUTES</u> | <u>AVERAGE G.P.M.</u> |
|-------------|-----------------------|----------------|-----------------------|
| 13-Dec-01   | 773500                | 2865           | 269.98                |
| 14-Dec-01   | 397700                | 1470           | 270.54                |
| 17-Dec-01   | 1028100               | 4320           | 237.99                |
| 18-Dec-01   | 335900                | 1440           | 233.26                |
| 19-Dec-01   | 334300                | 1470           | 227.41                |

**Big Game Road Kill Fatality Report**

| Year | 1st Quarter     |              | 2nd Quarter     |              | 3rd Quarter     |              | 4th Quarter     |              | Total |   |
|------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-------|---|
|      | Employee Killed | Other Killed |       |   |
| 1997 |                 |              |                 |              |                 |              |                 |              |       |   |
| Deer | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| Elk  | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| 1998 |                 |              |                 |              |                 |              |                 |              |       |   |
| Deer | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| Elk  | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| 1999 |                 |              |                 |              |                 |              |                 |              |       |   |
| Deer | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| Elk  | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     | * |
| 2000 |                 |              |                 |              |                 |              |                 |              |       |   |
| Deer | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 2            | 2     |   |
| Elk  | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     |   |
| 2001 |                 |              |                 |              |                 |              |                 |              |       |   |
| Deer | 1               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 1     |   |
| Elk  | 0               | 0            | 0               | 0            | 0               | 0            | 0               | 0            | 0     |   |

\* - Totals verified by Derris Jones - DWR (Habitat Manager) 11/08/00

**NORTH FORK GORDON CREEK  
MACROINVERTEBRATE SAMPLING RESULTS  
FROM SPRING, 2001**

Submitted to:

Lodestar Energy Horizon Coal Mine  
HC 35 Box 37  
Helper, UT 84526

Submitted by:

JBR Environmental Consultants, Inc.  
8160 South Highland Drive  
Sandy, UT 84093

September 26, 2001  
Revised October 8, 2001

**NORTH FORK GORDON CREEK  
MACROINVERTEBRATE SAMPLING RESULTS  
FROM SPRING, 2001**

**1.0 Introduction**

On May 31, 2001 JBR Environmental Consultants (JBR) met with Mr. Dave Miller of Lodestar Energy and Ms. Susan White of the Utah Division of Oil, Gas, and Mining (UDOGM) at Lodestar Energy's Horizon Coal Mine, located west of Helper, Utah (Figure 1). This meeting was held to identify two macroinvertebrate sampling sites on North Fork Gordon Creek, one located above the North Fork's confluence with a small tributary known locally as Jewkes Creek and the other located downstream of that confluence. Macroinvertebrates are good indicators of both physical and chemical stream quality.

The Horizon Coal Mine located near Scofield in Emery County, Utah has been in operation since October 1997. In July 1999, the mine was purchased by Lodestar Energy who subsequently obtained necessary UDOGM permits to continue operations at the mine. Lodestar Energy's Horizon Coal Mine's surface facilities are located within the Jewkes Creek watershed. The approximate 460-acre Jewkes Creek watershed is also subject to non-mining land uses including grazing and logging. Cascade Mountain Resources, Inc. conducted logging operations in a 500-acre area above the mine during 1999-2000. The timber was hauled on County Road 290 along Jewkes Creek, toward a mill in Wellington. The road was re-aligned in places to accommodate the haul trucks, and graded as necessary to remove ruts. Drainage from the road was directed into Jewkes Creek, causing increased sediment loads to that stream system which are still evident below the confluence of Jewkes Creek and the North Fork of Gordon Creek.

The mine discharges underground water into Jewkes Creek, approximately 0.5 road miles upstream of Jewkes Creek's confluence with North Fork Gordon Creek. This discharge is allowed under a Utah Pollutant Discharge Elimination System (UPDES) permit.

UDOGM requested that Lodestar Energy initiate a macroinvertebrate data collection program that can be used to track temporal and spatial differences in habitat quality in North Fork Gordon Creek above and below its confluence with Jewkes Creek. Lodestar Energy contracted with JBR to conduct the study, and UDOGM provided input on sampling locations and study design.

The criteria for choosing potential sample reaches were based upon the desire to have one site upstream of the Jewkes Creek-North Fork confluence, and one site downstream of that confluence, with the two sites having otherwise similar environmental characteristics in order to maximize their potential to be compared. The specific sampling sites within the defined general location

reaches were selected according to similar habitat parameters such as stream substrate, gradient, and canopy cover. Station 1 was located on North Fork Gordon Creek approximately 0.2 road miles upstream from the confluence of Jewkes Creek and Gordon Creek. Station 2 was located on North Fork Gordon Creek approximately 0.1 road miles downstream from the confluence of Jewkes Creek and Gordon Creek (Figure 2). Therefore, the two sites are within approximately 0.3 miles of each other, and thus have similar climate conditions, elevation zones, and watershed position.

Sampling took place at the two North Fork Gordon Creek sites on May 31, 2001. Repeat sampling will occur biannually, and results reported here will be updated as additional information is obtained.

## **2.0 Methods**

Macroinvertebrate sampling was conducted with a modified Surber sampler, using a widely accepted method described in Winget and Mangum (1979). Sampling occurred at each of the two station locations described above. These locations were marked in the field using rebar stakes and flagging.

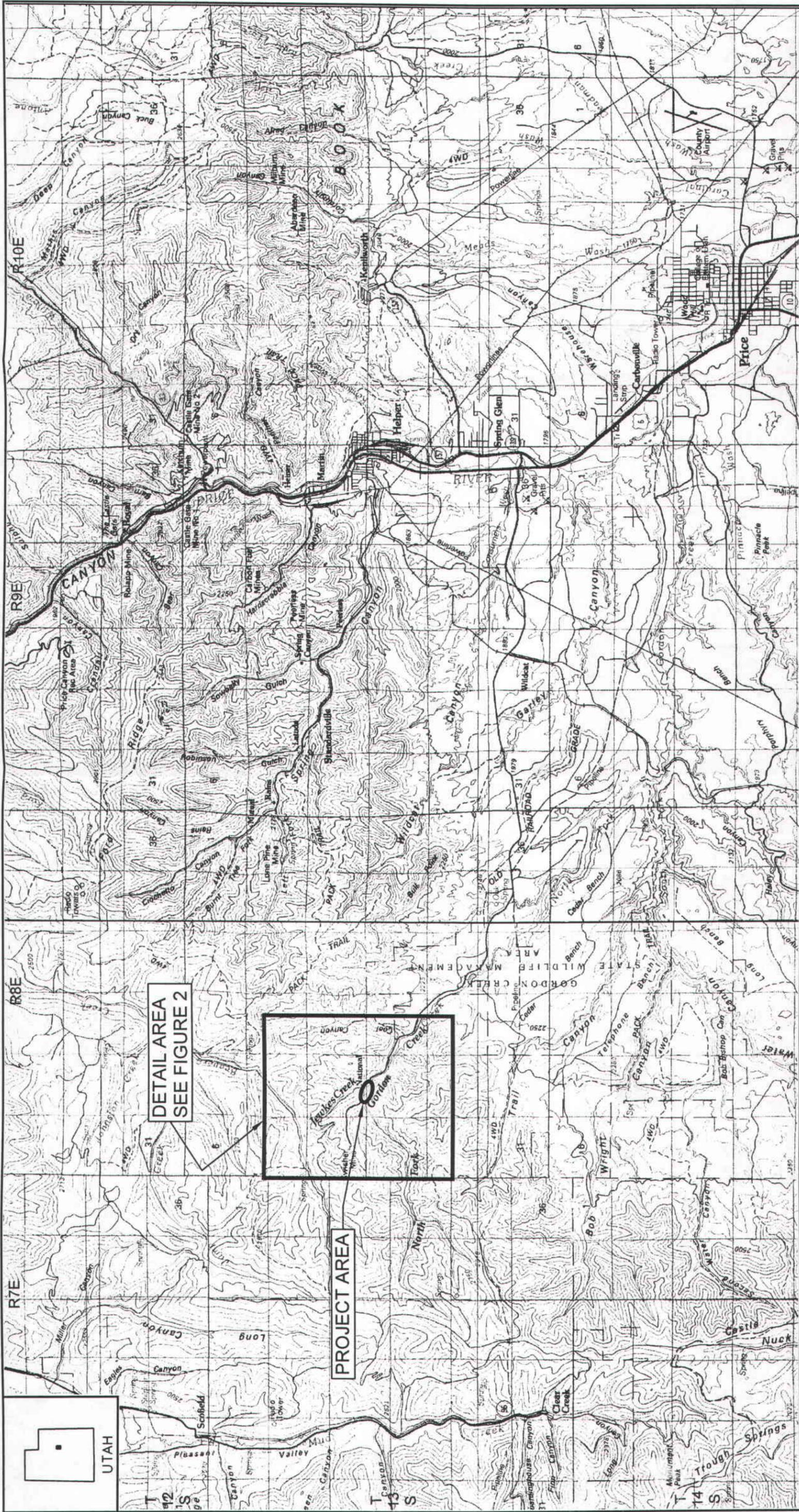
Three macroinvertebrate sub-samples were taken at each station. Each of these samples were collected in riffle areas in midstream flow. Riffles are typically the stream feature most abundant with macroinvertebrates.

For each sample, a modified Surber sampler was placed on the creek bottom with the opening of the sampler facing upstream so that the creek current filled the collecting bag. Only the substrate that was within the 0.1m<sup>2</sup> frame was sampled. Insects were dislodged and carried into the collecting bag by the current. This process was continued until only small substrate material remained within the sampler frame. The small substrate was gently agitated by hand or with a metal stake, to a depth of three to four inches. The sampler was then removed and the contents of the net transferred to a pan. Debris was removed and the samples were washed with a salt solution by decanting and sieving until the sample was free of sediment and organic algae. The samples were then rinsed from the sieve and placed in bottles containing 70 percent isopropyl alcohol.

The labeled bottles were delivered to the entomology laboratory at Brigham Young University, where the macroinvertebrates were sorted, identified, counted and analyzed by Dr. Richard W. Baumann.

