Visual Resource Management

Santa Fe, NM September 24-28, 2007

Course Objective

After attending this course, you will be able to:

- Describe the basic principles and concepts of the VRM system
- Communicate the role of visual resource management in BLM land use planning and activity planning
- Demonstrate the skills and knowledge necessary to:
    - inventory visual resources
    - analyze the landscape
    - design and mitigate for minimizing contrast to the landscape from activities.

Successfully complete a field project in an interdisciplinary setting to reduce the contrast of a proposed project on the characteristic landscape.

Visual Resource Management: Student Agenda
Santa Fe, New Mexico

Monday September 24, 2007

8:00a-9:30a	**Unit 1**	Overview of VRM	John McCarty
9:30a-12:00	**Unit 2**	Looking at Landscapes	Allysia Angus
1:00 p-3:00 p	**Unit 3**	VRM Inventory	Dave Kiel/Rob Sweeten
3:00 p-5:00 p	**Field Trip**	Landscape Analysis	Gregg Curry
		Scenic Quality Exercise	Sweeten

Tuesday September 25, 2007

8:00a-10:00a	**Unit 4**	Land Use Planning	Kiel/Sweeten
10:00a-10:30a	**Unit 5**	Project Planning and VRM	Angus
10:30a-11:15a	**Unit 6**	Design Fundamentals	Gary Long/Angus
11:15a-12:00	**Unit 7**	Design Strategies	Long/Angus
1:00p-2:00p	**Unit 8**	Environmental Factors	Long/Angus
2:00p-2:30p	**Unit 9**	Types of Projects	Long
2:30p-5:00p	**Field Problem**		Long

Wednesday September 26, 2007

8:00a- 9:30a	**Unit 10**	Project Planning/Analysis	Curry/Sweeten
9:30a -12:00	**Contrast Rating Field Problem**		Sweeten/Curry
1:00p- 2:00p	**Unit 11**	Visual Simulation	Sweeten
2:00p- 2:30p	**Unit 12**	Writing Good EAs	Long
2:30p- 3:00p	**Unit 13**	Monitoring and Compliance	John McCarty
3:00p- 4:30p	**Unit 14**	Experience Examples	John/Torres/Gary
4:30p- 5:00p	**Unit 15**	Stump the Experts	Panel

Thursday September 27, 2007

8:00a- 8:45a		Final Class Team Project: o explain procedures o team assignments	John McCarty
8:45a- 11:00a		Team Project cont.. o Meet with "Customers o Review proposals o Determine Info Needs o Prepare for field trip	Teams to be assigned
11:00a- 12:00		LUNCH and Travel to field sites	
12:00- 2:30p		Team Project cont… o Review site/proposal o Suggest alternatives o Finalize negotiations o Select KOPs o Analyze landscape o Prepare rough sketches o Conduct contrast rating o Suggest additional Mitigation	Teams work on their own
2:30p- 5:00p		Travel back to Hotel Team Project cont… o Prepare Reports o Prepare Simulations	Teams

Friday September 28, 2007

8:00a- 8:15a		Evaluations – Training - Commitments	
8:150a- 11:00a		Team Presentations	Teams
11:00a- 11:30a	Unit 16	Summary – Close Out	McCarty

VRM Instructor Contact List – Santa Fe, NM - 2007

Rob Sweeten, Moab Support Center (Moab Field Office), 435-259-2139

Rob Sweeten is the Moab Support Center Landscape Architect stationed in the Moab Utah Field Office. His expertise is in VRM planning and contrast rating, recreational site design, accessibility issues, site construction, and contract inspection. He worked at the Utah State Office before moving to Moab and has been with the BLM for 11 years. Rob has faced many of the surface disturbing projects that occur on BLM land such as oil and gas, pipelines, landfills, open pit mines, recreation development, fire rehabilitation, road development, power lines, and many other projects. Rob served on the original committee that started and created this course. Rob has taught at each of the 10 offerings of this course. Rob also team teaches the Visual Simulation course at the National Training Center and most recently was an instructor for the Visual Resource Management for Fluid Minerals Best Management Practices satellite broadcast. We are extremely grateful for his dedication.

Gary Long, Wyoming State Office, 307-775-6101

Gary is a state lead recreation planner for Wyoming. His expertise is in recreation planning, OHV Management, wilderness and visual resource management. He has a BA in Geography & Recreation from the University of Wyoming. He pursued graduate studies in wilderness management at UW. He began his career with BLM in 1974 in Rawlins, Wyoming. He has also worked in Alaska, Lander, and Casper, Wyoming.

He has worked extensively on recreation project planning and as such led or served as a team member on numerous efforts to design or re-design developed recreation sites, recreational trails, and interpretive centers. Gary led several activity planning efforts in Wyoming, including a statewide management plan for the Oregon and Mormon Pioneer National Historic Trails.

He also has extensive background in oil and gas development, national historic trails management, transportation planning, energy related rights of way, and other fluid minerals projects. Gary's experience with VRM includes developing mitigation measures for oil and gas exploration projects, range developments such as fences and water projects, rights-of-way, recreational trails, timber harvest operations, and road systems.

Allysia Angus, Landscape Architect / Land Use Planner, 435-644-4364

Allysia Angus is the Landscape Architect / Land Use Planner for Grand Staircase-Escalante National Monument working out of the Monument's Escalante Field Station. She has been with the Monument for six years and has worked on a number of planning and design projects ranging from the Monument's new visitor centers, developed and primitive recreation sites, and the Monument's Architecture and Landscape Architecture Guidelines. Allysia also served as project planner and graphic designer for the Scenic Byway 12 Corridor Management Plan (CMP), which was used to successfully designate Utah's Scenic Byway 12 as the state's first All-American Road (the highest award of the National Scenic Byway program). The CMP has won planning awards from both the Utah chapters of the American Planning Association and the American Society of Landscape Architecture. She now serves as an executive officer of the Scenic Byway 12 Committee.

She holds a bachelor's degree in Communications and Art from the University of Tennessee and a master's degree in Landscape Architecture and Environmental Planning from Utah State University. Her office address is 755 W. Main Street/PO Box 646, Escalante, UT 84726, and her phone number is (435) 826-5615.

Dave Kiel, Vermilion Cliffs National Monument, 435-688-3240

Dave is an Outdoor Recreation Planner for the Vermilion Cliffs National Monument, which is part of the Arizona Strip District Office. Prior to holding his current position, he spent five years as a GIS Specialist for the Arizona Strip District Office and the Cedar City Support Area in Utah. Before coming to work for the BLM, he spent 17 years working for the City of and Borough of Juneau, Alaska, where he served as Parks Superintendent. He has a BS in Geography and his expertise lies in recreation management and the use of GIS in land use planning. He spent the past four years integrating GIS into the Arizona Strip District's land use planning effort. His experience with VRM lies in the use of GIS tools for inventory, alternative development, and impact analysis.

Greg Currie, Recreation Planner, 541-416-6711

Greg is a recreation planner and planning team lead for the Prineville District BLM in Central Oregon. His role there has focused on recreation planning and development of Resource Management Plans with a focus on recreation and visual resources. Greg has worked as a landscape architect for the USFS (Spring Mountains National Recreation Area), and as a State Landscape Architect for the Natural Resources Conservation Service, specializing in community based conservation and design projects, including historic preservation projects, park and trail designs and interpretive facilities in rural as well as highly urban settings. Prior to federal service, Greg worked as a Landscape Architect for EDAW, Inc. in San Francisco and specialized in visual resource analysis for a variety of clients, including USFS, BLM, BOR, and various city, county, and state agencies, as well as utility providers and mining companies. These projects included public perception surveys, visual resource analysis and development of photo simulations. Past project work included analysis of visual resource effects of varying streamflows in wild and scenic rivers and differing lake levels at Mono Basin Scenic Area.

Greg holds a bachelor's degree in Natural Resource Management from California Polytechnic State University, San Luis Obispo and a master's degree in Landscape Architecture from California Polytechnic University, Pomona. His office address is 3050 NE 3rd Street, Prineville, OR 97754.

Tami Torres, Taos Field Office, 505-751-4757

Tami is the Outdoor Recreation Planner in the Taos, New Mexico Field Office and has been there seven years working as the VRM Lead and on various recreation project plans. Her experience with VRM has included rights of ways, including water tanks and highway rock fall fences, as well as vegetative treatments, and of course recreation projects. She has completed many trail and recreation site planning projects. Her interest extends to interpretation and she's worked on and written interpretive plans and signs and designed or guided programs.

Her first recreation job was as an interpreter at Yaquina Head Outstanding Natural Area. She has also worked for the Oregon State University Research Forests, the Tillamook State Forest, and the Tualatin Hills Park District. Before moving to New Mexico, she worked for BLM in Coos Bay, Oregon. Currently she serves on the BLM RMiS Team and is assisting the NTC with the "VRM" and "Leading the Recreation Program" classes. Tami holds a Bachelor's degree in Natural Resources and a Master's in Forest Social Science from Oregon State University.

Elvin Clapp, National Training Center, 602-906-5506

Elvin Clapp has been a training coordinator and supervisor at the NTC for 11 years. He has also worked at the field, state, and headquarters office levels of BLM in lands and recreation programs. He has a special interest in protecting and enhancing landscapes by good management practices and sound land use and project planning. Elvin has an undergraduate and master's degrees in outdoor recreation from North Carolina State University, where he also taught for two years.

John McCarty, National VRM Leader, BLM-Washington Office, 202-785-6574
John McCarty serves as the BLM's Chief Landscape Architect since April 4th of 2007 and is located at the BLM's headquarters in Washington, DC. He joined the ranks of the BLM after 7 years of private industry service with a national architectural/engineering firm. John was located in their Western Colorado office, which specializes in landscape architecture, environmental planning and community/land use master planning.

While new to the BLM, John has a history in working with the BLM as a private consulting contractor. Project areas of experience include Visual Resource Management (VRM) inventories, energy development VRM mitigation plans and strategies, researching and developing new VRM mitigation strategies using color applications, recreation project planning, NEPA, and stream restoration and habitat improvements.

In addition to BLM work, he has been responsible for management, coordination and design of a wide variety of public and private projects. He has been credited with skillful experience and innovative approach to context sensitive design strategies and his consideration of sensitive environmental and natural resource issues for blending the built environment with the natural setting.

Prior to private consulting, John worked for the Town of Snowmass Village and the Colorado Department of Transportation. He holds a Bachelors of Science degree in Landscape Architecture and Recreation Resources from Colorado State University, earned in 1982.

Useful Websites

A. Website containing all of the notebook, Powerpoints, and handout material. You can save all of the material on your own computer, print, and share with others. NTC will update the site as new material, including next year's notebook, is developed. There are other folders for the Visual Simulation Class and other recreation and visual resource courses:

ftp://ftp.blm.gov/pub/Recreation/

B. National Visual Resource Management web site, include manuals, forms, field contacts, and other guidance:

http://www.blm.gov/nstc/VRM/index.html

C. Best Management Practices for Oil and Gas Development, with focus on visual resources. Contains images and guidance. You can also download BLM's Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (commonly referred to as The Gold Book):

http://www.blm.gov/bmp/Technical_Information.htm

D. Video Segments from Showing the Basic Principles of Visual Resource Management

http://www.ntc.blm.gov/VRM/VisualFinal.swf

E. Scenic America:

http://www.scenic.org/

F. Forest Service's Built Environment Image Guide:

http://www.fs.fed.us/recreation/programs/beig/

G. Forms for VRM, Recreation and Other Programs:

https://web.eforms.blm.gov:8201/FormsCentral/show-home.do

Available NTC Training in 2008

For more information, go to https://doilearn.doi.gov/

Visual Resource Management, 8400-05 ***Call Elvin Clapp, 602-906-5506***
Nov 3-7, 2008 Phoenix, AZ

Visual Resource Simulation, 8400-06 ***Call Elvin Clapp, 602-906-5506***
March 11-13, 2008 Phoenix, AZ

This course covers use of Adobe Photo Shop to generate visual simulations for your typical projects: powerlines, range improvements, oil and gas wells, etc. It's a hands-on format where participants will scan, import, and work on images to develop accurate visual simulations. Other topics include advantages/disadvantages of simulations, ethics, evaluating products of contractors, techniques for inputing photos, printer and other output techniques, simulation policies and relationship to VRM system. This training is at a technical level to support visual simulations for EAs and other documentation. It won a regional award from the Society of Landscape Architects. Participants receive comprehensive notebook and CD for application of tools in the field.

Surface Management for Fluid Minerals, 3100-15 Call Larry Bauer, 602-906-5527
Spring, 2008 – Location TBD
This basic course is designed to address operational aspects of dirt work and reclamation involved in permitting an Application for Permit to Drill an Oil, Gas, or Geothermal well. Participants review construction and reclamation plans, perform preoperational field inspections, and recommend necessary modifications to mitigate the effects of surface disturbing activities in accordance with the Bureaus' standards and guidelines. A field exercise is designed to allow students to perform pre-construction onsite visits to determine any changes needed of a submitted application and also perform reclamation inspections to ensure compliance with applications that have been approved. The target audience is surface protection specialists, resource specialists and others involved in the APD approval process.

