APPENDIX A: SPECIES SPECIFIC RECOMMENDATIONS

These reasonable recommendations are derived from the best available science and represent preferred management actions to protect wildlife and wildlife habitats where oil and gas development is occurring.

AQUATIC SPECIES/AMPHIBIANS

- Consult with CDOW or collect baseline aquatic species and macro-invertebrate inventory data both pre and post development.
- Conduct two pass population estimations for streams potentially affected. Report species composition, length-frequency and individual weights.
- Collect water samples to monitor water quality before, during and after occupation and document data and changes.
- No surface disturbance within 300 feet of any designated Gold Medal water.
- Design stream crossings to minimize the total number of crossings and so that crossings are at or as near to 90 degrees to the direction of stream flow.
- Construct stream crossings "in the dry" and avoid impacts to trout during spawning and hatching periods.
- Restrict trucks from crossing streams and utilize appropriate and effective culverts that don't preclude upstream movement of fish.
- Avoid using low water crossings.
- Control erosion and sedimentation, and manage storm water runoff; reclaim sites as quickly as possible to restore vegetation.
- Control weeds along riparian corridors and manage livestock grazing to maintain riparian corridor health.
- Consider fencing riparian areas.
- Avoid changes to water quality and quantity.
- Repair incised channels where excessive erosion and sedimentation is occurring.
- Consider directional boring of pipeline crossings of perennial streams.
- Replace non-native riparian vegetation such as tamarisk and Russian olive with appropriate native plantings such as cottonwood or willow.
- Protect groundwater, riparian areas and wetlands by installing impermeable barriers beneath fluid pits.
- When working in designated Gold Medal waters, disinfect heavy equipment, hand tools, boots and any other equipment that was previously used in a river, stream, lake, pond, or wetland prior to moving the equipment to another water body. The disinfection practice should follow this outline:
    - Remove all mud and debris from equipment and spray/soak equipment with a 1:15 solution of disinfection solution containing the following ingredients:
        - Dialkyl dimethyl ammonium chloride, 5-10% by weight;
        - Alkyl dimethyl benzyl ammonium chloride, 5-10% by weight;
        - Nonyl phenol ethoxylate, 5-10% by weight;
        - Sodium sesquicarbonate, 1-5%;
        - Ethyl alcohol, 1-5%; and

        - Tetrasodium ethylene diaminetetraacetate, 1-5%
        - and water, keeping the equipment moist for at least 10 minutes and managing rinsate as a solid waste in accordance with local, county, state, or federal regulations; or
    - Spray/soak equipment with water greater than 140 degrees Fahrenheit for at least 10 minutes.
    - Sanitize water suction hoses and water transportation tanks (using methods described above) and discard rinse water at an appropriately permitted disposal facility.
- Avoid stream channel disturbances during fish spawning seasons. Fish spawn at specific times of the year. The eggs incubate in the gravel until the yolk sac is absorbed and the larval fish can swim up through the gravel and into the main body of water. Eggs incubating in the redds can be smothered by the excessive deposition of sediment, and further affected by fungal spores carried in the sediment. Adults can be affected by the same fungal species with high mortality rates. Fish spawning dates and incubation times vary by elevation and temperatures, but in general the following intervals will apply in Colorado:
    - Rainbow trout: March 1 - June 15
    - Brown trout: October 1 – May 1
    - Brook trout: August 15 – May 1
    - Cutthroat trout: June 1 – September 1
    - Bluehead sucker: May 1 – July 15
    - Flannelmouth sucker: April 1 – July 1
    - Roundtail chub: May 15 – July 15