## **3.0 Results**

The entomology lab at Brigham Young University prepared a written report based upon their analyses of the submitted samples (Baumann, 2001). Several types of information were derived from the samples and were reported in tabular form in Baumann's report; these tables are



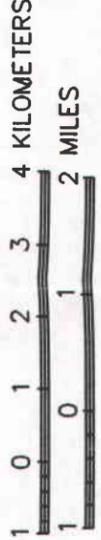
BASE: NEPHI AND PRICE, 1:100,000 USGS MAPS

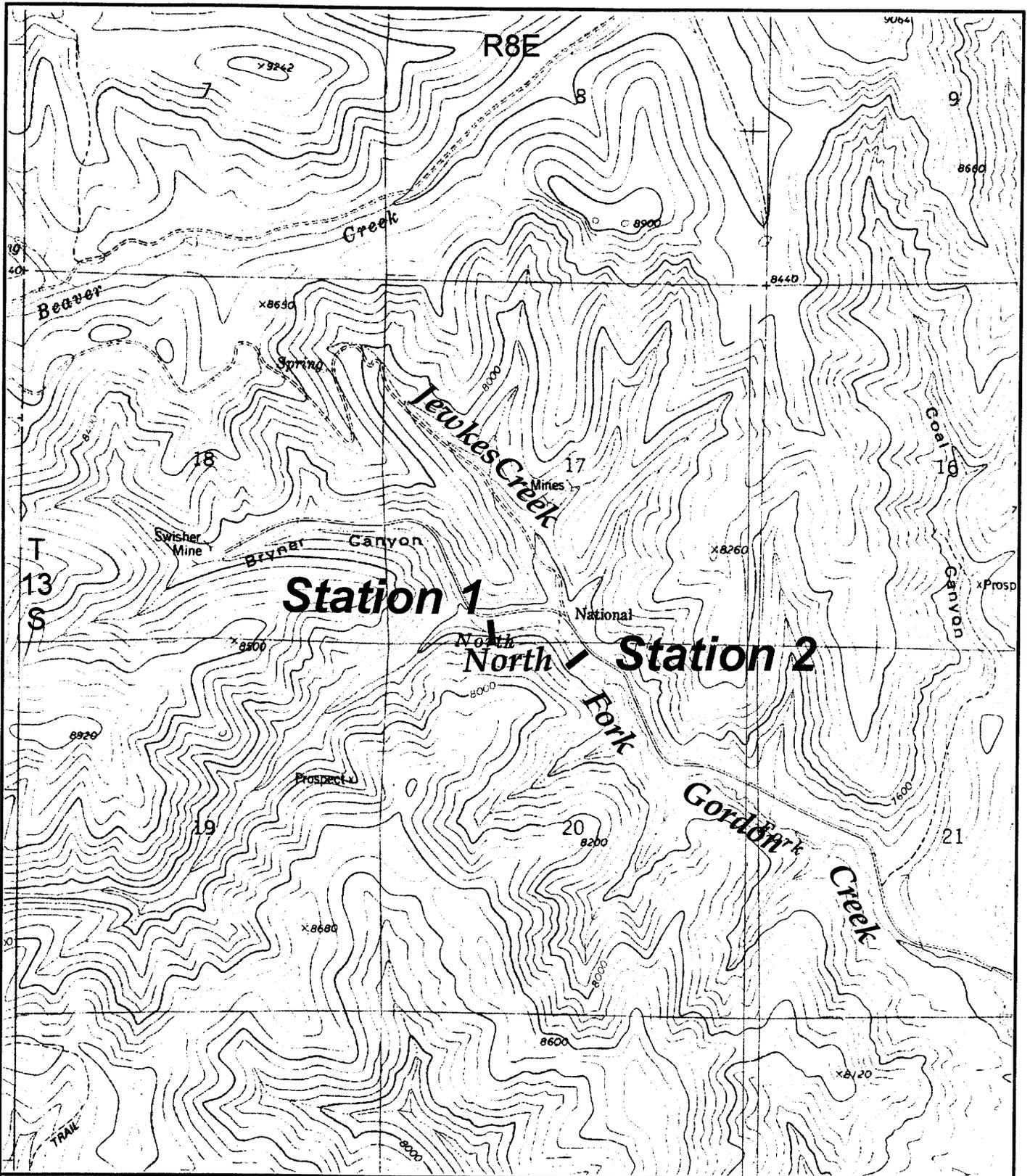
**HORIZON COAL**

FIGURE 1  
PROJECT LOCATION MAP

**ibr**  
environmental consultants, inc.  
DESIGN: MJ DRAWN: CP CHD: BY: SCALE: 1:100,000

DATE DRAWN: 10/4/01  
REVISION:

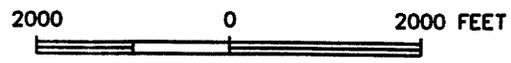




BASE: JUMP CREEK, UTAH, USGS 7.5' TOPO, 1979

# HORIZON COAL

FIGURE 2  
SITE MAP - MACRO INVERTEBRATE  
SAMPLING LOCATIONS



**Jbr**  
environmental consultants, inc.

DESIGN: MJ  
 DRAWN: CP  
 CH'D: BY  
 BY:

SCALE 1" = 2000'

|            |         |
|------------|---------|
| DATE DRAWN | 8/23/01 |
| REVISION   |         |
|            |         |
|            |         |

LODESTAR\Loadstar1 - 1.dwg

contained in Appendix A. A complete list of taxa found at each station was prepared, including total numbers, biomass, and density (numbers/square meter). Further, species were categorized according to their trophic level (scrapers, shredders, collectors, filter feeders, and predators) and their tolerance quotient. The number of taxa (or richness) also relates to community composition (or diversity), and the Shannon-Weaver Diversity Index was used to indicate diversity. Data from Baumann's report are summarized below, and discussions of these data follow.

**SUMMARY INFORMATION OF DATA FROM BAUMANN'S REPORT**

| Parameter                                     | Stations |      |
|---|----------|------|
|   | 1        | 2    |
| Total number of taxa                          | 19       | 15   |
| Density (mean number/square meter)            | 4578     | 9139 |
| Biomass (grams/square meter)                  | 1.6      | 0.1  |
| (Diversity) Shannon Weaver Index = d          | 2.0      | 0.36 |
| Average Community Tolerance Quotient = CTQa   | 69       | 72   |
| Predicted Community Tolerance Quotient = CTQp | 60       | 60   |
| Percent of Predicted = BCI                    | 87       | 83   |

As shown in the above summary table, 19 separate taxa were collected at the upstream station and 15 were collected at the downstream station. Representatives from all five trophic levels were found at both stations. Density of species, as reflected by the number of individuals found per square meter, was greater at the downstream station. The increase in numbers at the downstream station was primarily due to the much greater presence of individuals from the Chironomidae genus. Chironomidae are members of the fly family with a high tolerance quotient (108). In contrast to the greater number of individual organisms collected at the downstream station, biomass was much greater at the upstream station.

The varying number of species is also reflected in diversity differences between the two sites, with the upstream site showing a diversity index of more than four times greater than the downstream site. In general, a more diverse macroinvertebrate population is indicative of better stream health.

Various tolerance quotients were also derived from the sample data. A tolerance quotient relates to the ability of a given species to withstand stressors such as poor water quality, high sediment levels, and extremes in water temperature; taxa have differing abilities to respond to various stressors or environmental conditions. Species with low tolerances are considered to be more

fragile taxa, and can typically only be found in locations with relatively high quality that do not have environmental stressors present. The Actual Community Tolerance Quotients (CTQa) given above are simply arithmetic means of the tolerance quotients of the sampled macroinvertebrates. The upstream site had a CTQa of 69, while the downstream site had the somewhat lower value of 72. The range of individual species tolerance quotients was from 18 to 108 at the upstream station and from 30 to 108 at the downstream station. However, Baumann's report states that, given the close proximity of the two sites, "several taxa such as *Cinygmula*, *Rhyacophila*, and *Elmidae* were common at the upper station but were only represented by a few individuals at the lower station, indicating that they could have simply drifted downstream and were not actually established." Of those noted three taxa, the first two have tolerance quotients of 30, and were the only taxa with such low tolerances reported at the downstream station.

Still another measurement, the predicted Community Tolerance Quotient (CTQp) is the mean of the tolerance quotients for a predicted macroinvertebrate community, and represents the ideal tolerance quotient mean for a community in a given area. The ratio of the CTQp to the CTQa is known as the Biotic Condition Index, or BCI. It provides an indication of how close to its potential a particular stream site is, given the existing stream and watershed conditions. BCIs of 87 and 83 for the upstream and downstream sites, respectively, indicate relatively good, but not ideal, conditions.

#### 4.0 Summary

The May 2001 macroinvertebrate sampling at two sites on North Fork Gordon Creek appears to show slightly better habitat conditions at the upstream site in comparison to the downstream site, based upon number of taxa sampled, species diversity, and environmental tolerance indicators. Future sampling will provide additional data to further characterize the macroinvertebrate communities at these two locations.

#### 5.0 References

- Baumann, July 2001. *Macroinvertebrate Studies on Gordon Creek, West of Helper, Carbon County, Utah*. Department of Zoology, Brigham Young University, Provo, Utah. Prepared for, and submitted to, JBR Environmental Consultants.
- Winget, R. N. and F. A. Mangum. 1979. Biotic Condition Index: Integrated biological, physical, and chemical stream parameters for management. Aquatic ecosystem inventory: Macroinvertebrate analysis, U. S. Forest Service, Intermountain Region, 51 pp.