Construction and Reclamation for Fluid Minerals, 3100-16 Call Jeff Garrett, 602-906-5604
Date and Location TBD

This is a more complex course and is designed to address the operational aspects of roads and pads for fluid minerals. Covers road and pad design, construction and reclamation. Participants review fluid minerals related surface disturbing proposals to determine if they are complete, feasible and meet Bureau standards. They will identify potential conflicts and recommend possible mitigation measures and monitor approved projects to determine if they are constructed in compliance with the approved operating plan. In addition, participants review a reclamation plan and determine if the plan includes suitable reclamation procedures and recommend appropriate modifications to achieve Bureau objectives. Target audience is surface protection specialists, civil engineers, mining engineers, and petroleum engineers.

Other Recreation and Visitor Services Training

Leading the Recreation Program, 8300-10 ***Elvin Clapp, 602-906-5506***
Feb 4 - 8, 2008 Phoenix, AZ

Recreation Planning: Effective Engagement in BLM's Land Use Planning, 8300-11
Tentative Feb 25-29, 2007 Salt Lake City ***Mike Brown, 602-906-5605***

Cave and Karst Management, 8300-24 ***Mike Brown, 602-906-5605***
December 3-7, 2007 Las Vegas, NM

Trail Management: Plans, Projects, and People, 8300-17 ***Mike Brown, 602-906-5605***
Late Feb, 2008 Las Vegas, NV

Recreation Permits Refresher, 8300-14 ***Elvin Clapp, 602-906-5506***
State rec. leaders should call to schedule a session in your state

Online Recreation and NEPA Courses – Register via DOI Learn

Special Recreation Permits, 8300-15 ***Elvin Clapp, 602-906-5506***

Visual Resource Management for Fluid Minerals, 8300-07 ***Calvin Russell, 602-906-5635***

Introduction to Basic All Terrain (ATV) Operation, 1112-06

NEPA Concepts ***Cathy Humphrey, 602-906-5536***
Mod 1 (NEPA)
Mod 2 (CEQ Regulations), 1620-17
Mod 3 (BLM-specific NEPA Requirements), 1620-18
Purpose & Need, 1620-28

Note: Supervisory approval not required for online courses.

Unit 1:
Introduction; Overview of VRM

A. Introduction

Objective: Describe the importance of protecting scenic values, and explain in general terms, the process the BLM uses to manage for scenery via the Visual Resource Management (VRM) System

- Field manager perspective
- Course Outline: units, notebook, and field exercises
- Instructor and Participant Introductions

B. What is VRM, Why do we use it?

- **BLM manages lands with inherent Scenic Value**
    - Western landscapes are a legacy to pass on to future generations.
    - BLM manages more land (261 million acres) than any other agency.
    - BLM manages a diversity of landscapes, each with a unique sense of place.



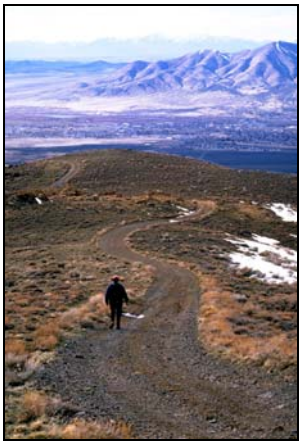
- **Multiple Uses on BLM Lands have potential to create visual impacts**
    - Growing demand for land uses such as communication sites, rights-of-way, recreation use, energy and mineral development.
    - If not carefully planned and design, these activities have potential to greatly modify character of the landscape for which BLM is recognized.
    - Poorly designed activities reflect negatively on BLM's image and may result in undesirable consequences to local communities' economy, quality of life, and visitor experiences.



These images reflect strong visual contrasts created by individual activities and cumulative effects

- **The Changing West; Western Population Growth and the Importance of Recreation in Tourism and Rural Economies**
  - Western states have experienced rapid growth and development
  - Public lands have been increasingly used for outdoor recreation and tourism.
  - Many rural communities are reliant on tourism to sustain their economies.
  - Thus, the management of the scenic values of public lands has become a much more important aspect of natural resource management to BLM.





- **Director's Priorities for Recreation and Visitor Services**
  - Goals: Provide access for recreation; Ensure quality experience and enjoyment of natural and cultural resources
  - Objectives: Manage for settings and experiences; Attention to the design of facilities and built environment.

- **Visual Resource Management is BLM's System to:**
  - Help identify visual (scenic) values.
  - Minimize visual impacts to landscape character of public lands

- It's essentially, a language for "looking at landscapes".
- VRM system helps lend objectivity to process.

- **Benefits of addressing visual concerns:**
  - The benefits to be gained by carefully designing surface-disturbing activities to minimize visual impacts are readily apparent.
  - BLM is committed to sound management of the scenic values on public lands in order to ensure that these benefits are realized and the scenic values are protected.
  - VRM system uses basic, fundamental landscape site planning and design techniques to help reduce contrast to landscape character.


Road that follows contours of landscape.


Pipeline that has been reclaimed and re-vegetated.

C. Legal Obligations/Authority/Policy

By law, BLM is responsible for managing public lands for multiple uses. But BLM is also responsible for ensuring that the scenic values of these public lands are considered before allowing uses that may have negative visual impacts.

- **The National Environmental Policy Act of 1969 (NEPA)** 43 U.S.C. 4321 et. seq.;
  - Section 101 (b). Requires measures be taken to " ...assure for all American...esthetically pleasing surroundings...."
  - Section 102. Requires agencies to "Utilize a systematic, interdisciplinary approach which will ensure the integrated use of...Environmental Design Arts in the planning and decision making...."
- **The Federal Land Policy and Management Act of 1976 (FLPMA)** 43 U.S.C. 1701 et. seq.;
  - Section 102 (a)(8). States that "...the public lands be managed in a manner that will protect the quality of the...scenic...values...."
  - Section 103 (c). Identifies "scenic values" as one of the resources for which public land should be managed.

- Section 201 (a). States that “The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including...scenic values)....”

- Section 505 (a). Requires that “Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic values....”

- **BLM Policy: Manual Section 8400- Visual Resource Management**

  - The Bureau has a basic stewardship responsibility to identify and protect visual values on public lands.

  - Each program (i.e., Range, Forestry, Minerals, Lands, etc.) involved in resource development work is responsible for protecting visual values. This includes ensuring that:
    - Personnel in each program who are involved in activities which affect visual values are properly trained in visual management techniques
    - Visual values are adequately considered in all management activities
    - Adequate guidance and funding is available to accomplish these purposes.

  - The Bureau shall prepare and maintain, on a continuing basis, an inventory of visual values on all public lands.

  - Visual management objectives (classes) are developed through the RMP process for all Bureau lands.

  - The approved VRM objectives (classes) provide the visual management standards for the design and development of future projects and for rehabilitation of existing projects.

  - The contrast rating process (Manual Section 8431) is used as a visual design tool in project design and as a project assessment tool during environmental review.

D. VRM System Overview

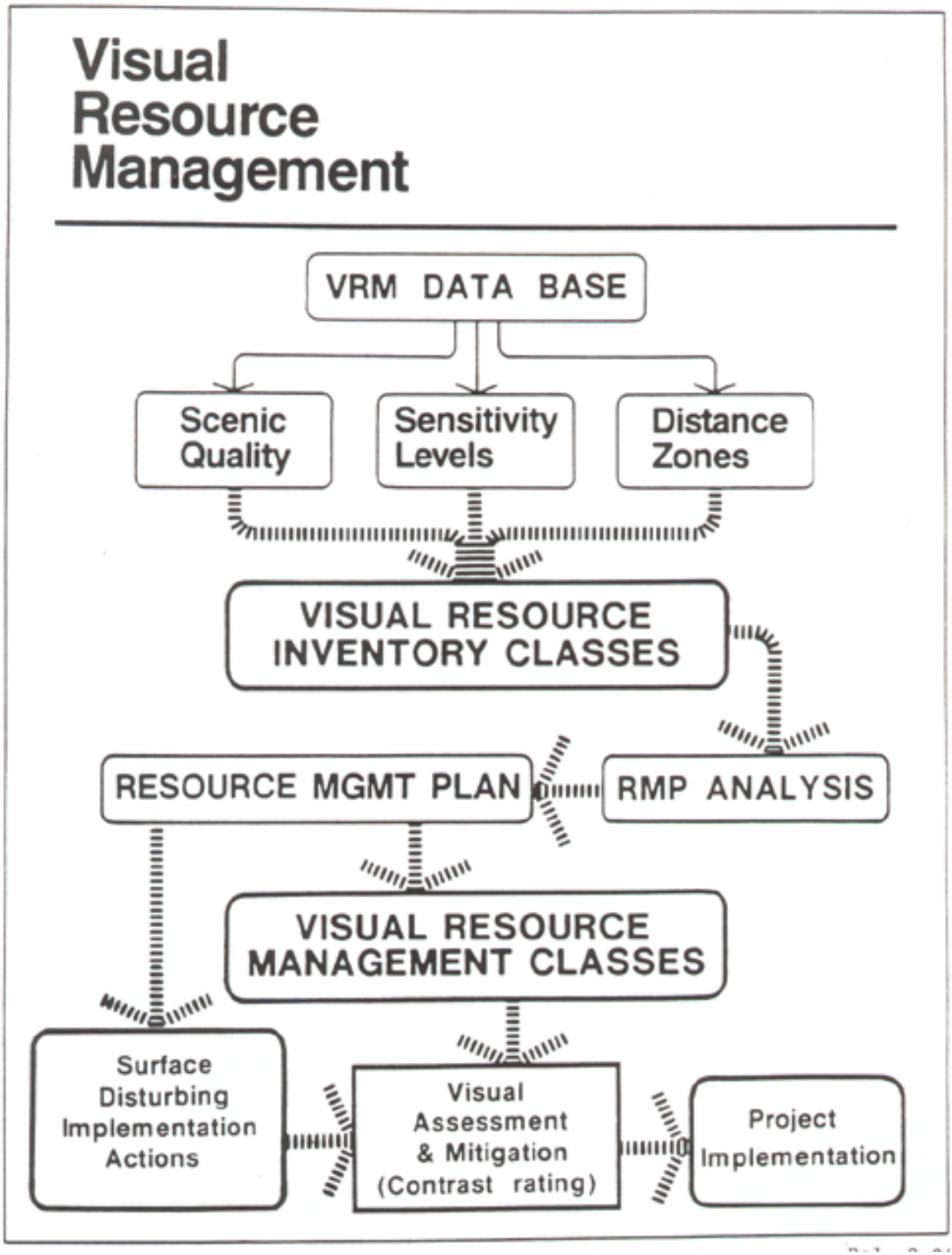
- Public lands have a variety of visual values which warrant different levels of management. VRM is used to systematically identify and evaluate these values to determine the appropriate management objectives and to design activities to meet those objectives.

- The **VRM process** involves:

  - 1) inventorying scenic values

  - 2) establishing management objectives for those values through the resource management planning process, and

  - 3) evaluating proposed activities to analyze effects and develop mitigations to meet established VRM objectives.


Visual
Resource
Management
VRM DATA BASE
Scenic Quality
Sensitivity Levels
Distance Zones
VISUAL RESOURCE INVENTORY CLASSES
RESOURCE MGMT PLAN
RMP ANALYSIS
VISUAL RESOURCE MANAGEMENT CLASSES
Surface Disturbing Implementation Actions
Visual Assessment & Mitigation (Contrast rating)
Project Implementation

Unit 2:
Looking at Landscapes

A. Introduction

Objective:

Students will use the three landscape analysis components:

Landscapes Types
Landscape Character Elements
Landscape Analysis Factors

to analyze and describe the landscape character of a given scene using common landscape vocabulary.

B. Landscape Character

The **character of a landscape** is the overall impression created by its unique combination of visual features (such as land, vegetation, water, and structures).

C. Types of Landscapes

- **Panoramic**



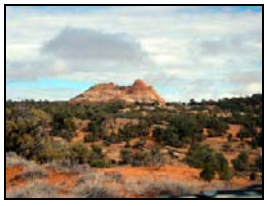

- A broad horizontal composition.
- Little or no sense of boundary restriction; no apparent limits to the view.
- Foreground or middle ground objects do not substantially block viewing of background objects.
- Sky and foreground elements may occupy much of the scene.
- Includes plains, expanses of water, and distant mountain ranges.

- **Enclosed**



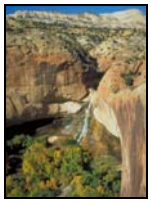
  - Landscape spaces, large or small, are surrounded by continuous groupings of objects.
  - Landscape elements form “walls” and “floor”.
  - Eye is drawn to enclosed portion of landscape.
  - An example is a meadow or small lake surrounded by walls of trees or earth forms.
  - Vulnerable to modification if within enclosure space.