# **Appendix A**

## **Data Tables From Baumann's Report**

**Table 1. Macroinvertebrates obtained from North Fork, Gordon Creek, Carbon County, Utah, samples collected May 31, 2001**

| Organism                         | Trophic Level* | Tolerance Quotient | Stations |      |
|----------------------------------|----------------|--------------------|----------|------|
|                                  |                |                    | 1        | 2    |
| <b>Ephemeroptera (Mayflies)</b>  |                |                    |          |      |
| Baetis                           | C-G            | 72                 | 530      | 22   |
| Drunella grandis                 | Shr            | 32                 | 2        | 5    |
| Cinygmula                        | Shr            | 30                 | 200      | 1    |
| Epeorus longimanus               | Scr            | 18                 | 24       |      |
| <b>Plecoptera (Stoneflies)</b>   |                |                    |          |      |
| Isoperla quinquepunctata         | Pred           | 48                 | 3        | 1    |
| Nemouridae                       |                |                    | 6        |      |
| <b>Trichoptera (Caddisflies)</b> |                |                    |          |      |
| Brachycentrus                    | Scr            | 54                 |          | 11   |
| Hesperophylax                    | Scr            | 108                | 3        |      |
| Hydropsyche                      | C-F            | 108                | 10       | 49   |
| Rhyacophila                      | Pred           | 30                 | 24       | 4    |
| <b>Coleoptera (Beetles)</b>      |                |                    |          |      |
| Elmidae                          | C-G            | 104                | 16       | 2    |
| <b>Lepidoptera (Moths)</b>       |                |                    |          |      |
| Petrophila                       | Shr            | 72                 | 1        | 1    |
| <b>Diptera (Flies)</b>           |                |                    |          |      |
| Antocha monticola                | Pred           | 40                 | 1        |      |
| Chironomidae                     | C-G            | 108                | 634      | 2439 |
| Dicranota                        | Pred           | 36                 | 6        |      |
| Empididae                        | Pred           | 95                 | 1        | 8    |
| Hexatoma                         | Pred           | 36                 |          | 1    |

**Table 1. Continued**

| Organism                         | Trophic Level* | Tolerance Quotient | Stations |   |
|----------------------------------|----------------|--------------------|----------|---|
|                                  |                |                    | 1        | 2 |
| <b>Diptera (Flies) Continued</b> |                |                    |          |   |
| Stratiomyidae                    | Pred           | 108                |          | 1 |
| Tipula                           | Shr            | 80                 | 5        | 1 |
| Simuliidae                       | C-F            | 108                | 1        |   |
| <b>Acari (Mites)</b>             |                |                    |          |   |
| Hydracarina                      | Pred           | 98                 | 3        |   |
| Nematomorpha (Worms)             | C-G            | 108                |          | 1 |
| <b>Crustacea (Scuds)</b>         |                |                    |          |   |
| Gammarus                         | C-G            | 98                 | 6        |   |

\*C-F = collectors-filterers

C-G = collectors-gatherers

Pred = predators

Scr = scrapers

Shr = shredders

**Table 2. Summary of macroinvertebrate data from North Fork, Gordon Creek, Carbon County, Utah, samples collected May 31, 2001.**

| Parameter                        | Stations |      |
|----------------------------------|----------|------|
|                                  | 1        | 2    |
| Total number of taxa             | 19       | 15   |
| Mean number/square meter         | 4578     | 9139 |
| Standard Deviation               | 1312     | 2122 |
| Grams/square meter               | 1.6      | 0.1  |
| Dominance Community<br>TQ=CTQd   | 67       | 79   |
| Shannon Weaver Index = d         | 2.0      | 0.36 |
| Average Community TQ=CTQa        | 69       | 72   |
| Predicted Community TQ =<br>CTQp | 60       | 60   |
| Percent of Predicted = BCI       | 87       | 83   |

| <u>BCI</u> | <u>SCALE</u> | <u>CTQa</u> | <u>SCALE</u> |
|------------|--------------|-------------|--------------|
| Above 90   | Excellent    | Below 60    | Excellent    |
| 80-90      | Good         | 60-70       | Good         |
| 70-80      | Fair         | 70-80       | Fair         |
| Below 70   | Poor         | Above 80    | Poor         |

TOTAL SAMPLE STATISTICS

STATION: 1      Upper Gordon Creek, North Fork, west of Helper, Carbon Co., Utah      DATE: 05 31 01

| Repl | Total No. Species | Mean /SQM | Confidence Limits (80 Percent) |      | Standard Deviation | Percent SE of Mean | Coeff. of Variation | DBAR   | CTQA | CTQD |
|------|-------------------|-----------|--------------------------------|------|--------------------|--------------------|---------------------|--------|------|------|
|      |                   |           | LL                             | UL   |                    |                    |                     |        |      |      |
| 3    | 19                | 4578      | 3150                           | 6007 | 1312.20            | 16.55              | 28.66               | 2.0236 | 69   | 67   |

SPECIES ANALYSIS

STATION: 1      Upper Gordon Creek, North Fork, west of Helper, Carbon Co., Utah      DATE: 05 31 01

| TAXONOMIC CLASS | ORDER         | FAMILY         | GENUS         | SPECIES         | MEAN N/SQM | LOG10 N/SQM | TQ  | LOG10 TQ | XTQ |
|-----------------|---------------|----------------|---------------|-----------------|------------|-------------|-----|----------|-----|
| INSECTA         | EPHEMEROPTERA | HEPTAGENIIDAE  | EPEORUS       | LONGIMANUS      | 86         | 1.935       | 18  | 34       |     |
| INSECTA         | EPHEMEROPTERA | HEPTAGENIIDAE  | CINYMULA      |                 | 718        | 2.856       | 30  | 85       |     |
| INSECTA         | EPHEMEROPTERA | EPHEMERELLIDAE | DRUNELLA      | GRANDIS         | 7          | 0.856       | 32  | 27       |     |
| INSECTA         | EPHEMEROPTERA | BAETIIDAE      | BAETIS        |                 | 1184       | 3.073       | 72  | 221      |     |
| INSECTA         | PLECOPTERA    | NEMOURIDAE     |               | QUINQUEPUNCTATA | 22         | 1.333       | 36  | 47       |     |
| INSECTA         | PLECOPTERA    | PERLODIDAE     | ISOPERLA      |                 | 11         | 1.032       | 48  | 49       |     |
| INSECTA         | TRICHOPTERA   | HYDROPSYCHIDAE | HYDROPSYCHE   |                 | 36         | 1.555       | 108 | 167      |     |
| INSECTA         | TRICHOPTERA   | RHYACOPHILIDAE | RHYACOPHILA   |                 | 86         | 1.935       | 30  | 58       |     |
| INSECTA         | TRICHOPTERA   | LIMNephilidAE  | HESPEROPHYLAX |                 | 11         | 1.032       | 108 | 111      |     |
| INSECTA         | COLEOPTERA    | ELMIDAE        |               |                 | 57         | 1.759       | 104 | 182      |     |
| INSECTA         | DIPTERA       | TIPULIDAE      | ANTOCHA       | MONTICOLA       | 4          | 0.555       | 40  | 22       |     |
| INSECTA         | DIPTERA       | TIPULIDAE      | DICRANOYA     |                 | 22         | 1.333       | 36  | 47       |     |
| INSECTA         | DIPTERA       | TIPULIDAE      | TIPULA        |                 | 18         | 1.254       | 80  | 100      |     |
| INSECTA         | DIPTERA       | SIMULIIDAE     |               |                 | 4          | 0.555       | 108 | 59       |     |
| INSECTA         | DIPTERA       | CHIRONOMIDAE   |               |                 | 2275       | 3.357       | 108 | 362      |     |
| INSECTA         | DIPTERA       | EMPIDIDAE      |               |                 | 4          | 0.555       | 95  | 52       |     |
| INSECTA         | LEPIDOPTERA   | PYRALIDAE      | PETROPHILA    |                 | 4          | 0.555       | 72  | 39       |     |
| ARACHNIDA       | HYDRACARINA   |                |               |                 | 11         | 1.032       | 98  | 101      |     |
| CRUSTACEA       | AMPHIPODA     | GAMMARIDAE     | GAMMARUS      |                 | 22         | 1.333       | 98  | 130      |     |

MEAN BIOMASS GM/SQM: 1.6      TOTALS: 4578 3.661

TOTAL SAMPLE STATISTICS

STATION: 2      Lower Gordon Creek, North Fork, west of Helper, Carbon Co., Utah      DATE: 05 31 01

| Repl | Total No. Species | Mean /SQM | Confidence Limits (80 Percent) |       | Standard Deviation | Percent of Mean | SE of Mean | Coeff. of Variation | DBAR | CTQA | CTQD |
|------|-------------------|-----------|--------------------------------|-------|--------------------|-----------------|------------|---------------------|------|------|------|
|      |                   |           | LL                             | UL    |                    |                 |            |                     |      |      |      |
| 3    | 15                | 9139      | 6828                           | 11450 | 2122.54            | 13.41           | 23.23      | 0.3602              | 72   | 79   |      |

SPECIES ANALYSIS

STATION: 2 Lower Gordon Creek, North Fork, west of Helper, Carbon Co., Utah DATE: 05 31 01

| TAXONOMIC LIST CLASS | ORDER         | FAMILY          | GENUS         | SPECIES         | MEAN N/SQM | LOG10 N/SQM | TQ  | LOG10 XTQ |
|----------------------|---------------|-----------------|---------------|-----------------|------------|-------------|-----|-----------|
| INSECTA              | EPHEMEROPTERA | HEPTAGENIIDAE   | CINYGULA      |                 | 4          | 0.555       | 30  | 16        |
| INSECTA              | EPHEMEROPTERA | EPHEMERELLIDAE  | DRUNELLA      | GRANDIS         | 18         | 1.254       | 32  | 40        |
| INSECTA              | EPHEMEROPTERA | BAETIDAE        | BAETIS        |                 | 79         | 1.897       | 72  | 136       |
| INSECTA              | PLECOPTERA    | PERLOIDAE       | ISOPERLA      | QUINQUEPUNCTATA | 4          | 0.555       | 48  | 26        |
| INSECTA              | TRICHOPTERA   | HYDROPSYCHIDAE  | HYDROPSYCHE   |                 | 176        | 2.245       | 108 | 242       |
| INSECTA              | TRICHOPTERA   | RHYACOPHILIDAE  | RHYACOPHILLA  |                 | 14         | 1.157       | 30  | 34        |
| INSECTA              | TRICHOPTERA   | BRACHYCENTRIDAE | BRACHYCENTRUS |                 | 39         | 1.596       | 54  | 86        |
| INSECTA              | COLEOPTERA    | ELMIDAE         |               |                 | 7          | 0.856       | 104 | 89        |
| INSECTA              | DIPTERA       | TIPULIDAE       | HEXATOMA      |                 | 4          | 0.555       | 36  | 19        |
| INSECTA              | DIPTERA       | TIPULIDAE       | TIPULA        |                 | 4          | 0.555       | 80  | 44        |
| INSECTA              | DIPTERA       | CHIRONOMIDAE    |               |                 | 8751       | 3.942       | 108 | 425       |
| INSECTA              | DIPTERA       | EMPIDIDAE       |               |                 | 29         | 1.458       | 95  | 138       |
| INSECTA              | DIPTERA       | STRATIOMYIDAE   |               |                 | 4          | 0.555       | 108 | 59        |
| INSECTA              | LEPIDOPTERA   | PYRALIDAE       | PETROPHILA    |                 | 4          | 0.555       | 72  | 39        |
| NEMATOMORPHA         |               |                 |               |                 | 4          | 0.555       | 108 | 59        |

MEAN BIOMASS GM/SQM: 0.1 TOTALS: 9139 3.961



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FAX: (435) 653-2436

June 13, 2001

LODESTAR ENERGY INC.  
333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID: NORTH GORDON CREEK UP STREAM  
MV-1

RECEIVED 1530  
SAMPLED 1010

### FIELD MEASUREMENTS

FLOW 156                      TEMP 8  
COND. 550                      pH 8.4  
D.O. 4

NOTES:  
DIS.METALS  
FILTERED @ LAB

Kind of sample Water  
reported to us

Sample taken at

Sample taken by Horizon

Date sampled May 31, 2001

Date received May 31, 2001

Page 1 of 2

Analysis report no. 59-22622

| Parameter                 | Result | MDL    | Units | Method                         | Analyzed   |         |    |
|---------------------------|--------|--------|-------|--------------------------------|------------|---------|----|
|                           |        |        |       |                                | Date/Time  | Analyst |    |
| Acidity                   | <5     | 0.63   | mg/l  | as CaCO <sub>3</sub> D1067-92  | 06-08-2001 | 1140    | SC |
| Alkalinity, Bicarbonate   | 253    | 1.28   | mg/l  | as HCO <sub>3</sub> EPA 310.1  | 06-04-2001 | 0900    | SC |
| Alkalinity, Carbonate     | 5      | 1.28   | mg/l  | as CO <sub>3</sub> EPA 310.1   | 06-04-2001 | 0900    | SC |
| Alkalinity, Total         | 217    | 1.28   | mg/l  | as CaCO <sub>3</sub> EPA 310.1 | 06-04-2001 | 0900    | SC |
| Aluminum, Dissolved       | <1     | 0.12   | mg/l  | EPA 202.1                      | 06-06-2001 | 1000    | MK |
| Anions                    | 5.0    | ----   | meq/l | -----                          | 06-12-2001 | 1320    | SB |
| Arsenic, Dissolved        | <0.01  | 0.01   | mg/l  | EPA 206.2                      | 06-04-2001 | 0900    | MK |
| Boron, Dissolved          | 0.2    | 0.01   | mg/l  | EPA 212.3                      | 06-11-2001 | 1200    | JK |
| Cadmium, Dissolved        | <0.01  | 0.003  | mg/l  | EPA 213.1                      | 06-06-2001 | 1345    | MK |
| Calcium, Dissolved        | 66     | 0.20   | mg/l  | EPA 215.1                      | 06-06-2001 | 1100    | MK |
| Cations                   | 4.9    | ----   | meq/l | -----                          | 06-12-2001 | 1320    | SB |
| Chloride                  | 4      | 0.20   | mg/l  | EPA 300.0                      | 06-01-2001 | 1352    | CB |
| Copper, Dissolved         | <0.1   | 0.01   | mg/l  | EPA 220.1                      | 06-06-2001 | 1315    | MK |
| Hardness, Total           | 239    | ----   | mg/l  | as CaCO <sub>3</sub> SM2340-B  | 06-12-2001 | 1320    | SB |
| Iron, Total               | 0.4    | 0.03   | mg/l  | EPA 236.1                      | 06-07-2001 | 1030    | MK |
| Iron, Dissolved           | <0.1   | 0.02   | mg/l  | EPA 236.1                      | 06-07-2001 | 1030    | MK |
| Lead, Dissolved           | <0.1   | 0.08   | mg/l  | EPA 239.1                      | 06-06-2001 | 1400    | MK |
| Magnesium, Dissolved      | 18     | 0.41   | mg/l  | EPA 242.1                      | 06-06-2001 | 1145    | MK |
| Manganese, Total          | <0.1   | 0.007  | mg/l  | EPA 243.1                      | 06-07-2001 | 1115    | MK |
| Manganese, Dissolved      | <0.1   | 0.007  | mg/l  | EPA 243.1                      | 06-07-2001 | 1115    | MK |
| Molybdenum, Dissolved     | <0.02  | 0.0005 | mg/l  | EPA 246.1                      | 06-05-2001 | 1000    | MK |
| Nitrogen, Ammonia         | <0.5   | 0.02   | mg/l  | as N EPA 350.3                 | 06-12-2001 | 0830    | SC |
| Nitrogen, Nitrate-Nitrite | 0.95   | 0.02   | mg/l  | as N EPA 300.0                 | 06-01-2001 | 1343    | CB |
| Nitrogen, Nitrite         | <0.03  | 0.004  | mg/l  | as N EPA 300.0                 | 06-01-2001 | 1343    | CB |

*Handwritten signature/initials*

Respectfully submitted,  
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*Handwritten signature*

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FAX: (435) 653-2436

June 13, 2001

LODESTAR ENERGY INC.  
333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID:NORTH GORDON CREEK UP STREAM  
MV-1

RECEIVED 1530  
SAMPLED 1010

FIELD MEASUREMENTS

FLOW 156                      TEMP 8  
COND. 550                      pH 8.4  
D.O. 4

NOTES:

DIS.METALS  
FILTERED @ LAB

Kind of sample Water  
reported to us

Sample taken at

Sample taken by Horizon

Date sampled May 31, 2001

Date received May 31, 2001

Page 2 of 2

Analysis report no. 59-22622

| Parameter                          | Result | MDL   | Units     | Method    | Analyzed          |      |    |
|------------------------------------|--------|-------|-----------|-----------|-------------------|------|----|
|                                    |        |       |           |           | Date/Time/Analyst |      |    |
| Oil & Grease                       | <2     | 1.3   | mg/l      | EPA 413.1 | 06-06-2001        | 0750 | SC |
| Phosphorous, Ortho-PO <sub>4</sub> | <0.05  | 0.01  | mg/l as P | EPA 300.0 | 06-01-2001        | 1343 | CB |
| Potassium, Dissolved               | 1      | 0.19  | mg/l      | EPA 258.1 | 06-07-2001        | 1300 | MK |
| Selenium, Dissolved                | <0.01  | 0.001 | mg/l      | EPA 270.2 | 06-04-2001        | 1200 | MK |
| Sodium, Dissolved                  | 3      | 0.2   | mg/l      | EPA 273.1 | 06-07-2001        | 1400 | MK |
| Solids, Settleable                 | <0.2   | 0.4   | ml/l      | EPA 160.5 | 06-01-2001        | 0925 | CB |
| Solids, Total Dissolved            | 246    | 6.2   | mg/l      | EPA 160.1 | 06-04-2001        | 0915 | CB |
| Solids, Total Suspended            | 30     | 3.8   | mg/l      | EPA 160.2 | 06-04-2001        | 0915 | CB |
| Sulfate                            | 27     | 0.16  | mg/l      | EPA 300.0 | 06-01-2001        | 1343 | CB |
| Zinc, Dissolved                    | <0.01  | 0.003 | mg/l      | EPA 289.1 | 06-06-2001        | 1330 | MK |
| Cation/Anion Balance               | -0.6   | ----  | %         |           | 06-12-2001        | 1320 | SB |

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6/13/01

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FAX: (435) 653-2436

June 13, 2001

LODESTAR ENERGY INC.  
333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID:NORTH FORK GORDON CREEK DOWN STREAM  
MV-2

RECEIVED 1530

SAMPLED 1050

### FIELD MEASUREMENTS

FLOW 195 TEMP 10

COND. 590 pH 8.0

D.O. 5.0

### NOTES:

DIS.METALS

FILTERED @ LAB

Kind of sample Water  
reported to us

Sample taken at

Sample taken by Horizon

Date sampled May 31, 2001

Date received May 31, 2001

Page 1 of 2

Analysis report no. 59-22623

| Parameter                 | Result | MDL    | Units                     | Method    | Analyzed          |      |    |
|---------------------------|--------|--------|---------------------------|-----------|-------------------|------|----|
|                           |        |        |                           |           | Date/Time/Analyst |      |    |
| Acidity                   | <5     | 0.63   | mg/l as CaCO <sub>3</sub> | D1067-92  | 06-08-2001        | 1140 | SC |
| Alkalinity, Bicarbonate   | 277    | 1.28   | mg/l as HCO <sub>3</sub>  | EPA 310.1 | 06-04-2001        | 0900 | SC |
| Alkalinity, Carbonate     | <5     | 1.28   | mg/l as CO <sub>3</sub>   | EPA 310.1 | 06-04-2001        | 0900 | SC |
| Alkalinity, Total         | 227    | 1.28   | mg/l as CaCO <sub>3</sub> | EPA 310.1 | 06-04-2001        | 0900 | SC |
| Aluminum, Dissolved       | <1     | 0.12   | mg/l                      | EPA 202.1 | 06-06-2001        | 1000 | MK |
| Anions                    | 5.6    | ----   | meq/l                     | -----     | 06-12-2001        | 1320 | SB |
| Arsenic, Dissolved        | <0.01  | 0.01   | mg/l                      | EPA 206.2 | 06-04-2001        | 0900 | MK |
| Boron, Dissolved          | 0.3    | 0.01   | mg/l                      | EPA 212.3 | 06-11-2001        | 1200 | JK |
| Cadmium, Dissolved        | <0.01  | 0.003  | mg/l                      | EPA 213.1 | 06-06-2001        | 1345 | MK |
| Calcium, Dissolved        | 71     | 0.20   | mg/l                      | EPA 215.1 | 06-06-2001        | 1100 | MK |
| Cations                   | 5.6    | ----   | meq/l                     | -----     | 06-12-2001        | 1320 | SB |
| Chloride                  | 5      | 0.20   | mg/l                      | EPA 300.0 | 06-01-2001        | 1352 | CB |
| Copper, Dissolved         | <0.1   | 0.01   | mg/l                      | EPA 220.1 | 06-06-2001        | 1315 | MK |
| Hardness, Total           | 268    | ----   | mg/l as CaCO <sub>3</sub> | SM2340-B  | 06-12-2001        | 1320 | SB |
| Iron, Total               | 0.4    | 0.03   | mg/l                      | EPA 236.1 | 06-07-2001        | 1030 | MK |
| Iron, Dissolved           | <0.1   | 0.02   | mg/l                      | EPA 236.1 | 06-07-2001        | 1030 | MK |
| Lead, Dissolved           | <0.1   | 0.08   | mg/l                      | EPA 239.1 | 06-06-2001        | 1400 | MK |
| Magnesium, Dissolved      | 22     | 0.41   | mg/l                      | EPA 242.1 | 06-06-2001        | 1145 | MK |
| Manganese, Total          | <0.1   | 0.007  | mg/l                      | EPA 243.1 | 06-07-2001        | 1115 | MK |
| Manganese, Dissolved      | <0.1   | 0.007  | mg/l                      | EPA 243.1 | 06-07-2001        | 1115 | MK |
| Molybdenum, Dissolved     | <0.02  | 0.0005 | mg/l                      | EPA 246.1 | 06-05-2001        | 1000 | MK |
| Nitrogen, Ammonia         | <0.5   | 0.02   | mg/l as N                 | EPA 350.3 | 06-12-2001        | 0830 | SC |
| Nitrogen, Nitrate-Nitrite | 0.79   | 0.02   | mg/l as N                 | EPA 300.0 | 06-01-2001        | 1343 | CB |
| Nitrogen, Nitrite         | <0.03  | 0.004  | mg/l as N                 | EPA 300.0 | 06-01-2001        | 1343 | CB |