- **Feature**



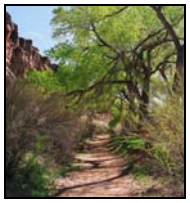

  - Dominated by a feature or a group of feature objects in the distance to which the eye is drawn.
  - Typically includes such elements as a waterfall, prominent landform, or tree.
  - Vulnerable to modification if near feature.

- **Focal**

  - Tend to converge upon themselves as distance increases or as they curve horizontally.
  - Eye is led to focal point in landscape.
  - Vulnerable to modification if near focal point.

- **Canopied**

  - o The landscape where features overhead create a ceiling or canopy.
  - o Typically within or at the edge of a forest where branches and foliage are overhead.
  - o Also within canyons with predominately arched, overhanging walls.

D. Landscape Character Elements

- **Form**




  - o Mass of an object or of a combination of objects that appear unified. (If seen only two-dimensionally, it's called a shape.)
  - o Forms that are bold, regular, solid or vertical tend to be dominant in the landscape.

    - ***Types of Form***
      - o <u>Dimensional shape</u> appears as a two-dimensional shape on the landscape caused by contrast in color or texture of adjacent areas.
      - o <u>Dimensional mass</u> is the volume of a landform, natural object, or manmade structure.

- **Line**




  - The path (real or imagined) that the eye follows in a landscape.
  - Perceived in abrupt differences in form, color, or texture, or when objects are aligned in one-dimensional sequence.
  - Line is usually evident as the edge of shapes or masses in the landscape.
    - ***Types of Lines***
      - Edge is the boundary between two contrasting areas (i.e. where grass and tree line meet, etc.) or the outline of a two-dimensional shape on the land surface (i.e. triangular clear cut, etc.).
      - Band is the contrasting linear form with two roughly parallel edges dividing an area in two (i.e. road).
      - Silhouette is the outline of a mass seen against a backdrop (i.e. skyline, ridgeline, etc.).

- **Color**




  - The property of reflecting light of a particular intensity and wavelength to which the eye is sensitive.
  - THE major visual property of surfaces.
  - Color is what enables us to differentiate objects even though they have identical form, line, and texture.
  - Light, warm, bright colors in a landscape will typically advance and dominate; dark, cool, dull colors will typically retreat.
  - Dark next to light tends to attract the eye and become a visual focal point.

- **Texture**




  - Texture is the aggregation of small forms or color mixtures into a continuous surface pattern.
  - Aggregated parts are such that they do not appear as discrete objects in the composition of the scene.
  - Texture dominance diminishes with increasing distance.

    - ***Sub-elements of Texture***
      - Grain – relative dimensions of the surface variations from large to small.
        Fine
        Medium
        Coarse
      - Density – spacing of surface variations creating the texture.
        Sparse
        Medium
        Dense
      - Regularity – degree of uniform recurrence and symmetrical arrangement of the surface variation.
        Uneven / random
        Even / ordered
        Even / random
        Gradation

E. Visual Variety



Landscapes with abundance and variety in form, line, color and texture, as well as combinations of types – are typically the most interesting and visually appealing.

- *Homogeneous landscapes* are typically considered less visually appealing and memorable.
- *Complex landscapes*, those with much visual variety, however, are typically considered more visually appealing and memorable.

E. Landscape Analysis Factors

- **Contrast**




  - The degree to which sharp differences in adjacent objects or areas exist.
  - Landscapes or areas of landscapes with great contrast attract the eye more readily than those with little to no contrast.

- **Sequence**



  - A succession of landscape elements.

  - Repetitious dominance of form, line, color, or texture.

    - ***Types of Sequence***
      - Form sequence
        - Systematic repetition of landform and vegetative patterns.
        - Interruption of form sequence can create a “missing tooth” effect.

      - Line sequence
        - Systematic repetition of landform and vegetative patterns.
        - Can lead the eye to, and emphasize, a distant object.
        - Removal of one of the elements forming line would break the line and be visually disruptive.

      - Color sequence
        - Systematic repetition of landform and vegetative patterns.
        - Can also lead the eye to, and emphasize, a distant object.

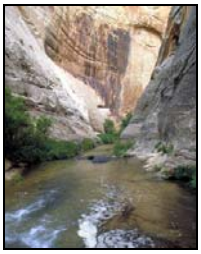
- **Axis**




  - A straight line, real or imaginary, passing through the center of a landscape such that each half is symmetrical.
  - A natural or created landscape with an axis focuses viewer attention primarily on the terminus and its background.
  - The axis has always been a design tool of great forcefulness.

- **Convergence**





  - Tends to focus attention on one point or small area.
  - The point at which the landscape elements come together and its adjacent area generally become dominant focal points within the landscape.

- **Co-dominance**



  - Two major landscape form features are nearly identical.
  - Co-dominant features often produce a symmetrical composition that does not blend with the characteristic landscape.
  - Natural landscapes with co-dominant features added are seldom as visually pleasing as those with a singular dominant element.

- **Enframement**




  - Created when features in the landscape direct the viewer's attention inwards like the frame of a picture.
  - Walls of trees or rock cliffs on either side, reflecting waters at the base, and tree canopies overhead serve as forces of enframement.

- **Scale**




  - The proportionate size relationship between an object and the surroundings in which it is placed.
  - The scale of an object relative to the visible expanse of the landscape which forms its setting determines the object's dominance in that landscape.
  - The size of the enclosing space inversely affects an object's relative scale -- small spaces make objects appear larger.

Unit 5:
Project Planning and VRM

A. Introduction to Project Planning

Objective: Students will understand how to incorporate visual resource objectives into all phases of project planning and why it's important to do so.

- **Key Points to Remember**
    - Incorporate visual resource considerations early in and throughout process.
    - Understand existing constraints.
    - Team approach is best.
    - Field review is essential.
    - Don't jump to design details too soon.

B. Incorporate Visual Resources in Project Planning Process

- Better efficiency
- Better chance of acceptance
- Better projects
- Less chance for costly, time delaying court challenges
- Avoid and/or minimize mitigation

C. Understanding Existing Constraints

- Laws, Management Strategies, Guidance
- RMPs, MFPs, City and County General Plans
- **Visual Resource Management Class Objectives**
- Activity Plans, Travel Management Plans, Transportation Plans, Master Plans, Recreation Area Management Plans (RAMPs), etc.
- Project plans, design guidelines/standards
- Existing Facilities

C. Team Approach is Best


- Minimizing the visual impacts is everyone's job.
- Include all of the disciplines that have a significant stake.
- Include external stakeholders early on.
- Increases the credibility of the recommendations and makes project easier to implement.

D. Field Review is Essential

- Project proponent and planning team can only meaningfully discuss project on-site.
- Keeps everyone on the same page.
- Misunderstandings can be avoided.
- Project parameters can be determined more easily.

F. Don't Jump to Design Too Soon

- Thoughtful and comprehensive planning leads to better design.
- Saves time and money if planning leads design.

Unit 9:
Types of Projects

A. Introduction

Unit 10:

Project Analysis and Evaluation

A. Introduction

Objective: Students will use the Visual Contrast Rating System to determine the elements of a project that are inconsistent with VRM objectives and recommend measures to improve the visual quality of a project.

B. Visual Contrast Rating System

- A systematic process to analyze potential visual impacts of proposed projects and activities.
- The degree to which a development adversely affects the visual quality of a landscape is directly related to the amount of visual contrast between it and the existing landscape character.
- The amount of contrast is measured by separating the landscape into major features - (Landform/Water, Vegetation, Structures) – then predicting the magnitude of contrast in each of the basic elements – Form, Line, Color, Texture.
- The Visual Contrast Rating System is primarily intended to assist BLM personnel not formally trained in design arts to apply basic principles of planning and design to prevent or minimize visual impacts.
- Every attempt is made to reduce visual impacts even if the proposed project meets VRM Management Objectives for the area.
- The BLM Handbook, H-8431-1, Visual Contrast Rating, provides the necessary guidance to follow when conducting the ratings.

The above image shows a failed effort to reclaim a pipeline right-of-way after construction. The line of boulders is visible for several miles and has adversely affected form, line, color, and texture in the landscape.

Allowable changes and relationship to the casual observer for each VRM Class are summarized in the below table.

VRM CLASS	Visual Resource Objective	Change Allowed (Relative Level)	Relationship to the Casual Observer
Class I	**Preserve** the existing character of the landscape. Manage for natural ecological changes.	**Very Low**	Activities should not be visible and **must not attract attention**.
Class II	**Retain** the existing character of the landscape.	**Low**	Activities may be visible, but **should not attract attention.**
Class III	**Partially retain** the existing character of the landscape.	**Moderate**	Activities **may attract attention** but **should not dominat**e the view.
Class IV	Provide for management activities which require **major modification** of the existing character of the landscape.	**High**	Activities **may attract attention, may dominate** the view, but are still mitigated.

C. Steps in Visual Contrast Rating Process

- **Obtain a complete project description**.
  - Emphasize early contact with project proponent
  - Coach proponent on project design
  - Proposal must be comprehensive

- **Identify VRM Objectives from land use plan**.
  - Class I – No visible change
  - Class II – Change visible but does not attract attention
  - Class III – Change attracts attention but does not dominate
  - Class IV – Change is dominant but mitigated

- **Select key observation points.**
  - Linear projects should have more than one KOP
  - Views from communities, rivers & roads
  - Scenic overlooks, important vantage points
  - Factors that should be considered in selecting KOPs are:
    - angle of observation
    - number of viewers
    - length of time the project is in view
    - relative project size
    - season of use
    - light conditions

- **Prepare visual simulations**.
  - Helps understand the project
  - Helps understand the visual impacts
  - Great way to illustrate impacts in the EA
  - Seeing an image of the project is much better than trying to imagine it
  - Helps the proponent, the public, as well as BLM

- **Complete Contrast Rating**.
  - See Bureau Manual Handbook H-8431-1
  - Illustrations and appendices
  - Provides documentation for EA
  - Provides a record for future action
  - Protects & appeals

D. Visual Contrast Rating Form

- Quickly reveals elements and features that cause the greatest visual impact.

- Filling it out is NOT a pass-fail exercise.

- To properly assess the contrast between the proposed and existing situation, it is necessary to break each down into the basic features (i.e., landform/water, vegetation., and structures) and basic elements (i.e., for, line, color, and texture) so that the specific features and elements that cause contrast can be accurately identified and documented.

- Here are some helpful tips for contrast rating forms:

  - ***Complete it in field***: The actual rating should be completed in the field from the KOP(s). When possible , it should be done as a team. Do not "dry-lab" these forms.

  - ***Time of Year***: The rating should be completed during the time of year and time of day when most people will be viewing the area of development.

  - ***Rate the Contrast***: Using the matrix, rate the degree of contrast. Be sure to include any mitigating measures.

Did you meet the VRM objectives? Determining whether or not VRM objectives have been met - - - compare the contrast ratings with the objectives for the approved VRM class from the RMP. For comparative purposes, the four levels of contrast (none, weak, moderate, and strong) roughly correspond with classes I, II, III, and IV, respectively.

  - **Document! Document! Document!** Take pictures, complete the form, write short narratives, prepare visual simulations - - - whatever it takes to describe your thought process and final recommendations. You will probably be called upon many months later to *defend your recommendation* and proper documentation is the only way you or your manager will accurately remember what took place during your analysis.

  - **Input info into NEPA document**: Enter your findings, along with the necessary documentation, in the NEPA document. Write any necessary stipulations. Be sure all resource stipulations are coordinated and in agreement.

  - **Monitor construction and operation compliance:** Be sure that the visual stipulations are being followed. Many times your hard work goes down the drain because of in-the-field changes during construction and maintenance. You must monitor throughout construction to ensure compliance. Document, document and document. If the project proponent is not in compliance, then your written notes and photographs are our only line of defense.

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

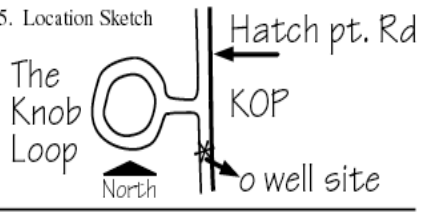
Date: Aug. 16, 1985
District: Moab
Resource Area: Grand
Activity (program): Oil/Gas

SECTION A. PROJECT INFORMATION

1. Project Name: Well Site #136
2. Key Observation Point: #15 on Hatch Point Road
3. VRM Class: Class II

4. Location
Township: 27S
Range: 21 E
Section: 24

5. Location Sketch



Section A of the Visual Contrast Rating Form locates the project and identifies the VRM class. A simple illustration identifies the project location and, just as important, the location of the KOP.

This project is an oil and gas development project that would create an access road, a leveled drilling location (pad), and production facilities should drilling result in a discovery of recoverable reserves.