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6-13-01

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June 13, 2001

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333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID:NORTH FORK GORDON CREEK DOWN STREAM  
MV-2

RECEIVED 1530  
SAMPLED 1050

FIELD MEASUREMENTS

FLOW 195                      TEMP 10  
COND. 590                      pH 8.0  
D.O. 5.0

NOTES:

DIS.METALS  
FILTERED @ LAB

Kind of sample Water  
reported to us

Sample taken at

Sample taken by Horizon

Date sampled May 31, 2001

Date received May 31, 2001

Page 2 of 2

Analysis report no. 59-22623

| Parameter                          | Result | MDL   | Units     | Method    | Analyzed          |      |    |
|------------------------------------|--------|-------|-----------|-----------|-------------------|------|----|
|                                    |        |       |           |           | Date/Time/Analyst |      |    |
| Oil & Grease                       | <2     | 1.3   | mg/l      | EPA 413.1 | 06-06-2001        | 0750 | SC |
| Phosphorous, Ortho-PO <sub>4</sub> | <0.05  | 0.01  | mg/l as P | EPA 300.0 | 06-01-2001        | 1343 | CB |
| Potassium, Dissolved               | 2      | 0.19  | mg/l      | EPA 258.1 | 06-07-2001        | 1300 | MK |
| Selenium, Dissolved                | <0.01  | 0.001 | mg/l      | EPA 270.2 | 06-04-2001        | 1200 | MK |
| Sodium, Dissolved                  | 4      | 0.2   | mg/l      | EPA 273.1 | 06-07-2001        | 1400 | MK |
| Solids, Settleable                 | <0.2   | 0.4   | ml/l      | EPA 160.5 | 06-01-2001        | 0925 | CB |
| Solids, Total Dissolved            | 291    | 6.2   | mg/l      | EPA 160.1 | 06-04-2001        | 0915 | CB |
| Solids, Total Suspended            | 35     | 3.8   | mg/l      | EPA 160.2 | 06-04-2001        | 0915 | CB |
| Sulfate                            | 46     | 0.16  | mg/l      | EPA 300.0 | 06-01-2001        | 1343 | CB |
| Zinc, Dissolved                    | <0.01  | 0.003 | mg/l      | EPA 289.1 | 06-06-2001        | 1330 | MK |
| Cation/Anion Balance               | -0.5   | ----  | %         |           | 06-12-2001        | 1320 | SB |

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6-13-01

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**NORTH FORK GORDON CREEK  
MACROINVERTEBRATE SAMPLING RESULTS  
FROM FALL, 2001**

Submitted to:

Lodestar Energy Horizon Coal Mine  
HC 35 Box 37  
Helper, UT 84526

Submitted by:

JBR Environmental Consultants, Inc.  
8160 South Highland Drive  
Sandy, UT 84093

January 2, 2002

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|            |                                   |
|------------|-----------------------------------|
| Appendix A | Data Tables From Baumann's Report |
|------------|-----------------------------------|

# NORTH FORK GORDON CREEK MACROINVERTEBRATE SAMPLING RESULTS FROM FALL, 2001

## 1.0 Introduction

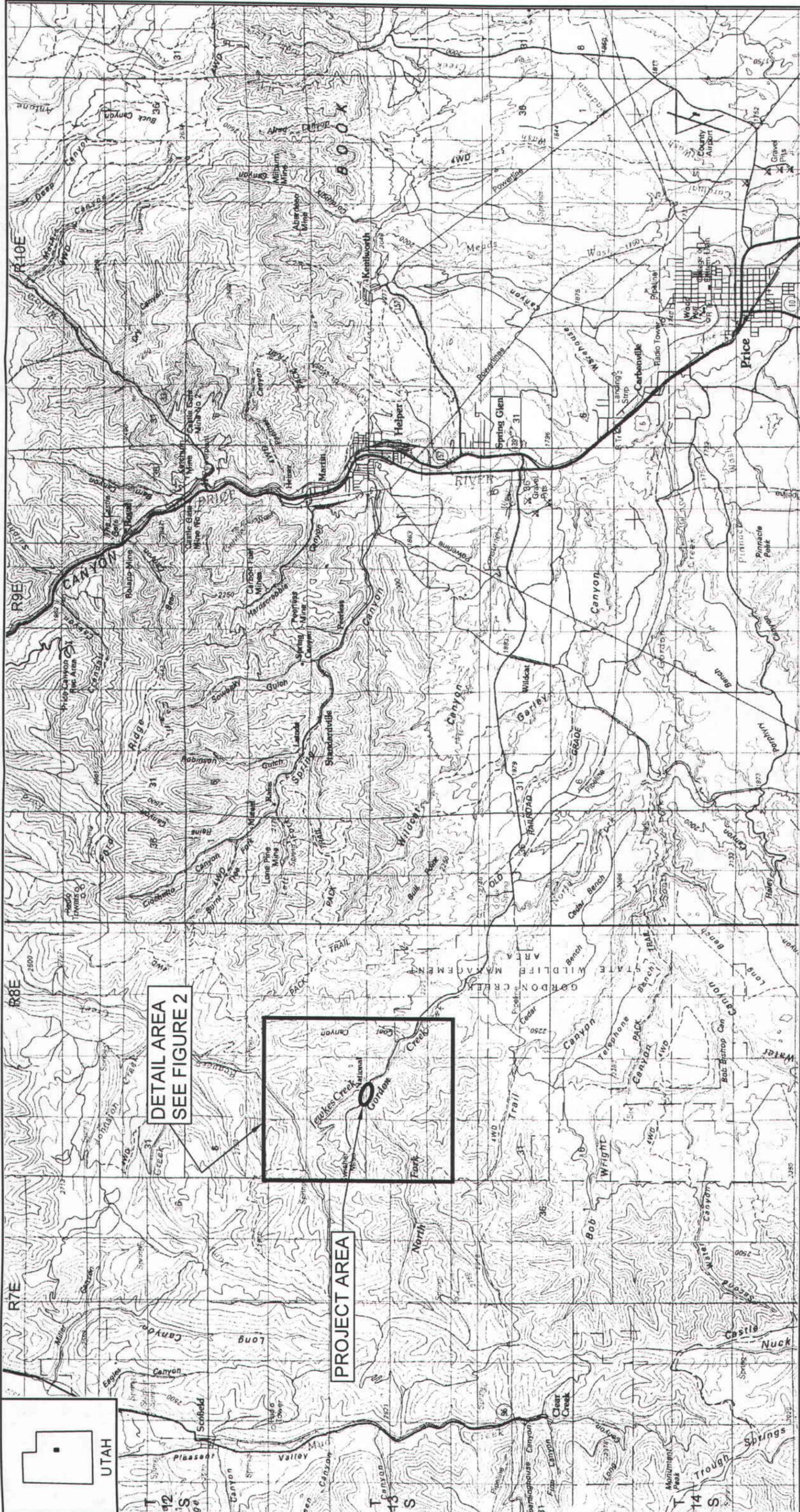
Lodestar Energy's Horizon Coal Mine is located near Scofield, Utah (Figure 1), and its surface facilities are in the Jewkes Creek watershed. Jewkes Creek is tributary to North Fork Gordon Creek. As described in more detail in a previous report (JBR, 2001), the Jewkes Creek watershed is subject to non-mining land uses including grazing and logging. The Horizon Coal Mine discharges underground water into Jewkes Creek, approximately 0.5 road miles upstream of Jewkes Creek's confluence with North Fork Gordon Creek.

In the spring of 2001, Utah Division of Oil, Gas, and Mining (UDOGM) requested that Lodestar Energy initiate a macroinvertebrate data collection program that can be used to track temporal and spatial differences in habitat quality in North Fork Gordon Creek above and below its confluence with Jewkes Creek. Lodestar Energy contracted with JBR Environmental Consultants (JBR) to conduct the study, and UDOGM provided input on sampling locations and study design. Station 1 was located on North Fork Gordon Creek approximately 0.2 road miles upstream from the confluence of Jewkes Creek and Gordon Creek. Station 2 was located on North Fork Gordon Creek approximately 0.1 road miles downstream from the confluence of Jewkes Creek and Gordon Creek (Figure 2). Repeat sampling will occur biannually at these two sites.

JBR first sampled the two chosen study sites on May 31, 2001, and prepared a report for Lodestar (JBR, 2001). The May sampling showed that a higher number taxa, more biomass, and greater diversity were collected at the upstream site, but that density (number of individuals found per square meter) was greater at the downstream station. Overall, the sampling appeared to show slightly better habitat conditions at the upstream site on North Fork Gordon Creek (JBR, 2001). Sampling at the two sites was repeated on October 24, 2001, and results are discussed in this report.

## 2.0 Methods

The October 2001 macroinvertebrate sampling was conducted using the same methods as were used in May 2001 and previously described by JBR (2001). Three separate sub-samples were collected at each station. A modified Surber sampler was placed in riffle areas in midstream flow at each site. After processing the substrate within the confines of the sampler, the contents of the net were transferred to a pan, debris was removed, a salt solution was used to wash the sample. The sample was then placed in a preserved bottle and transported to the entomology laboratory at Brigham Young University, where the macroinvertebrates were sorted, identified, counted and analyzed by Dr. Richard W. Baumann.



BASE: NEPHI AND PRICE, 1:100,000 USGS MAPS

**HORIZON COAL**

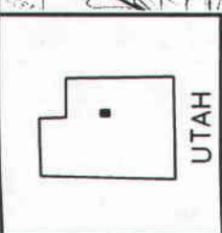
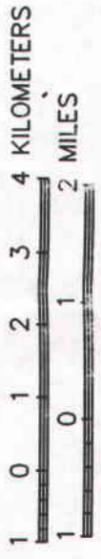
FIGURE 1  
PROJECT LOCATION MAP

**ibr**  
Environmental consultants, inc.  
DESIG. - MJ    DRAWN - CP    CHD - BY

DATE DRAWN 10/4/01

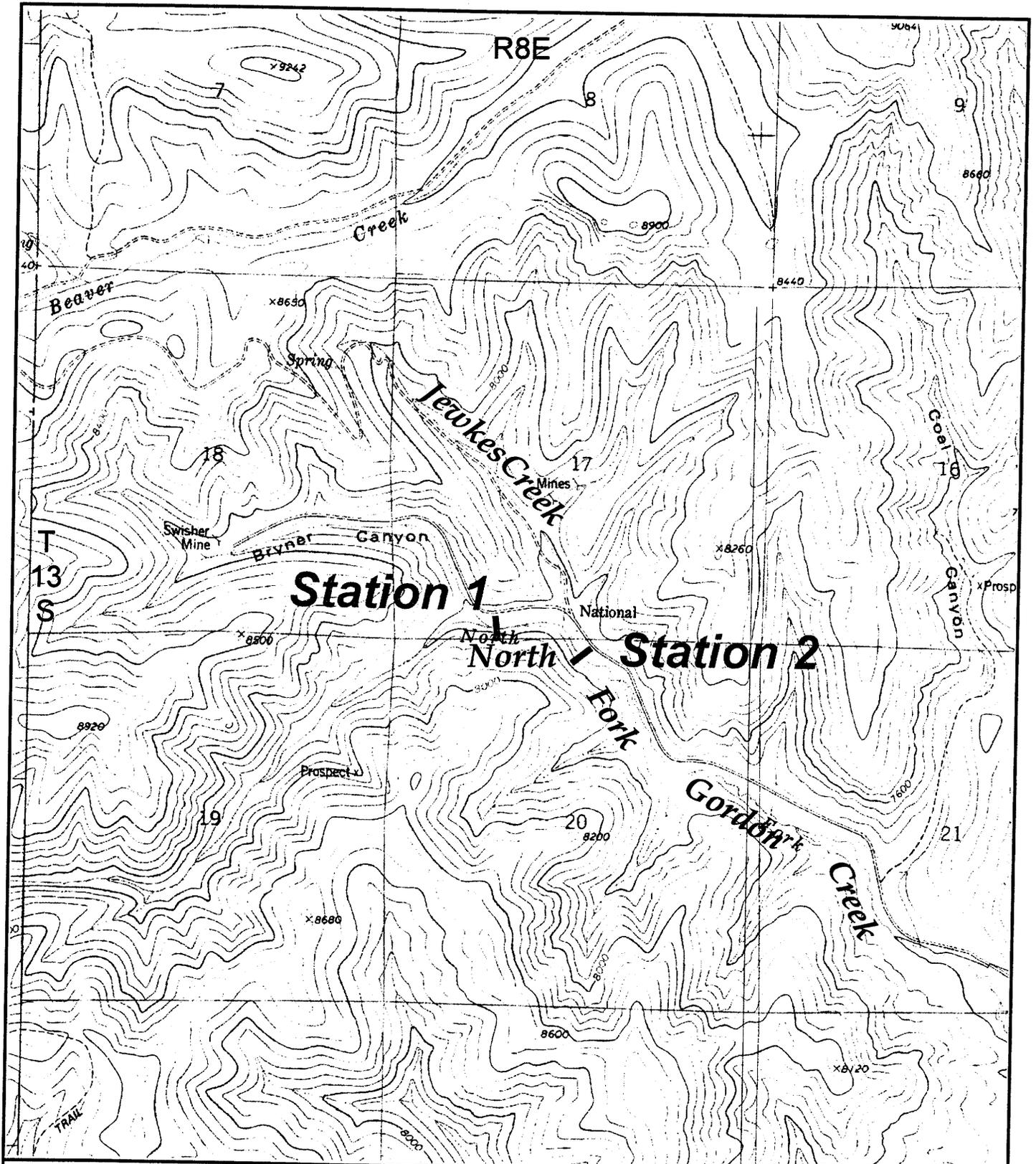
REVISION

SCALE 1:100,000



**DETAIL AREA  
SEE FIGURE 2**

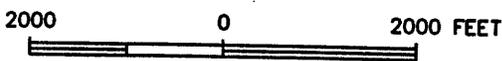
**PROJECT AREA**



BASE: JUMP CREEK, UTAH, USGS 7.5' TOPO, 1979

# HORIZON COAL

FIGURE 2  
SITE MAP - MACRO INVERTEBRATE  
SAMPLING LOCATIONS



**Jbr**  
environmental consultants, inc.  
Salt Lake City, Utah   Cedar City, Utah   Reno, Nevada   Elko, Nevada   Boise, Idaho

|           |    |          |    |          |  |       |            |
|-----------|----|----------|----|----------|--|-------|------------|
| DESIGN BY | MJ | DRAWN BY | CP | CHK'D BY |  | SCALE | 1" = 2000' |
|-----------|----|----------|----|----------|--|-------|------------|

|            |         |
|------------|---------|
| DATE DRAWN | 8/23/01 |
| REVISION   |         |

LODESTAR\Loadstar1-1.dwg

### 3.0 Results

The entomology lab at Brigham Young University prepared a written report based upon their analyses of the submitted samples (Baumann, 2001). Several types of information were derived from the samples and were reported in tabular form in Baumann's report; these tables are contained in Appendix A. A complete list of taxa found at each station was prepared, including total numbers, biomass, and density (numbers/square meter). Further, species were categorized according to their trophic level (scrapers, shredders, collectors, filter feeders, and predators) and their tolerance quotient. The number of taxa (or richness) also relates to community composition (or diversity), and the Shannon-Weaver Diversity Index was used to indicate diversity. Data from Baumann's report are summarized below, and discussions of these data follow.

#### SUMMARY INFORMATION OF DATA FROM BAUMANN'S REPORT

| Parameter                                     | Stations |      |
|---|----------|------|
|   | 1        | 2    |
| Total number of taxa                          | 14       | 19   |
| Density (mean number/square meter)            | 624      | 2494 |
| Biomass (grams/square meter)                  | 0.1      | 1.1  |
| (Diversity) Shannon Weaver Index = d          | 2.7      | 2.6  |
| Average Community Tolerance Quotient = CTQa   | 65       | 62   |
| Predicted Community Tolerance Quotient = CTQp | 60       | 60   |
| Percent of Predicted = BCI                    | 92       | 97   |

As shown in the above summary table, 14 separate taxa were collected at the upstream station and 19 were collected at the downstream station. Density of species and biomass were both greater at the downstream station. The increase in numbers at the downstream station was primarily due to the much greater presence of individuals from three genera: Chironomidae, Hydropsyche, and Brachycentrus. Chironomidae are members of the fly family with a high tolerance quotient (108). Hydropsyche and Brachycentrus are both members of the caddisfly family, however the former has a high tolerance quotient of 109, while the later is much less tolerant to environmental stressors with a 54 quotient value. Although greater numbers were found at the downstream station, diversity was similar at both Station 1 and Station 2, as reflected by the Shannon Weaver Index.

# **Appendix A**

## **Data Tables From Baumann's Report**

**Table 1. Macroinvertebrates obtained from North Fork, Gordon Creek, Carbon County, Utah, samples collected October 25, 2001**

| Organism                         | Trophic Level* | Tolerance Quotient | Stations |     |
|----------------------------------|----------------|--------------------|----------|-----|
|                                  |                |                    | 1 2      | 2 1 |
| <b>Ephemeroptera (Mayflies)</b>  |                |                    |          |     |
| Baetis                           | C-G            | 72                 | 79       |     |
| Drunella grandis                 | Shr            | 32                 | 12       | 8   |
| Cinygmula                        | Shr            | 30                 | 2        | 41  |
| <b>Plecoptera (Stoneflies)</b>   |                |                    |          |     |
| Capnia                           | C-G            | 32                 | 6        | 2   |
| Isogenoides zionensis            | Pred           | 30                 | 3        |     |
| Isoperla                         | Pred           | 48                 |          | 1   |
| Cultus                           | Pred           | 12                 |          | 3   |
| Pteronarcella badia              | Shr            | 30                 | 1        |     |
| Zapada cinctipes                 | Shr            | 16                 | 4        |     |
| <b>Trichoptera (Caddisflies)</b> |                |                    |          |     |
| Brachycentrus                    | Scr            | 54                 | 232      |     |
| Hydropsyche                      | C-F            | 108                | 123      | 2   |
| Lepidostoma                      | C-G            | 24                 |          | 1   |
| Oligophlebodes                   |                | 30                 |          | 7   |
| Ochrotrichia                     | Scr            | 108                | 4        |     |
| <b>Coleoptera (Beetles)</b>      |                |                    |          |     |
| Dryopidae                        | C-G            | 104                |          | 1   |
| Elmidae                          | C-G            | 104                | 21       | 51  |

| <b>Table 1 Continued</b>   |                |                    |          |     |
|----------------------------|----------------|--------------------|----------|-----|
| Organism                   | Trophic Level* | Tolerance Quotient | Stations |     |
|                            |                |                    | ± 2      | 2 1 |
| <b>Diptera (Flies)</b>     |                |                    |          |     |
| Antocha monticola          | Pred           | 40                 | 2        |     |
| Chironomidae               | C-G            | 108                | 175      |     |
| Dicranota                  | Pred           | 36                 | 2        |     |
| Empididae                  | Pred           | 95                 | 4        | 1   |
| Hexatoma                   | Pred           | 36                 | 2        |     |
| Molophilus                 | Shr            | 72                 | 6        |     |
| Pericoma                   | C-G            | 86                 |          | 8   |
| Stratiomyidae              | Pred           | 108                | 4        |     |
| Tipula                     | Shr            | 80                 | 3        |     |
| <b>Gastropoda (Snails)</b> |                |                    |          |     |
| Physa                      |                | 108                |          | 9   |
| <b>Crustacea (Scuds)</b>   |                |                    |          |     |
| Gammarus                   | C-G            | 98                 |          | 39  |

\*C-F = collectors-filterers  
 C-G = collectors-gatherers  
 Pred = predators

Scr = scrapers  
 Shr = shredders

NOTE: Baumann's tables have been edited as shown by redline/strikeout to provide consistent site identification numbers with JBR's report and with Baumann's previous data report for the spring sampling.