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat to rolling terrain	Simple forms created by vegetative patterns	_____
LINE	Horizontal & diagonal	Weak & undulating	_____
COLOR	Dark tan to orange	Light to dark green, mottled	_____
TEX-TURE	smooth	Smooth to coarse	_____

Section B of the Visual Contrast Rating Form is where the Existing Characteristic Landscape of the Project Area is described. Note the use of simple language. Use short phrases and, most importantly, focus on the area being affected by the project. It is inappropriate to describe the background in detail if the project is to occur in the foreground.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat	Geometric & linear forms created by clearings	Cylindrical, geometric & angular
LINE	Horizontal (pad) Curved (road)	Strong irregular lines created by edge effect of clearings & roads	Vertical, horizontal & Angular
COLOR	Tan	Light Green	Tan
TEX-TURE	Fine to Smooth	Patchy	Coarse

Section C of the Visual Contrast Rating Form is where the Proposed Activity's effects on the Characteristic Landscape are described.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

ELEMENTS	1. DEGREE OF CONTRAST	FEATURES												2. Does project design meet visual resource management objectives? Yes_____ No__X__ (Explain on reverse) 3. Additional mitigating measures recommended. Yes__X__ No_____ (Explain on reverse)
		Land/Water Body				Vegetation				Structures				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
	Form			X				X				X		Evaluator's Names Date:
	Line		X				X					X		Cimarron Chacon 7/16/04 Allysia Angus
	Color			X				X				X		
	Texture			X				X				X		

Section D is organized into features and elements. The terms strong, moderate, weak and none conform to VRM Classes IV, III, II, and I. In other words, if the project creates strong contrast (impacts), it would still conform to Class IV but not to Classes I – III. If the project only causes weak contrast (impacts, it would meet the Class II VRM objective.

In the example above, the project would meet a Class II objective for Form, Color, and Texture, but only a Class III objective for Line. Note that the structures only caused a weak degree of contrast, but changes to land and vegetation caused a moderate degree of contrast to the element Line.

This tells you where to focus mitigation efforts in order to reduce the degree of impact, and thus meet the Class II VRM objective.

E. Vocabulary

- Analyze the landscape for those elements which are dominant - - - they are the most important.

- Use terminology that is meaningful to you - you are the one who 1) is going to have to use the analysis to solve design problems, and 2) is going to have to explain why you did what you did to both management and the public - - many times, months after you performed the analysis.

If everything goes right you may have a project that blends with the landscape and is virtually unseen.

Unit 11:
Visual Simulations

Objective: Illustrate the value and utility of visual simulation techniques for visual resource management. Several different software programs will be described along with example case studies in which simulations were used effectively.

Unit 12:
Writing Good EAs

A. Introduction

Objective: Students will be able to write good Visual Resource sections for a typical EA after completion of this session.

B. General Rules to Remember

- As in any EA you need to adequately describe:
  - Proposed action
  - Alternatives
  - Affected environment
  - Environmental consequences
  - Effective mitigation measures

- VRM data sources for a good EA
  - The RMP
  - The VRM inventory
  - The project description
  - The contrast rating
  - Knowledge from Resource specialists(s)
  - Input from the Public
  - Field review of project proposal
  - Photos and Visual Simulations (if needed)

- How to approach writing VRM analysis?

  - o Focus your analysis on the project area
  - o Visit the project area
  - o Do a Visual Contrast Rating(s)
  - o Write a landscape character description
  - o Do a visual simulation, review photos, visit similar project areas
  - o Identify Features affected by the project (land/water, vegetation, etc)
  - o Identify Elements affected by the project (form, line, color, texture)
  - o Include the following factors in your analysis of the project:
    - Distance
    - Angle of observation
    - Length of time projects is in view
    - Relative size or scale
    - Season of use and light conditions
    - Recovery time
    - Spatial relationships
    - Atmospheric conditions

  - o Identify impacts to Form, Line, Color and Texture. Identify what features are affected. Do the analysis in terms of the above factors.
  - o Take a professional interest in writing good EAs. Writing good EAs is as much about the analysis process as it is about writing up the results.

B. Tips for Sections of EA

- Proposed Action and Alternatives

  - o Use Section C of the Contrast Rating Form (separate forms should be completed for each Alternative)
  - o Obtain complete project description from the proponent
  - o Document in form of notes and photos from the field trip
  - o Produce visual simulations to better understand project
  - o Describe in terms of landscape character elements for landscape features
  - o Recognize that a high level EA requires more detail

- Affected Environment Section – good sources to use
  - Scenic Quality Field Inventory form (8400-1)

Form 8400-1
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCENIC QUALITY FIELD INVENTORY

Date: Feb 15, 2003
District: Rawlins
Resource Area: Lander
Scenic Quality Rating Unit: 024

1. Evaluators *(names)*
Gary Long, Cimarron Chacon, Steve Knox

2. Landscape Character *(Feature)*

	a. LANDFORM/WATER	b. VEGETATION	c. STRUCTURE
Form	Gently rolling hills with stabilized	Low, somewhat clumpy in foreground	None visible
	Sand dunes		
Line	Predominately horizontal lines	Horizontal, Lines created by subtle	None Visible
	Formed by hills and low sand dunes	Changes and variation in vegetative	
		Cover which is predominately sage brush	
Color	Tan to buff colored soils where	Gray-green, with emphasis on the gray	None Visible
	Visible. Rock outcrops are gray to	The best color from the BLM color chart	
	Gray-green & brown	Is shale green	
Texture	Smooth texture with a few	Somewhat coarse in immediate fore	None visible
	Moderately coarse areas due to	Ground. Texture changes to medium &	
	Rock outcrops	smooth as we move away from KOP	

3. Narrative
This SQRU is made up of gently rolling sagebrush covered hills interspersed with stabilized sand dunes. Vertical relief is limited. It is an open, panoramic landscape, mostly devoid of human impacts. It is very representative of typical landscapes found in the Wyoming Basin. No unusual characteristics. Vegetative cover is dominated by Wyoming sage. Grass is present but not visible. The visible color is a function of the vegetation. Very little soil or rock outcrops are visible. The most outstanding feature is the feeling of vastness and naturalness you get due to the size of the unit and the relative lack of human intrusions which are limited to roads and trails, most of which are not visible from the KOP.

  - VRM Class Objective
  - Characteristic Landscape Description – Section D Contrast Rating Form

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION			
	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat to rolling terrain	Simple forms created by vegetative patterns	n/a
LINE	Horizontal and diagonal	Weak and undulating	n/a
COLOR	Dark tans to orange	Light to dark green, mottled	n/a
TEX-TURE	Smooth	Smooth to coarse	n/a

  - Sensitivity Level
  - Distance Zones and KOPs

- Environmental Consequences
  - The Environmental Impact is the amount of **Contrast** the proposed project causes to the Existing Landscape.
  - Use Section D and narrative on back of contrast rating form

SECTION D. CONTRAST RATING		SHORT TERM X				LONG TERM								
	1.Degree of Contrast	FEATURES												
		Land/Water Body				Vegetation				Structures				2. Does Project Design meet visual resource management objectives? Yes __X__ No ____ (explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigating measures recommended. Yes __X__ No ____ (explain on reverse)
ELEMENTS	Form			X				X			X			Evaluator's Names Date:
	Line		X				X			X				
	Color			X				X		X				
	Texture			X				X		X				Cimarron Chacon 7/16/04 Allysia Angus

- Example language for impacts:
  - Land/Water Body Impacts
    - *Building a level drilling location and access road would cause a weak (minimal) amount of contrast to the form of the land. It would moderately impact line through introduction of the location and road, both of which would be visible linear features. Exposing the soil would cause a weak impact to the color in the landscape. The texture of the exposed soil would be smoother than the existing landscape, thus creating a weak contrast.*
  - Vegetation Impacts
    - *Construction of the level drilling location and access road would cause weak contrast to the form of the vegetation. Removal of vegetation would cause a moderate amount of contrast due to introduction of distinct lines in the landscape. The lighter color of new vegetation that followed completion of the project would weakly contrast with existing vegetation. The smoother texture of the new vegetation would weakly contrast with the existing vegetation.*
  - Structures Impacts
    - *The blocky, rectangular form of the structures would contrast moderately with the existing landscape. They would introduce distinct vertical lines which would strongly contrast with the existing horizontal landscape. The light color of the structures as proposed would strongly contrast with the darker color of sagebrush which is the dominant color in the natural landscape. Finally, the smooth texture of the structures would strongly contrast with the coarser texture of the surrounding sagebrush.*

- Does project meet VRM Objectives?
  - Refer to Section D of Contrast Rating Form
  - The answer is yes if:

    None = Class I
    Weak = Class II
    Moderate = Class III
    Strong = Class IV
  - What to do if answer is no?
    - Don't approve project
    - Redesign project to meet objectives
    - Amend RMP

- Mitigation measures
  - Taken from back of the contrast rating form.
  - Can often be avoided if project is planned and designed well.
  - Included even if project meets VRM objectives, in some cases.

Additional Mitigating Measures (See item 3)

1. As per agreement with company representatives, relocate drill pad 250 feet northwest behind/between low stabilized sand dunes.
2. Relocate access road behind/between stabilized dunes
3. Use low profile tanks a maximum of 12 feet high rather than the standard 18 foot tanks
4. Paint facilities a color compatible with sagebrush, the dominant veg species in the area

Unit 13:
Monitoring and Compliance

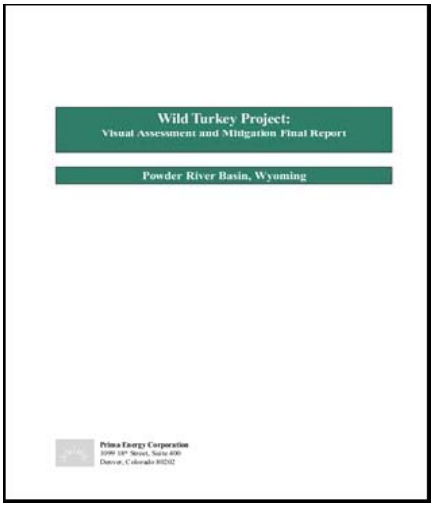
A. Introduction

Objective: At the end of this session, you will be able to outlines the purpose for follow up monitoring, elements of a monitoring plan, and examples to consider when developing a monitoring strategy.

Kickoff – What is Monitoring? Why should VRM monitoring be conducted and what are my roles and responsibilities?

There are 4 aspects of monitoring that we need to consider:

1. Compliance Monitoring – Did they do what was required?
2. Effectiveness Monitoring - Did it work?
3. Validation Monitoring – Did we ask them to do the right thing?
4. Adaptive Management – If it did not work, what changes should we make now or in the future?



The VRM Mitigation Plan should include a section on a monitoring strategy to ensure that the project is constructed according to the plans and mitigation requirements.

- Sets conditions and terms for implementation and how it will be monitored.
- Clarifies performance standards for the applicant and their operators.
- Identifies how compliance will be quantified and measured.
- Outlines corrective actions to be taken when a site is out of compliance.
- Establishes a clear understanding of expectations and a road map to successful compliance.

There is no cookbook approach to compliance monitoring – is dependent on the collective design/ BMP elements of the project's VRM plan.

B. Responsibilities

1. BLM proposed action

If the project is a BLM proposal, such as a recreation site, visitor center, fire station, road, etc., then the internal BLM project staff and ultimately the field manager must ensure that the design elements and mitigation measures are accomplished.

2. Industry proposed action
If the project is an applicant driven project, the applicant is responsible for preparing a compliance monitoring strategy that demonstrates their ability to meet VRM objectives.

- Their strategy should be based on sound design and mitigation planning principles including how to monitor and measure for compliance.
- Mitigation and monitoring plans should be a requirement identified in the Conditions of Approval.
- Critically review proposal assuring that the mitigation strategy can be implemented.

3. Determination of adequacy

The BLM is responsible:

- For assessing the credibility of the applicant's strategy
- To ensure the approved monitoring plan is being implemented by the applicant.
- Determine that the necessary tools have been provided to adequately measure compliance.
  - o If so, Accept it
  - o If not, Accept it with changes. Reject it with an outline of missing or incorrect elements and ask for resubmission.

Proper monitoring and compliance checking takes time and money, but assures successful results. Greater long term costs associated with not achieving successful results.