**Table 2. Summary of macroinvertebrate data from North Fork, Gordon Creek, Carbon County, Utah, samples collected October 25, 2001.**

| Parameter                     | Stations |     |
|-------------------------------|----------|-----|
|                               | ± 2      | 2 1 |
| Total number of taxa          | 19       | 14  |
| Mean number/square meter      | 2494     | 624 |
| Standard Deviation            | 705      | 409 |
| Grams/square meter            | 1.1      | 0.1 |
| Dominance Community TQ=CTQd   | 69       | 66  |
| Shannon Weaver Index = d      | 2.6      | 2.7 |
| Average Community TQ=CTQa     | 62       | 65  |
| Predicted Community TQ = CTQp | 60       | 60  |
| Percent of Predicted = BCI    | 97       | 92  |

| <u>BCI</u> | <u>SCALE</u> | <u>CTQa</u> | <u>SCALE</u> |
|------------|--------------|-------------|--------------|
| Above 90   | Excellent    | Below 60    | Excellent    |
| 80-90      | Good         | 60-70       | Good         |
| 70-80      | Fair         | 70-80       | Fair         |
| Below 70   | Poor         | Above 80    | Poor         |

TOTAL SAMPLE STATISTICS

STATION: # 2      North Fork Gordon Creek (Downstream) Carbon Co., Utah      DATE: 10 25 01

| Repl Species | Total No. | Mean /SQM | Confidence Limits (80 Percent) |      | Standard Deviation | Percent SE of Mean | Coeff. of Variation | DBAR   | CTQA | CTQD |
|--------------|-----------|-----------|--------------------------------|------|--------------------|--------------------|---------------------|--------|------|------|
|              |           |           | LL                             | UL   |                    |                    |                     |        |      |      |
| 3            | 19        | 2494      | 1726                           | 3261 | 704.93             | 16.32              | 28.27               | 2.5731 | 62   | 69   |

TOTAL SAMPLE STATISTICS

STATION: 2 1 North Fork Gordon Creek (Upstream) Carbon Co., Utah DATE: 10 25 01

| Repl Species | Total No. | Mean /SQM | Confidence Limits (80 Percent) |      | Standard Deviation | Percent of Mean | SE of Variation | Coeff. of Variation | DBAR | CTQA | CTQD |
|--------------|-----------|-----------|--------------------------------|------|--------------------|-----------------|-----------------|---------------------|------|------|------|
|              |           |           | LL                             | UL   |                    |                 |                 |                     |      |      |      |
| 3            | 14        | 624       | 179                            | 1069 | 408.77             | 37.80           | 65.48           | 2.7302              | 65   | 66   |      |

SPECIES ANALYSIS

STATION: 21 North Fork Gordon Creek (Upstream) Carbon Co., Utah DATE: 10 25 01

TAXONOMIC LIST

| CLASS      | ORDER         | FAMILY           | GENUS          | SPECIES | MEAN<br>N/SQM | LOG10<br>N/SQM | TQ  | LOG10<br>XTQ |
|------------|---------------|------------------|----------------|---------|---------------|----------------|-----|--------------|
| INSECTA    | EPHEMEROPTERA | HEPTAGENIIDAE    | CINYGMULA      |         | 147           | 2.168          | 30  | 65           |
| INSECTA    | EPHEMEROPTERA | EPHEMERELLIDAE   | DRUNELLA       | GRANDIS | 29            | 1.458          | 32  | 46           |
| INSECTA    | PLECOPTERA    | PERLODIDAE       | CULTUS         |         | 11            | 1.032          | 12  | 12           |
| INSECTA    | PLECOPTERA    | PERLODIDAE       | ISOPERLA       |         | 4             | 0.555          | 48  | 26           |
| INSECTA    | PLECOPTERA    | CAPNIIDAE        | CAPNIA         |         | 7             | 0.856          | 32  | 27           |
| INSECTA    | TRICHOPTERA   | HYDROPSYCHIDAE   | HYDROPSYCHE    |         | 7             | 0.856          | 108 | 92           |
| INSECTA    | TRICHOPTERA   | LIMNIPHILIDAE    | OLIGOPHLEBODES |         | 25            | 1.400          | 30  | 41           |
| INSECTA    | TRICHOPTERA   | LEPIDOSTOMATIDAE | LEPIDOSTOMA    |         | 4             | 0.555          | 24  | 13           |
| INSECTA    | COLEOPTERA    | ELMIDAE          |                |         | 183           | 2.262          | 104 | 235          |
| INSECTA    | COLEOPTERA    | DRYOPIDAE        |                |         | 4             | 0.555          | 104 | 57           |
| INSECTA    | DIPTERA       | EMPIDIDAE        |                |         | 4             | 0.555          | 95  | 52           |
| INSECTA    | DIPTERA       | PSYCHODIDAE      | PERICOMA       |         | 29            | 1.458          | 86  | 125          |
| GASTROPODA | PHYSIDAE      | PHYSA            |                |         | 32            | 1.509          | 108 | 162          |
| CRUSTACEA  | AMPHIPODA     | GAMMARIDAE       | GAMMARUS       |         | 140           | 2.146          | 98  | 210          |

MEAN BIOMASS GM/SQM: 0.1 TOTALS: 624 2.795



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November 1, 2001

LODESTAR ENERGY INC.  
333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID: HORIZON MV-1 - *UPSTREAM*

Kind of sample Water  
reported to us

RECEIVED 1445  
SAMPLED 1045

Sample taken at Horizon

FIELD MEASUREMENTS  
FLOW 15 GPM TEMP 3  
COND 780 pH 8.4

Sample taken by KP

NOTES:  
DIS. METALS  
FILTERED @ LAB

Date sampled October 24, 2001

Date received October 24, 2001

Page 1 of 1

Analysis report no. 59-23528

| Parameter               | Result | MRL  | Units                     | Method    | Analyzed          |    |
|-------------------------|--------|------|---------------------------|-----------|-------------------|----|
|                         |        |      |                           |           | Date/Time/Analyst |    |
| Alkalinity, Bicarbonate | 327    | 5    | mg/l as HCO <sub>3</sub>  | EPA 310.1 | 10-30-2001 1420   | SC |
| Alkalinity, Carbonate   | <5     | 5    | mg/l as CO <sub>3</sub>   | EPA 310.1 | 10-30-2001 1420   | SC |
| Alkalinity, Total       | 628    | 5    | mg/l as CaCO <sub>3</sub> | EPA 310.1 | 10-30-2001 1420   | SC |
| Anions                  | 7.2    | ---- | meq/l                     | -----     | 10-31-2001 1545   | SB |
| Calcium, Total          | 75     | 1    | mg/l                      | EPA 215.1 | 10-25-2001 2100   | MK |
| Cations                 | 6.7    | ---- | meq/l                     | -----     | 10-31-2001 1545   | SB |
| Chloride                | 8.9    | 0.5  | mg/l                      | EPA 300.0 | 10-25-2001 0900   | CB |
| Hardness, Total         | 323    | ---- | mg/l as CaCO <sub>3</sub> | SM2340-B  | 10-31-2001 1545   | SB |
| Iron, Total             | <0.1   | 0.1  | mg/l                      | EPA 236.1 | 10-26-2001 0118   | MK |
| Iron, Dissolved         | <0.1   | 0.1  | mg/l                      | EPA 236.1 | 10-26-2001 0151   | MK |
| Magnesium, Total        | 33     | 1    | mg/l                      | EPA 242.1 | 10-25-2001 2152   | MK |
| Manganese, Total        | <0.05  | 0.05 | mg/l                      | EPA 243.1 | 10-26-2001 0229   | MK |
| Manganese, Dissolved    | <0.05  | 0.05 | mg/l                      | EPA 243.1 | 10-26-2001 0301   | MK |
| Oil & Grease            | <2     | 2    | mg/l                      | EPA 413.1 | 10-25-2001 0930   | SC |
| Potassium, Total        | 2      | 1    | mg/l                      | EPA 258.1 | 10-26-2001 0340   | MK |
| Sodium, Total           | 5      | 1    | mg/l                      | EPA 273.1 | 10-26-2001 0423   | MK |
| Solids, Settleable      | <0.1   | 0.1  | ml/l                      | EPA 160.5 | 10-24-2001 1500   | CB |
| Solids, Total Dissolved | 384    | 10   | mg/l                      | EPA 160.1 | 10-29-2001 0945   | CB |
| Solids, Total Suspended | 10     | 5    | mg/l                      | EPA 160.2 | 10-29-2001 0945   | CB |
| Sulfate                 | 78     | 0.5  | mg/l                      | EPA 300.0 | 10-25-2001 0900   | CB |
| Cation/Anion Balance    | -3.6   | ---- | %                         |           | 10-31-2001 1545   | SB |

Respectfully submitted,  
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November 1, 2001

LODESTAR ENERGY INC.  
333 WEST VINE STREET  
SUITE 1700  
LEXINGTON KENTUCKY 40507

Sample identification by  
LODESTAR ENERGY INC.

ID: HORIZON MV-2 - *DANNSTELAM*

Kind of sample Water  
reported to us

Sample taken at Horizon

Sample taken by KP

Date sampled October 24, 2001

Date received October 24, 2001

RECEIVED 1445  
SAMPLED 1120

FIELD MEASUREMENTS  
FLOW 60 GPM TEMP 9  
COND 820 pH 8.2

NOTES:  
DIS. METALS  
FILTERED @ LAB  
POSSIBLE MATRIX SPIKE INTERFERENCE  
FOR ALKALINITY  
Page 1 of 1

Analysis report no. 59-23527

| Parameter               | Result | MRL  | Units                     | Method    | Analyzed        |         |
|-------------------------|--------|------|---------------------------|-----------|-----------------|---------|
|                         |        |      |                           |           | Date/Time       | Analyst |
| Alkalinity, Bicarbonate | 332    | 5    | mg/l as HCO <sub>3</sub>  | EPA 310.1 | 10-30-2001 1420 | SC      |
| Alkalinity, Carbonate   | <5     | 5    | mg/l as CO <sub>3</sub>   | EPA 310.1 | 10-30-2001 1420 | SC      |
| Alkalinity, Total       | 272    | 5    | mg/l as CaCO <sub>3</sub> | EPA 310.1 | 10-30-2001 1420 | SC      |
| Anions                  | 7.9    | ---- | meq/l                     | -----     | 10-31-2001 1545 | SB      |
| Calcium, Total          | 84     | 1    | mg/l                      | EPA 215.1 | 10-25-2001 2100 | MK      |
| Cations                 | 7.6    | ---- | meq/l                     | -----     | 10-31-2001 1545 | SB      |
| Chloride                | 9.2    | 0.5  | mg/l                      | EPA 300.0 | 10-25-2001 0900 | CB      |
| Hardness, Total         | 354    | ---- | mg/l as CaCO <sub>3</sub> | SM2340-B  | 10-31-2001 1545 | SB      |
| Iron, Total             | 0.2    | 0.1  | mg/l                      | EPA 236.1 | 10-26-2001 0118 | MK      |
| Iron, Dissolved         | <0.1   | 0.1  | mg/l                      | EPA 236.1 | 10-26-2001 0151 | MK      |
| Magnesium, Total        | 35     | 1    | mg/l                      | EPA 242.1 | 10-25-2001 2152 | MK      |
| Manganese, Total        | <0.05  | 0.05 | mg/l                      | EPA 243.1 | 10-26-2001 0229 | MK      |
| Manganese, Dissolved    | <0.05  | 0.05 | mg/l                      | EPA 243.1 | 10-26-2001 0301 | MK      |
| Oil & Grease            | <2     | 2    | mg/l                      | EPA 413.1 | 10-25-2001 0930 | SC      |
| Potassium, Total        | 5      | 1    | mg/l                      | EPA 258.1 | 10-26-2001 0340 | MK      |
| Sodium, Total           | 9      | 1    | mg/l                      | EPA 273.1 | 10-26-2001 0423 | MK      |
| Solids, Settleable      | <0.1   | 0.1  | ml/l                      | EPA 160.5 | 10-24-2001 1500 | CB      |
| Solids, Total Dissolved | 438    | 10   | mg/l                      | EPA 160.1 | 10-29-2001 0945 | CB      |
| Solids, Total Suspended | 8      | 5    | mg/l                      | EPA 160.2 | 10-29-2001 0945 | CB      |
| Sulfate                 | 108    | 0.5  | mg/l                      | EPA 300.0 | 10-25-2001 0900 | CB      |
| Cation/Anion Balance    | -2.3   | ---- | %                         |           | 10-31-2001 1545 | SB      |

Respectfully submitted,  
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**APPENDIX C**

**Legal Financial, Compliance and Related Information**

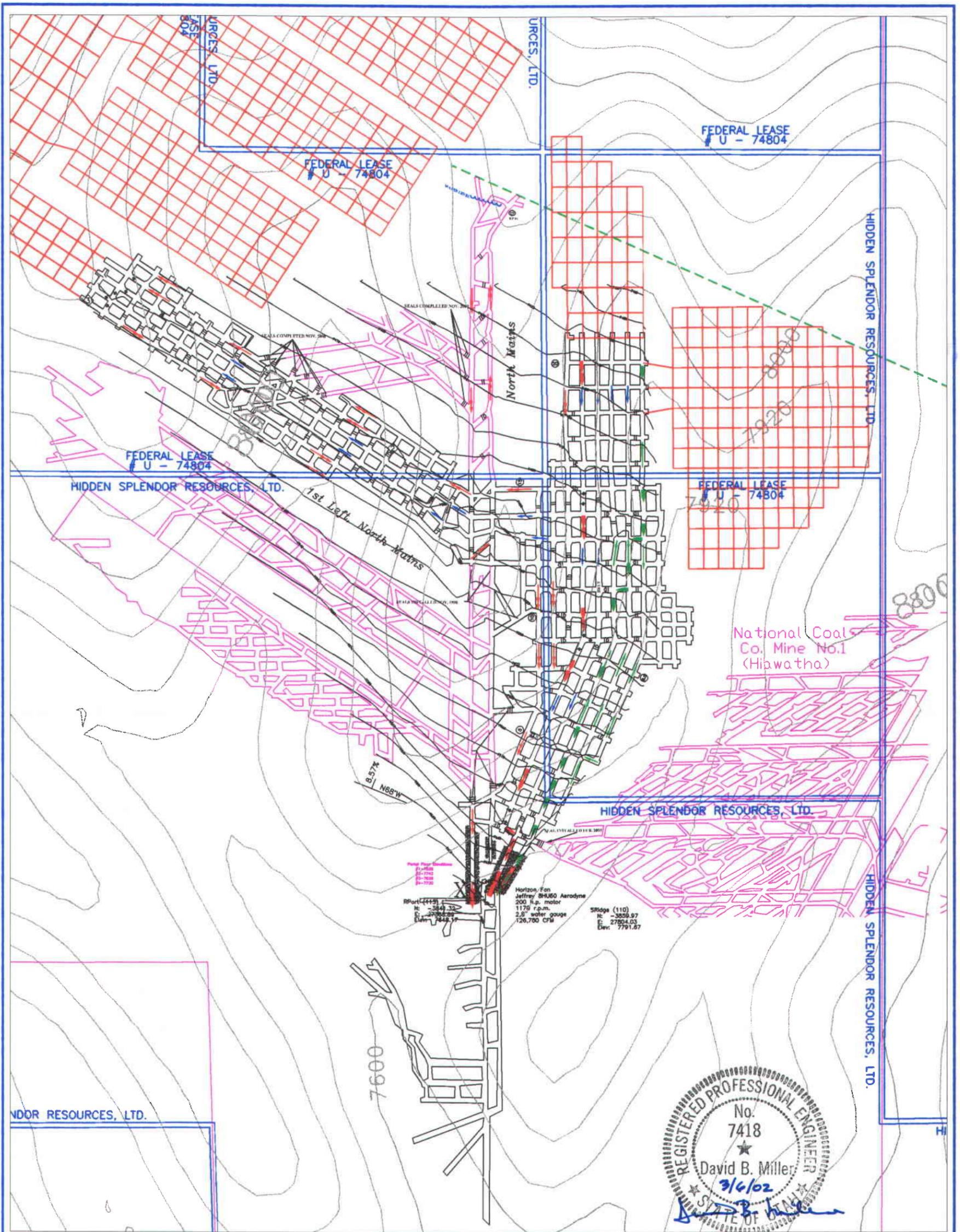
Annual Report of Officers  
As submitted to the Utah Department of Commerce

Other change in ownership and control information  
As required under R645-301-110

**APPENDIX D**

**Mine Maps**

As required under R645-302-525-270



No. 7418  
 REGISTERED PROFESSIONAL ENGINEER  
 David B. Miller  
 3/6/02  
 STATE OF UTAH

**LEGEND**

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li> Intake Air</li> <li> Return Air</li> <li> Belt Air</li> <li> Primary Escapeway</li> <li> Secondary Escapeway</li> <li> Overcast (proposed)</li> <li> Regulator (proposed)</li> <li> Stopping (proposed)</li> <li> Stopping w/Door (proposed)</li> <li> Air Lock (proposed)</li> <li> Curtain (proposed)</li> <li> Line Brattice (proposed)</li> </ul> | <ul style="list-style-type: none"> <li> Projection</li> <li> Belt Line</li> <li> Last Open Cross-Cut</li> <li> Roof Elevations</li> <li> Evaluation Point</li> <li> Bleeder Block</li> <li> Seal (proposed)</li> <li> Second Mined</li> <li> Major Fault</li> <li> Minor Fault</li> <li> Roof Fall</li> <li> Roof Fall (cleaned)</li> </ul> | <ul style="list-style-type: none"> <li> Surrounding Mine</li> <li> Fan</li> <li> Base Line Point</li> <li> Drill Hole</li> <li> Coal Contour Line</li> <li> Coal Outcrop</li> <li> Powerline</li> <li> Road</li> <li> Section Line</li> <li> Lease Line</li> <li> Section Line</li> <li> Permit Boundary</li> <li> Horizontal Drill Holes</li> </ul> |
|---|---|--|

**Lodestar Energy Inc.**  
 Mountain Operations, Horizon Mine  
 HC 35, Box 370, Helper Ut. 84528  
 PH #: 435-637-9200 Fax #: 435-448-9456

|  |                                |                  |
|--|--------------------------------|------------------|
| Drawn By: Lodestar Eng.                                      | Date: Feb. 5, 2002             | Scale: 1" = 400' |
| Approval: DAVE MILLER  | Drawing Name: horizon-2001.dwg |                  |
| <b>HORIZON 2001 YEAR END MAP</b><br><b>MSHA ID# 42-02074</b> |                                |                  |

02/05/02 10:00 AM - C:\Users\horizon\2001 production\horizon-2001.dwg

**APPENDIX E**

**Other Information**

In accordance with the requirements of R645-301 and R645-302



DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY

Michael O. Leavitt  
Governor

Dianne R. Nielson, Ph.D.  
Executive Director

Don A. Ostler, P.E.  
Director

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Ronald C. Sims, Ph.D.

Douglas E. Thompson, Mayor

J. Ann Wechsler

Don A. Ostler, P.E.  
Executive Secretary

November 15, 2001

Mr. Pappas

Lodestar Energy, Inc.  
Horizon  
HC 35 Box 370  
Helper, UT 84526

Subject: Lodestar- Horizon Mine  
Compliance Evaluation Inspection Report

Dear Mr. Pappas:

Attached for your review are the results of the November 14, 2001 Compliance Evaluation Inspection conducted by Chris Imbrogno of the Division of Water Quality. There were no deficiencies.

If you have any questions regarding this report, feel free to contact me at (801) 538-6628.

Sincerely,

Chris Imbrogno  
Environmental Scientist  
Permits & Compliance Section

Enclosure

cc: Donna Inman, EPA Region VIII w/enclosure  
Claron Bjork, Southeastern Utah District Health Department