4. Qualifications of VRM designer/planner

- BLM
- Contractor
- Continuing education

5. How much monitoring is enough?

Monitoring Plan should be in scale with the level of development proposed. The plan should be in balance with the scale of development, VRM sensitivities and magnitude of impact:

a. Small scale projects

b. Large scale projects

c. Scale of impact

d. Special considerations

6. Tracking the project progress through photo documentation

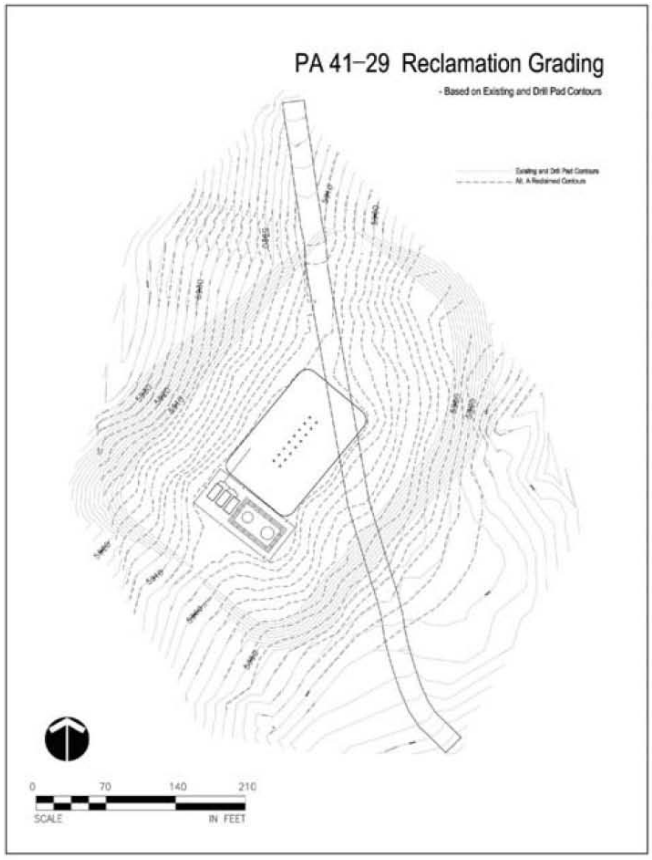
Maintain a comprehensive image file of project for referencing throughout the life of the project, including monitoring (hard copy and electronic filing):

- Photo-document the site during initial on-site review during the proposal planning phase.
- After site improvement is staked and limits delineated.
- During early construction phases.
- Construction and installation of VRM mitigation requirements.
- Post-construction monitoring of interim mitigation
- Final reclamation construction
- After monitoring of final reclamation

Design/Plan Element	**Monitoring Strategy**
Minimizing disturbance • Disturbance limits delineated on plans disturbance	Survey the boundaries limits of Flag and fence limits of disturbance Review site on a regular schedule

b. Earthwork

- Grading plan, contour grading details check — Visual review or topographical survey
- Tabulation of quantities — Derive quantities from survey
- Topsoil specification — Topsoil source, depth and quality- Sampling and testing



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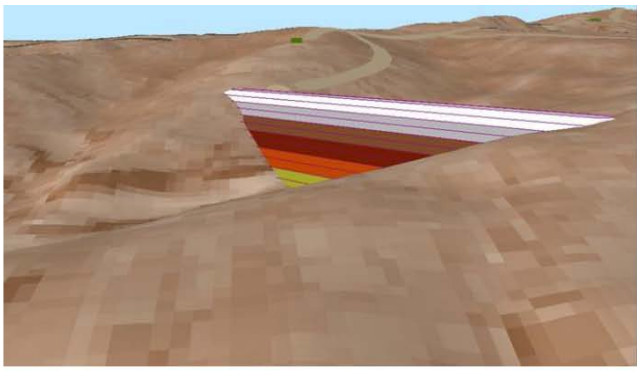
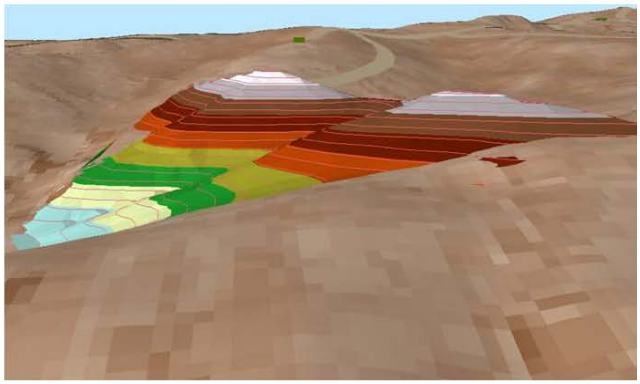


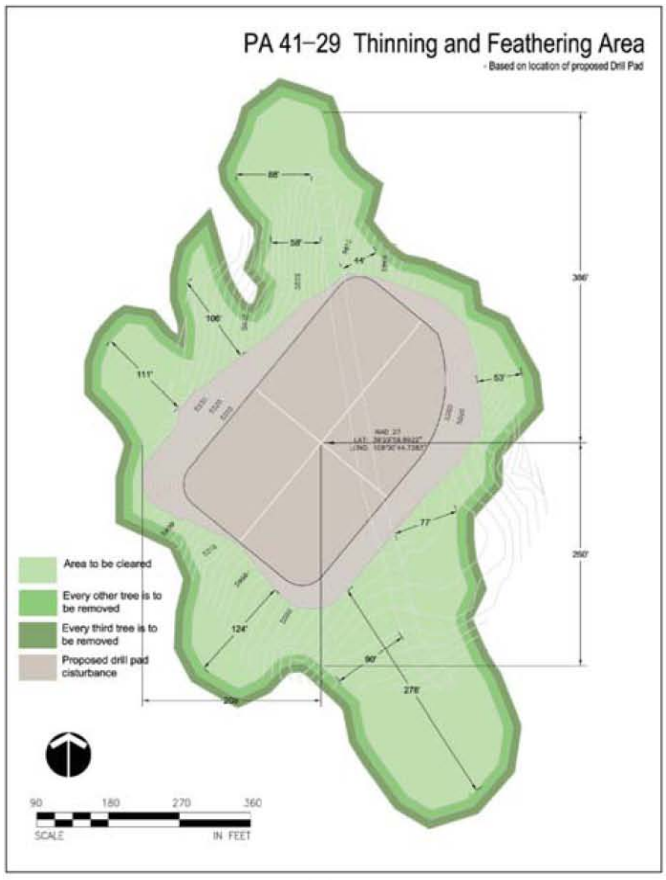
Conventional grading



Enhanced grading

c. Vegetation Manipulation

- Delineate thinning/clearing area on plans — Survey stake treatment area boundaries
- Develop visual models — Field verify using models before implementing
- Tabulation of trees to be removed — Pre-flag/paint mark the trees to be removed
- Clearing — Flag or fence the areas to be cleared
- Preservation of vegetation — Flag or fence the areas to be preserved



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d. Revegetation

• Topsoil specification	Topsoil sampling and testing
• Seed mix list species, quantities	Collect and review seed tags
• Method of seeding specification	Observe installation
• Pure Live Seed requirement	Seed testing for germination
• Seeding establishment	Monitoring germination, coverage and Seeding diversity of seeded areas
• Planting of nursery stock	Site count of installed plants and survival rate of plantings
• Vegetation establishment * maintenance	Submit a maintenance schedule Watering schedule Weed management Plant replacement Re-seeding

Appendix C

SEED MIX			
COMMON NAME	SCIENTIFIC NAME	VARIETY	POUNDS of PLS/ACRE
Indian ricegrass	*Achnatherum hymenoides*	*Paloma*	1.5
Fringed Sage	*Artemisia frigida*		0.25
Prairie Sage	*Artemisia ludoviciana*		0.25
Wyoming big sagebrush	*Artemisia tridentata ssp. wyomingensis*		1
Fourwing saltbrush	*Atriplex canescens*	*Rincon*	1.5
Shadscale saltbrush	*Atriplex confertifolia*		1.5
Sideoats Grama	*Bouteloua curtipendula*	*Vaughn or Niner*	1.5
Winterfat	*Ceratoides lanata*		0.5
Thickspike Wheatgrass	*Elymus lanceolatus*	*Critana*	1.5
Galleta grass	*Hilaria jamesii*	*Viva*	1
Western wheatgrass	*Pascopyrum smithii*	*Arriba*	2
Sandberg bluegrass	*Poa secunda*		0.5
Bluebunch wheatgrass	*Pseudoroegneria spicata*	*P-7*	1.5
Scarlet globemallow	*Sphaeralcea coccinea*		0.25
Alkali Sacaton	*Sporobolus airoides*	*Salado*	0.25

2. Monitoring timeline – the length of the monitoring period should be defined the in plan

- Dependent on design and construction elements.
- Revegetation monitoring could be as long as five years or more.
- Trend review – you may find that compliance is being achieved in advance of the anticipated schedule and release may be provided early. Opposite may occur as well.

3. Tools

- Use the information produced during design/planning phase during monitoring period
  - GPS/GIS/AutoCadd/Photoshop interface
  - Photo simulations
  - 3-D terrain models of proposed grading
  - Construction plans
  - As-built plans

- Quantify the VRM mitigation implementation using the design plans, rather than simple qualification of anticipated results.

- The dangers of relying solely on photos. Just because it looks good - does this mean that the design elements and mitigation measures were adequate? If not, explain why.

  - Create mitigation monitoring points
  - Same as Key Observation Points (KOP)
  - Different that KOPs.
  - Photo documentation points - should be taken from same location and established before construction begins. Should be identified in monitoring plan.

D. Challenges of arid and semi-arid land restoration.

1. Who Can Help

• Consult with others in your office or area that have monitoring experience, such as natural resource specialist, fluid minerals experts, range conservationist, etc. Lands and realty staff also have experience with variety of large scale projects.

2. Other Tips

• Work with proponents early on and throughout the monitoring process. Avoid surprises.

• Tips on documentation – photos, GIS, others?

• Develop a listing of best management practices for the soils, geology, vegetation in the area

3. References

BLM's Gold Book at: http://www.blm.gov/bmp/Technical_Information.htm

The new Gold Book introduces improved practices for expediting the processing of Applications for Permits to Drill (APDs) and environmental Best Management Practices (BMPs) to reduce the environmental effect of energy exploration and production.

Unit 14:
Experience Examples

A. Taos Examples

Peninsulas

Before

Improved – Modest, rustic 24” ditch,

Exposed aggregate add color and texture over concrete or asphalt

Color and texture for signs

Unit 15:
Stump the Experts

A. Introduction

Unit 16:
Course Wrap Up

A. Introduction

Objective: This unit will review the Overall Course Objective, highlight key unit lessons, and reiterate the process that BLM uses to manage for scenery via the Visual Resource Management System. An opportunity will be provided for final questions and clarification of learning points.

B. Overall Course Objective

Now, having participated in this course, you should be able to:

- Describe the basic principles and concepts of VRM.
- Communicate the role of visual resource management in BLM land use planning and activity planning.
- Demonstrate the skills and knowledge necessary to inventory visual resources, analyze the landscape, and develop mitigation strategies for minimizing contrast to the landscape from proposed surface-disturbing activities.

C. Unit Highlights

- Scenic resources are public resources.
- BLM has a legal obligation to manage for scenery.
- Visual Resource Management (VRM) is our system for scenery management.
- VRM Process Overview
    - 1) Inventory Scenic Values
    - 2) Establish Management Objectives
    - 3) Evaluate/Design Activities to Meet Objectives
- VRM is a “Language for Looking at Landscapes”
    - Types of Landscapes (Panoramic, Feature, Enclosed..)
    - Elements of Landscape Character
        - FORM
        - LINE
        - COLOR

        - TEXTURE
    - Landscape Analysis Factors (Contrast, Sequence, Convergence…)

- Land Use Planning and VRM

    - VRM Inventory Classes
        - Scenic Quality
        - Sensitivity Levels
        - Distance Zones

    - VRM Management Classes I-IV
    - VRM and other Land Use Allocations in the RMP
    - Use of GIS and VRM

- Project Level Planning and VRM

    - Site Planning Considerations
    - Observation
    - Project Design
    - Design Strategies
    - Environmental Factors

- Project Analysis and Evaluation

    - Visual Contrast Rating System

        - Obtain Project Description
        - Identify VRM Objectives
        - Select Key Observation Points
        - Prepare Visual Simulations
        - Complete Contrast Rating Form

    - Documentation
    - Vocabulary

- Writing Good Environmental Documents

    - Proposed Action
    - Alternatives
    - Affected Environment
    - Environmental Consequences
    - Mitigation

- Design and Mitigation Experiences

Your Vision for the Next 6 Months

Identify 3 commitments that you plan to make in your office over the next 6 months regarding visual resource management. Identify what, by whom and when will this be accomplished. This will be mailed to your office in February, 2006.

Commitment 1:

What:

By Whom:

Date to be Accomplished

Commitment 2:

What:

By Whom:

Date to be Accomplished

Commitment 3:

What:

By Whom:

Date to be Accomplished

"Even if you're on the right track, you'll get run over if you just sit there" Will Rogers

17. Appendix A
IM's, IB's, and IBLA Decision

A. IM No. 2000-096, Use of VRM Class I Designation in Wilderness Study Areas

B. IB No. 98-135, VRM Policy Restatement

C. IBLA 98-144, et al., Southern Utah Wilderness Alliance

D. VRM Inventory for the New Millennium

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

May 22, 1998

In Reply Refer To:
8400 (250) N

EMS TRANSMISSION 5/27/98
Information Bulletin No. 98-135

To: All Field Officials

From: Group Manager, Recreation Group

Subject: Visual Resource Management (VRM) Policy Restatement

It has been brought to my attention that there is a lack of understanding in some of our field offices regarding the need for incorporating VRM in our land-use planning and environmental documents, and in our on-the-ground operative decisions. This memorandum is a reiteration of the current Bureau policy.

It is Bureau policy that VRM management classes be assigned to all public lands as part of the Record of Decision for an RMP, and that visual design considerations shall be incorporated into all surface disturbing projects occurring on public lands regardless of the size or potential visual impact of these projects.

Several manuals/handbooks establish Bureau policy for the administration and use of the Visual Resource Management system. They include:

+ BLM Manual 8400 - Visual Resource Management, dated 4/5/84
+ BLM Manual Handbook H-8410 -1 - Visual Resource Inventory, dated 1/17/86
+ BLM Manual Handbook H-8431-1 - Visual Resource Contrast Rating, dated 1/17/86
+ BLM Manual 1616 - Prescribed Resource Management Planning Actions, dated 4/6/84
+ BLM Manual 1620 - Supplemental Program Guidance, dated 11/14/86
+ BLM manual 1621 - Supplemental Guidance For Environmental Resources, dated 1/14/86

It is important to consider the applicable national laws and as well as the above manuals/handbooks when attempting to interpret Bureau policy and intent. Reading single sentences or phrases out of context can be misleading.

The excerpts from these manuals/handbooks, noted Attachment 1, capture the spirit and intent of the pertinent national laws and the Bureau VRM policy. This language affirms that the Bureau has a basic stewardship responsibility to manage visual values on public lands and that local management discretion for decisions related to visual resource management issues is guided by this basic stewardship responsibility and decisions in planning documents.

In summary, it is the intent and policy of both the Department and the Bureau of Land Management that the visual resource values of public lands must be considered in all land-use planning efforts and surface disturbing activities. This does not mean that VRM should be used as a method to preclude all other resource development. It means that the visual values must be considered and those considerations documented in the decision-making process, and that if resource development/extraction is approved, a reasonable attempt must be made to meet the VRM objectives for the area in question and to minimize the visual impacts of the proposal.

It is also important to understand that the VRM Contrast Rating Process, which is part of the VRM system, should not be viewed as a means to preclude development, but rather as a design tool to assist management in the minimization of potential visual impacts.

Please contact Richard Hagan, the Bureau's National VRM Coordinator at (303) 236-9508, if you have any questions.

Signed by:	Authenticated by:
Rodger Schmitt	Robert M. Williams
Group Manager	Directives, Records
Recreation Group	& Internet Group,WO540

1 Attachment
1- Visual Resource Management Guidelines, Abstracted (4 pp)

Visual Resource Management Guidelines, Extracted

I 8400 - VISUAL RESOURCE MANAGEMENT, dated 11/14/86

.01 Purpose. This section describes the overall policy direction for Visual Resource Management (VRM) in the Bureau of Land Management (BLM).

.02 Objectives. The objective of Visual Resource Management is to manage public lands in a manner which will protect the quality of the scenic (visual) values of these lands.

.03 Authority.

A. Federal Land Policy and Management Act of 1976, 43 U.S.C. 1701 et. seq.;

1. Section 102 (a) (8). States that " . . . the public lands be managed in a manner that will protect the quality of the . . . scenic . . . values"

2. Section 103 (c). Identifies "scenic values" as one of the resources for which public land should be managed.

3. Section 201 (a). States that "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including scenic values) . . ."

4. Section 505 (a). Requires that "Each right-of-way shall contain terms and conditions which will . . . minimize damage to the scenic and esthetic values . . ."

B. National Environmental Policy Act of 1969, 43 U.S.C. 4321 et. Seq.;

1. Section 101 (b). Requires measures be taken to" . . . assure for all Americans . . . esthetically pleasing surroundings . . ."

.04 Responsibility.

A. Director.

1. Each program (i.e., Range, Forestry, Minerals, Lands, etc.) involved in resource development work is responsible for protecting visual values. This includes ensuring that" . . . visual values are adequately considered in all management activities . . "

B. [Self-explanatory]

C. Area Manager.

1. Prepares and maintains on a continuing basis an inventory of visual values on public lands and ensures that these values are adequately considered in the land-use planning and decision making processes.

2. Ensures that visual impacts are minimized in all resource development activities including non-BLM initiated projects.

3. [Self-explanatory]

.06 Policy.

A. "The Bureau has a basic stewardship responsibility to identify and protect visual values on public lands. . . ."

1. "The Bureau shall prepare and maintain on a continuing basis an inventory of visual values on all public lands. . . . The goal is to have a completed VRM inventory for each RMP effort. . . ."

2. Visual management objectives (classes) are developed through the RMP process for all Bureau lands. The approved VRM objectives shall result from, and conform with, the resource allocation decisions made in RMP'S.

3. [Self-explanatory]
4. The approved VRM objectives (classes) provide the visual management standards for the design and development of future projects and for rehabilitation of existing projects.

5. Visual design considerations shall be incorporated into all surface disturbing projects regardless of size or potential impact. . . "

6. The contrast rating process " . . . is used as a visual design tool in project design and as a project assessment tool during environmental review. Contrast ratings are required for proposed projects in highly sensitive areas or high impact projects, but may also be used for other projects where it would appear to be the most effective design or assessment tool. A brief narrative visual assessment is completed for all other projects which require an environmental assessment or environmental impact statement".

.07 Overview of visual resource management system

A. The VRM System. Public lands " . . . Visual management objectives are established in RMP'S in conformance with the land use allocations made in the plan. These area specific objectives provide the standards for planning, designing, and evaluating future management projects. . . . The VRM system therefore, provides a means: to identify visual

values; to establish objectives through the RMP process for managing these values; and to provide timely inputs into proposed surface disturbing projects to ensure that these objectives are met".

B. Use of Basic Landscape Design Principles. Assigning values to visual resources ". . .. The information generated through the VRM system is to be used as a guide. The decision on the amount of visual change that is acceptable is made by the field manager.

(*The reference here is that management discretion is tied to project development, not resource management planning decisions*)
II BLM MANUAL HANDBOOK 8410-1, VISUAL RESOURCE INVENTORY, dated 1/17/86

A. Overview. The visual resource inventory process provides BLM managers with a means for determining visual values " . . . Visual resource management classes are established through the RMP process for all BLM- administered lands . . . Visual management objectives are established for each class."

B. Implementation Options. The detail of the inventory will vary with the visual character ". . . It may be necessary to modify or make adaptions to the inventory system . . . These adaptations must 1) provide a more cost-effective way to complete a quality inventory, and 2) keep the conceptual framework of the . . . (VRM) system in tact."

V-1. Visual Resource Inventory Classes. " . . . Inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities."

V-2. Visual Resource Management Classes. Visual resource management classes are assigned through RMP'S. The assignment of visual management classes is ultimately based on the management decisions made in RMP'S. However, visual values must be considered throughout the RMP process. All actions proposed during the RMP process that would result in surface disturbance must consider the importance of the visual values and the impacts the project may have on these values. Management decisions in the RMP must reflect the value of visual resources. . . ."

III 1616 - PRESCRIBED RESOURCE MANAGEMENT PLANNING ACTIONS, dated 4/6/84

.1 Identification of Issues. This action ". . .. Other resource uses and management activities not involved with the identified planning issues are analyzed as appropriate during the planning process so that all the various public land resources are covered by the RMP at the end of the process."

.16 Comprehensive Aspects of a Resource Management Plan. "A program activity or resource management concern need not be involved in an issue to be considered further in the planning process. A completed RMP must include decisions, terms, and conditions which apply to all resource management activities in the resource area and all the public lands within the resource area. . . ."

IV 1620 - SUPPLEMENTAL PROGRAM GUIDANCE, dated 11/14/86

.02 Objectives. " The 1620 series of the BLM manual contains activity specific guidance for use in resource management planning". ". . . The overall objectives of the 1620 series are to:

A. Identify program specific determinations that are usually made during resource management planning. ". . ."

.06 Policy. "The resource management planning determinations set forth in the 1620 series of the BLM Manual are required in every resource management plan and, as applicable, every plan amendment except in the following situations. If one of these exceptions applies and, as a consequence, a specific determination will not be made, the plan or plan amendment involved must contain an explanation of why the determination will not be made".

A. A determination is not required if the resource in question is not present or potentially present in the resource area and if there is no record of interest or expression of interest in the resource. ". . ."

V 1621 - SUPPLEMENTAL GUIDANCE FOR ENVIRONMENTAL RESOURCES, dated 11/14/86

.4 Visual Resources.

.41 Determinations.

A. Resource Management Planning. The following visual resources related determinations are required in every resource management plan unless one of the exceptions discussed in BLM Manual Section 1620.06 applies.

1. Management Objectives. Management objectives are established for the visual resources in the planning area through the assignment of visual resource management (VRM) classes. The VRM classes are assigned to all public lands within the resource area. Each class " . . ."

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

March 21, 2000

In Reply Refer To:
8400 (250) P

EMS TRANSMISSION 03/27/2000
Instruction Memorandum No. 2000-096
Expires: 09/30/2001

To: All State Directors

From: Assistant Director, Renewable Resources and Planning

Subject: Use of Visual Resource Management Class I Designation in Wilderness Study Areas

This memorandum provides clarification on the appropriate Visual Resource Management (VRM) Class designation to be used when preparing Resource Management Plans (RMPs), or other management plans or guidance for lands that contain Wilderness Study Areas (WSAs).

Specifically, the Bureau of Land Management (BLM) Handbook, H-8410-1, Visual Resource Inventory, states on page 6, paragraph 1, that ". . . Class I is (emphasis added) assigned to those areas where a decision has been made previously to maintain a natural landscape. This includes areas such as wilderness areas, . . . and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape." The BLM has interpreted this statement to include WSAs until such time as these areas are designated as wilderness or released for other uses by the Congress.

It is important to understand that in these situations, the VRM management objectives are being used to support WSA management objectives. For WSAs, this is not only about visual values as many WSAs do not necessarily contain exceptionally high scenic values. The primary objective of WSA management is to retain the WSA's natural character essentially unaltered by humans during the time it is being managed as a WSA.

Therefore, it is the Bureau position, recognizing case-by-case exceptions for valid existing rights and grandfathered uses, that all WSAs should be classified as Class I, and managed according to VRM Class I management objectives until such time as the Congress decides to designate the area as wilderness or release it for other uses. If a WSA is designated as wilderness, the area would continue to be managed as VRM Class I. However, if the WSA is released, the RMP for the area would need to be amended and appropriate VRM management objectives established. This policy applies to all future plans and plan amendments.

The attachment to this memorandum consists of questions and answers that may be helpful in fully understanding this policy clarification.

Please contact Rich Hagan of my staff at (303) 236-9508 regarding technical implementation of this memorandum.

Signed by:

Elaine M. Brong
Deputy Assistant Director
Renewable Resources & Planning

Authenticated by:
Robert M. Williams
Directives, Records
& Internet Group,WO540

1 Attachment
1 - Questions and Answers - Visual Resource Management Policy Clarification for WSAs (2 pp)

QUESTIONS & ANSWERS
VISUAL RESOURCE MANAGEMENT POLICY CLARIFICATION FOR WSA'S

Q. What is the reason for this policy clarification?

A. This policy clarification will insure consistent application of the visual resource management policy for wilderness study areas when plans and plan amendments are prepared.

Q. Why should wilderness study areas be included as Class I areas in future planning efforts?

A. Class I is assigned to areas where a management decision has been made previously to maintain a natural landscape. WSAs are administratively or Congressionally designated areas where the decision has been made to retain a natural landscape until Congress makes a decision as to its future management.

Q. Is this policy clarification consistent with the H 8400-1, Visual Resource Inventory Handbook?

A. Yes. The clarification is consistent with the Visual Resource Inventory Handbook, H-8400-1, Section V.A.1., which states that administratively designated areas with an objective of preserving an existing natural landscape should be assigned Class I. This is clearly the case with Wilderness Study Areas.

Q. Why were WSAs not specifically included in the H 8400-1 Handbook?

A. A specific reference to WSAs in the 1984 Handbook was probably an oversight. The purpose of the Instruction Memorandum is to clarify the intent of the Handbook.

Q. What is the process for implementing this policy clarification?

A. This policy should be incorporated in all future plans and plan amendments in areas with WSAs. It is not necessary to amend existing plans solely to change VRM class ratings.

Q. Why is a VRM Class I needed for WSAs? Doesn't the BLM's Interim Management Policy adequately protect WSAs?

A. The BLM's Interim Management Policy prevents the impairment of wilderness values, but does allow some modifications to the natural character of the area if modifications are found not to impair or are allowed because of valid rights, grandfathered activities, safety considerations or other reasons. In these cases visual resource management complements interim management by providing techniques to insure that changes are designed not to attract attention.

Q. Why should WSAs with low scenic quality be classified as Class I areas?

A. The visual resource management process takes into consideration the concepts of both scenic quality and natural appearing landscapes. Areas such as wilderness, wilderness study areas, and wild sections of wild and scenic rivers are designated with the intent to preserve their natural appearing landscape regardless of their scenic value. High scenic quality may be a value of these areas, but is not necessary for their designation.

Q. Will Class I prevent construction of structures or maintenance of existing structures that would be allowed in WSAs under the Interim Management Policy (IMP)?

A. No. Resource Management Plans addressing this issue should note that the visual resource management (VRM) objectives are designed to support the IMP guidelines to not impair the natural character of the existing landscape. They should never be used to supercede the IMP guidelines.

SOUTHERN UTAH WILDERNESS ALLIANCE ET AL.

IBLA 98-144, 98-168, 98-207 Decided May 20, 1998

Separate appeals from decisions of the Utah State Office, Bureau of Land Management, rejecting appeals from approval of an application for permit to drill and removal of a visual resource stipulation from a Federal oil and gas lease. SDR UT 98-3; UTU-75058.

Decisions in IBLA 98-144 and 98-207 affirmed; appeal in IBLA 98-168 dismissed; petitions for stay denied as moot.

1. Appeals: Generally--Appeals: Jurisdiction--Oil and Gas Leases: Drilling

   A decision approving an application for a permit to drill an oil and gas well under 43 C.F.R. § 3162.3-1 is first subject to administrative review by the appropriate BLM State Director in accordance with 43 C.F.R. § 3165.3(b). Where an individual fails to exercise his right to seek State Director review, he may not appeal a subsequent decision of the State Director, issued to a third-party, affirming the action taken by the authorized officer.

2. Administrative Practice--Environmental Quality: Generally--Federal Land Policy and Management Act of 1976: Land-Use Planning--Oil and Gas Leases: Stipulations

   Where, as a result of a resource management planning process, resource allocation decisions are made which will result in impacts inconsistent with the visual resource inventory classification assigned to a parcel of land, that classification should be changed to reflect the visual resource management classification appropriate to the resource allocation decision.

3. Administrative Practice--Environmental Quality: Generally--Federal Land Policy and Management Act of 1976: Land Use Planning--Oil and Gas Leases: Stipulations

   Where an analysis of an RMP indicates that the resource allocation decisions are inconsistent with the visual

resource management classification assigned to the parcel of land, and the record further indicates that the visual classification was assigned in error, the Board will affirm the implementation of the resource allocation decision.

4. Administrative Practice--Environmental Quality: Generally--Federal Land Policy and Management Act of 1976: Land-Use Planning

Where the factual predicates upon which a decision involving resource allocation in a resource management plan was based cease to exist, the proper course of action is to amend or revise the resource management plan to reflect the new realities.

5. National Environmental Policy Act of 1969: Environmental Statements--Oil and Gas Leases: Generally

A finding that an application for a permit to drill will not have a significant impact on the human environment and, therefore, that no environmental impact statement is required, will be affirmed on appeal where the record establishes that relevant areas of environmental concern have been identified and the determination is the reasonable result of environmental analysis made in light of measures to minimize environmental impacts.

APPEARANCES: Scott Groene, Esq., Salt Lake City, Utah, and W. Herbert McHarg, Esq., Moab, Utah, for Southern Utah Wilderness Alliance; Kimberly A. Tempel, Esq., and Constance E. Brooks, Esq., Denver, Colorado, for Legacy Energy Corporation; Craig C. Halls, Esq., San Juan County Attorney, Monticello, Utah, for the San Juan County Commission; Elaine England, Esq., Office of the Field Solicitor, Salt Lake City, Utah, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE BURSKI

Southern Utah Wilderness Alliance (SUWA) has appealed from a decision of the Utah Deputy State Director, Bureau of Land Management (BLM or Bureau), issued on January 16, 1998, affirming a December 5, 1997, decision of the San Juan Resource Area (SJRA) Manager which had approved an application for permit to drill (APD), filed by Legacy Energy Corporation (Legacy). This appeal has been docketed as IBLA 98-144. The San Juan County Commission (the County) has also filed an appeal from the Deputy State Director's decision. That appeal is docketed as IBLA 98-168. Finally, SUWA has separately challenged the February 5, 1998, letter from the Associate State Director rejecting its protest to the Notice issued on
December 9, 1997, that BLM was removing a special stipulation relating to

visual resource management standards from Federal oil and gas lease UTU-75058 on the grounds that it had been improperly attached to that lease. This appeal is docketed as IBLA 98-207.

Together with its notices of appeal, SUWA has requested that the Board issue a stay pursuant to 43 C.F.R. § 3165.4(c) with respect to both IBLA 98-144 and IBLA 98-207. Additionally, Legacy has filed a motion for leave to appear as amicus curiae in IBLA 98-144. Finally, the County has filed a request for an extension of time in which to submit a statement of reasons in IBLA 98-168, and, subsequently, a statement of reasons for appeal. For the reasons provided below, we hereby recognize Legacy as an amicus curiae in these proceedings, dismiss the appeal of the County, affirm the decisions of the Utah State Office in denying the appeals submitted by SUWA, and deny the request for a stay on the grounds of mootness.

A detailed knowledge of the factual background in which these appeals arise is a predicate for understanding our actions herein. The approved APD, under challenge herein, authorized, subject to various conditions, the drilling of the Lockhart Federal No. 1 well on a site located in sec. 5, T. 29 S., R. 21 E., Salt Lake Meridian, Utah, within noncompetitive Federal oil and gas lease UTU-75058. This lease had issued effective April 1, 1996, and had been committed to the Lockhart Canyon Unit on March 6, 1997. Together with the standard lease stipulations, the lease was impressed with a special Visual Resource Management (VRM) stipulation advising that "[t]he area has high quality visual resources," and notifying the lessee that "[e]xploration, drilling, and other development or production activities must meet the objectives of VRM Class II."

Legacy submitted its APD on March 31, 1997, designating a drilling location in the SW¼NE¼ sec. 5, with an estimated drilling depth of 5,400 feet. Pursuant to this request, SJRA conducted an environmental assessment (EA). See EA UT-069-96-029, dated June 16, 1997. As a result of concerns raised in the development of the EA, various conditions of approval (COA's) were attached to the APD, and Legacy agreed to relocate the well site within sec. 5 to minimize impacts on the desert bighorn sheep. See Decision Record/Finding of No Significant Impact, dated August 26, 1997 (DR/FONSI I).

Of particular note were the concerns raised with respect to possible impacts of the proposed action on desert bighorn sheep as well as the effects the proposal might have on visual resources, particularly as viewed from various vantage points within nearby Canyonlands National Park. In response to the concerns related to impacts on desert bighorn sheep, COA No. B-3 provided:

> All initial construction activity and well drilling operations shall be prohibited from April 1 to August 31 and October 15 to December 31 to avoid desert bighorn sheep lambing and rutting periods and the dry summer months when the Lockhart

> Basin sheep herd is dependent upon the permanent spring as a source of drinking water. [1/]

In addition, COA No. B-8 required the installation of a gate and fence across the access road to prevent recreational vehicular access along the road to the well site. The only COA which dealt with effects on visual resources required that all production facilities be painted brown. See COA No. B-9.

The APD, with the COA's delineated in DR/FONSI I, was formally approved on August 27, 1997. However, approval of the APD was subsequently challenged by SUWA and the County, both of whom sought State Director review (SDR). Though each of these entities focussed their challenge on COA No. B-3, they proceeded from opposite perspectives. Thus, SUWA contended that COA No. B-3 provided inadequate protection to the desert bighorn sheep, while the County assailed BLM for the drilling restrictions which it had imposed on Legacy, arguing that they exceeded the limitations allowed under 43 C.F.R. § 3101.1-2. 2/

By decision dated October 24, 1997, the Deputy State Director set aside the approval of the APD and remanded the DR/FONSI to the SJRA for

---

1/ We note that the DR/FONSI I rejected a further proposal to require that all workover activities and transportation of crude oil and produced waters be prohibited during lambing and rutting periods based on the conclusion in the EA that "these activities would be less impacting on desert bighorn sheep than initial drilling operations because they would be repetitious and predictable" and "[s]tudies show that desert bighorn sheep will habituate to human activity if the activity is predictable and non-threatening." (DR/FONSI I at 2.)

2/ This regulation provides that a lessee has the right to use so much of the leased lands as are necessary to the exploration for and extraction of the leased resource, subject to stipulations in the lease and "such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed." Id. The regulation recognizes that such measures must be consistent with the lease rights granted but notes:

> "At a minimum, measures shall be deemed consistent with lease rights granted provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year."

Id. This last provision is referred to by the County as the "200 meter/60-day" rule.

further analysis and consideration. See SDR UT 97-11. In this decision, the Deputy State Director noted that the lease contained no special stipulation respecting the desert bighorn sheep and that the SJRA Resource Management Plan (RMP), which had authorized the issuance of leases for the area without protective stipulations, had not been amended by the subsequent Desert Bighorn Sheep Management Plan. From this, the Deputy State Director concluded that "[b]y issuing the lease, BLM accepted the possibility of impacts to the sheep," only subject to such reasonable measures as BLM might impose under 43 C.F.R. § 3101.1-2 to minimize adverse impacts to other resource values. (Decision at 2.)

The Deputy State Director noted that, under current BLM policy, restrictions to "existing" leases in excess of that delineated in the regulations (see note 2, supra) could only be imposed upon a finding that they were necessary to prevent unnecessary and undue degradation of public lands and their resources. While the SJRA Manager had, in fact, indicated that BLM's decision to relocate the well site within sec. 5 and to impose limitations on the periods in which drilling would be allowed were necessary in order to avoid unnecessary and undue degradation of the public lands, the Deputy State Director complained that "complete analysis supporting that decision is not included in the EA." Id.

The Deputy State Director was equally critical of the EA's discussion of alternative drilling sites and production methods. Id. at 3. Based on the foregoing, the Deputy State Director directed the SJRA Manager to "revisit the analysis presented in the EA in conjunction with the requirements of" current BLM policy and to supplement the analysis of alternative well sites and production methods.

In conformity with the Deputy State Director's decision, the SJRA subsequently expanded its environmental analysis, particularly with respect to the impacts on desert bighorn sheep which could be reasonably expected to occur as the result of Legacy's APD. See EA UT-069-97-029, dated Dec. 5, 1997. Because of the importance of this issue in the matter of a stay, we will set forth the EA's analysis in some detail.

Initially, the EA described the existing environment as it related to desert bighorn sheep. In doing so, it provided a historical framework which illuminates many of the problems which these appeals present:

> The Lockhart Basin area was not identified as, or included within, "Seasonal Wildlife Protection Areas" as a "Bighorn Lambing And Rutting Area" for the protection of crucial desert bighorn sheep habitats and the continued existence of bighorn populations. At the time the San Juan RMP was approved, the SJRA did not have the information subsequently gained from UDWR [Utah Division of Wildlife Resources] radio telemetry data and, additional desert bighorn sheep observations within the

> Lockhart Basin area. The bulk of this data was collected after the San Juan RMP was approved. In effect, this constitutes a special circumstance since data collected after the approval of the San Juan RMP have found that the dynamics of this bighorn population are changing. The population is increasing, and the existence of a key spring which is fundamental to the continued existence of this bighorn population has been verified.
>
> The Lockhart Basin desert bighorn sheep herd is contiguous with the Needles (Canyonlands National Park) and North San Juan herds. These three bighorn herds could be considered a single population because there are no geographic barriers to prevent movement and gene flow between the three units. At one time, the North San Juan bighorn herd was the largest in Utah and the source from which many transplants were made. However, this bighorn herd declined drastically in the mid 1980's due to a disease problem. By 1989, only 8 bighorn were counted on the aerial survey of this unit. The unit still remains at low population numbers.
>
> Little was known about the Lockhart Basin bighorn population, and biologists assumed that they had met the same fate as that of the North San Juan population. Because of this assumption, the San Juan RMP left the Lockhart Basin area open to oil and gas exploration and leasing with no stipulations for desert bighorn sheep conservation.

EA UT-069-97-029, at 20-21. The EA then described how, after a visitor reported a sighting of a group of desert Bighorn sheep in Lockhart Basin in 1989, subsequent aerial surveys by UDWR confirmed the existence of a small, but growing, healthy bighorn herd. As the EA noted "[t]his was a very important finding, because these bighorn had survived the disease outbreak" and could help repopulate adjacent areas, particularly if the Lockhart Basin herd had some resistance to the disease which had decimated the desert bighorn sheep in adjacent areas. Id. at 21.

The EA explained that recent radio telemetry and aerial surveys had indicated a herd size of between 75 to 100 sheep, a sufficient number to make the herd viable under present scientific estimates. Of equal importance, a permanent spring near the base of the cliff had been identified as being the key permanent water source used by the Lockhart Basin herd. Indeed, the EA stated that this spring "has been determined by the UDWR and BLM, to be essential to the long term survival of the Lockhart Basin bighorn, especially during dry and drought periods." Id. This spring was located 3,000 feet east of the proposed well pad's revised location. As

the EA had earlier noted, the well pad could not be moved any further to the west without requiring directional drilling by Legacy. Id. at 17. 3/

Moreover, the EA noted that the adjacent talus slope contained "critical spatial and/or escape terrain, rutting, lambing, migration and foraging habitat for the desert bighorn sheep." Id. at 22. This talus slope was particularly heavily utilized during the rutting and lambing periods (October 15 through December 31, and April 1 through July 15, respectively). The proposed drilling pad would be located approximately 1,000 feet southwest of the toe of the talus slope. Id.

In discussing anticipated impacts of the Legacy proposal, the EA noted:

> Site preparation and drilling operations taking place during the critical lambing and rutting periods (April 1 through July 15 and October 15 through December 31, respectively) would interfere with bighorn rutting, lambing, lamb rearing and migration. In addition, animal access to the key spring would be reduced, which would result in risk to the long term survival of the area's desert bighorn sheep herd.
>
> Research has documented the importance of space as a critical habitat requirement for desert bighorn sheep. When bighorn are forced to move to other sources of water then increased animal densities around these water sources could occur. Catastrophic die-offs have occurred in Utah, New Mexico, Arizona, California and throughout desert bighorn sheep range as a result of disease transmission when populations have become concentrated or exceeded carrying capacities. Scabies, blue tongue, sinusitis, and other diseases have caused these die-offs, but usually only after population levels have exceeded a critical threshold. It is also important to mention that populations which fall below "viable population numbers" are at risk of disappearing from their range within 50 to 70 years.
>
> * * * * * * *
>
> [K]ey water sources are crucial to the continued existence of bighorn populations throughout the dry months (April 1 through August 31 in the Lockhart Basin area), especially during drought

3/ The EA had also noted that the well site had already been moved 360 feet southeast of Legacy's original proposal in order to avoid excessive cut and fill requirements and to maximize the distance from the talus slope used by the desert bighorn sheep. Id.

> years. In non-drought years desert bighorn sheep may not be as dependent upon perennial water sources if free water is temporarily captured at other locations [4/], allowing animals to range greater than 2 miles from key perennial water sources. If the proposed well is drilled during a year of low precipitation, and free water has not been temporarily captured at other locations, the dependency of bighorn on the key spring for water is amplified. The opposite effect would be realized during a year of above normal precipitation, resulting in the temporary capture of free water accessible for bighorn consumption.
>
> [F]lat areas within 0.385 miles of talus slopes and areas within 0.75 miles of permanent water sources are [considered] critical habitat for desert bighorn sheep. Studies of desert bighorn sheep within the Greater Canyonlands/Arches National Park area have found that lactating ewes require a continuous source of water within 0.6 miles of lambing areas. Studies of desert bighorn sheep in Canyonlands National Park found that 94% of observations for all ewe groups were within 0.75 miles of permanent water sources during dry periods. The site preparation and drilling operation could interfere with desert bighorn sheep trailing along the talus slope to access water at the key spring. If bighorn access to the key spring is denied for a period of a few days (3 days or more) during the rutting and lambing seasons or during a dry period, then long term impacts to the Lockhart Basin desert bighorn sheep population would occur. These impacts would range from abandonment of habitat to increased bighorn mortality, without limitation as to age or sex group. If dominant or alpha rams are prematurely lost to the population, then the genetic integrity of the affected segment of the population would suffer long term decline. The genes of these animals would not be passed on to succeeding generations.

Id. at 25-27 (citations omitted; emphasis supplied).

The EA also noted that single animal or group wariness to human contact would increase if the well proved productive. However, the EA noted that studies had also indicated that desert bighorn sheep can habituate to a variety of human influences and intrusions, so long as the activity is predictable and nonthreatening in nature. The EA concluded that, provided

4/ The EA had earlier noted that, in 1997, four guzzlers had been developed in the Lockhart Basin to provide supplemental water supplies in nondrought periods. The EA noted, however, that "[t]hese guzzlers are not designed to replace the key spring or reduce its importance to the Lockhart Basin desert bighorn sheep herd." Id. at 22.

that the drilling and site preparation activities did not occur during the critical rutting or lambing periods, allowance of the operation would not jeopardize the Lockhart Basin desert bighorn sheep in either the short or long run. Id. at 29.

Based on its analysis of anticipated impacts, the EA then recommended various mitigating conditions prerequisite to allowance of the Legacy proposal. These generally paralleled those suggested in the original EA. However, this EA also provided:

> If the Lockhart Basin area receives well above average precipitation which significantly increases the availability of free water for desert bighorn sheep usage during a particular year, then the well could be drilled after the lambing season (July 15). The allowance of drilling after July 15 would be dependent upon actual "ground truth studies" conducted to assure that desert bighorn sheep water requirements are not compromised by drilling the proposed well during the dry time of the year, or in years of average or low precipitation.

Id. at 32.

On December 12, 1997, the SJRA Manager issued a second Decision Record/Finding of No Significant Impact (DR/FONSI II) approving the APD subject to attached COA's. While the COA's were renumbered, they generally tracked the content of the original COA's approved on August 27, 1997, with two important exceptions. Consistent with the discussion in the EA relating to the possibility of conducting initial site preparation and well drilling operations during periods of above normal precipitation, COA No. B-1 provided, inter alia, that "[t]he BLM Area Manager may grant an exception which would allow these operations to occur between July 16 and September 1, if it is determined the precipitation has provided free water at locations other than the key spring and, the free water sources are sufficient to ensure that bighorn water requirements are met." Second, original COA No. B-10 had simply provided that "[p]rior to installation of production equipment and facilities, the operator shall notify the BLM to schedule an on-site inspection." This provision was significantly expanded in the revised COA's where it appears as COA No. B-6. As revised, this COA provided:

> Prior to installation of production equipment and facilities, the operator shall notify the BLM to schedule a pre-work conference. The BLM will determine, at that time, reasonable measures necessary to mitigate the visual impacts to the maximum extent practical. These measures shall include, but are not

limited to, use of natural topography to screen facilities, orientation of specific production equipment, flare pit design and construction, artificial screens, etc.

Thereafter, the APD was approved on December 16, 1997, subject to the revised COA's.

SUWA then filed a second request for SDR. As noted above, by decision dated January 16, 1998, the Deputy State Director affirmed the approval of the APD and rejected SUWA's appeal. See SDR UT 98-3. He noted that there were three main areas of concern upon which SUWA premised its objection and he addressed them seriatim. Initially, the Deputy State Director dealt with SUWA's claims that approval of the APD violated the SJRA's prescriptions for visual resources. The objections by SUWA were premised on the Class II VRM designation of Lockhart Basin in the RMP and SUWA's assertion that allowance of the proposed action did not conform to the RMP. Moreover, SUWA pointed out that the lease contained an express stipulation which mandated protection of the VRM classification.

The Deputy State Director dealt with this challenge in two discrete ways. First of all, he noted that, in fact, the EA did address the impacts of the proposed action on visual resources. While the EA identified changes in texture and color of the landscape that would be evident as a result of drilling and production operations, the Deputy State Director argued that VRM objectives are, in fact, essentially guidelines which did not constitute absolute requirements, and that, when viewed in this context, the actions approved were consistent with the RMP prescriptions. Second, with respect to the lease stipulation, while he admitted that a VRM Class II stipulation had been attached to the lease, he asserted that this had been done inadvertently since the RMP provided that lands in Lockhart Basin were open to lease without protective stipulations. In this regard, he noted that "[i]n December 1997, BLM initiated steps to remove the stipulation from the lease." (SDR UT 98-3, at 2.)

Next, the Deputy State Director responded to SUWA's claims that the proposed action violated management prescriptions found in the RMP and in both the Moab District and the Utah Statewide Desert Bighorn Sheep Management Plans. 5/ In response, the Deputy State Director declared:

5/ While neither the Moab District nor Utah Statewide Desert Bighorn Sheep Management Plans have been submitted to the Board, we have obtained a copy of the Rangewide Plan for Managing Habitat of Desert Bighorn Sheep on Public Lands (Rangewide Plan). The Rangewide Plan identified the Lockhart Basin area as a Class II area, i.e., a habitat area with remnant herds capable of supporting viable populations in which the express BLM policy was to "enhance" the habitat. See Rangewide Plan at 11, 41.

In all critical respects, the Rangewide Plan supports SUWA's description of the management prescriptions recommended for the Lockhart

> As stated in the EA, Federal lease UTU-75058 was issued in 1996 in conformance with the San Juan Resource area RMP. The area containing the lease was not designated for protection of sheep via special lease stipulations. The Desert Bighorn Sheep Management Plan was implemented in 1987, and did not amend the oil and gas leasing categories/stipulations of the RMP. By issuing the lease, BLM accepted the possibility of impacts to bighorn sheep. The EA addresses reasonable alternative well locations that could afford protection to desert bighorn sheep. Additionally, mitigation has been developed to prevent undue and unnecessary degradation.

(SDR UT 98-3, at 2 (emphasis supplied).)

Finally, the Deputy State Director rejected SUWA's assertion that BLM's failure to adequately analyze the environmental consequences of post-drilling development violated the National Environmental Policy Act of 1969. The Deputy State Director relied upon the fact that this was an exploratory well and found that the EA sufficiently analyzed the impacts which production from the Lockhart Federal No. 1 well might be expected to generate. He noted that, under present BLM policy, analysis of the impact of full field development need not occur during exploratory activities. Id.

Subsequent to the receipt of the decision of the Deputy State Director, SUWA filed its appeal and request that the Board stay activities under the approved APD pending resolution of its appeal. Shortly thereafter, the County filed a notice of appeal with BLM, also seeking review of SDR UT 98-3. And soon following that, SUWA's formal appeal from the determination of the SJRA Manager to delete the VRM stipulation was filed with the Associate State Director, and upon his subsequent rejection of this appeal, a separate appeal was filed with the Board.

[1] We will first deal with the appeal filed by the County (IBLA 98-168) since it is most readily disposed of. As is apparent from our recitation of the history of this appeal, the County has been concerned with matters related to this lease for some time. Indeed, it initiated SDR

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fn. 5 (continued)
Basin area in the Moab District and Utah State plans. See Rangewide Plan at 17-20. Thus, this document provides, inter alia, that "[c]rucial areas, such as lambing grounds, migration routes, mineral licks, and areas within 1 mile of permanent water sources will receive maximum habitat protection" and that "[i]mpacts to desert bighorn sheep or their habitats will be mitigated to the extent possible on all mineral or fossil fuel exploration and development proposals." Id. at 18, 19.

of the original approval of the APD and DR/FONSI I, arguing that the limitations placed on the Legacy lease were violative of 43 C.F.R. § 3101.1-2. It was primarily as a result of these concerns that approval of the APD was set aside and the matter remanded to the SJRA. The reasons for implementing seasonal restrictions beyond those provided in the regulation were explored at length in the revised EA. Yet, while the record indicates that the County was duly served with a copy of the revised EA and DR/FONSI II, the County never sought SDR of this decision. Rather, it waited until a decision had issued in response to SUWA's request for SDR and filed an appeal from that decision. This is not permissible practice.

The Board has expressly held that challenges to decisions approving APD's are subject to the provisions of 43 C.F.R. § 3165.3(b) which requires a party adversely affected by an order of the authorized officer to seek SDR as a precondition to any subsequent appeal. See Southern Utah Wilderness Alliance, 122 IBLA 283 (1992). Furthermore, we have held that, where a party either files a late petition seeking SDR or fails to seek SDR at all, a subsequent appeal is properly dismissed. See, e.g., Wyoming Wildlife Federation, 123 IBLA 392 (1992); Global Natural Resources Corp., 121 IBLA 286 (1992); Han-San, Inc., 113 IBLA 362 (1990). Finally, we have also held that where an individual or organization is afforded the opportunity to protest actions proposed by BLM but fails to do so, it has no standing to appeal the denial of a protest filed by some other individual or organization. See In re Pacific Coast Molybdenum Co., 68 IBLA 325, 331 (1982). Applying the foregoing principles to the instant facts, it is clear that the County's purported appeal must be dismissed.

Thus, while the County did, in fact, seek review by the State Director of the original approval of the APD by the SJRA Manager, which review resulted in a setting aside of the original APD and the DR/FONSI I, it did not file a request for SDR after the issuance of the December 12, 1997, DR/FONSI II or the approval of the APD on December 16, 1997. This failure is fatal to its present appeal. If the County desired to relitigate its concerns with the SJRA's actions, it was required to first seek SDR of the decision approving the APD. Having failed to do so, it may not now appeal from a decision of the Deputy State Director addressing issues raised by SUWA in its request for SDR. The County's appeal of the Deputy State Director's decision must be dismissed. 6/

6/ In addition to the failure to properly seek SDR, the appeal by the County might also be subject to dismissal on the ground that, given the fact that the lessee (Legacy) had not objected to the COA's attached to its APD, the County could not independently maintain an appeal as to their imposition since it was not adversely affected thereby. However, in light of our disposition of the County's appeal, we need not further explore this question.

Turning to the SUWA appeals, we note that the one concern represented by both IBLA 98-144 and IBLA 98-207 is visual resource management. We will, therefore, discuss that issue first. 7/

Initially, we would note that while the impact on visual resources which would result from approval of the APD on December 16, 1997, did not vary from that expected when the first APD issued on August 27, 1997, SUWA did not directly raise the issue of the impact of the proposal on VRM objectives in its initial request for SDR. While the Deputy State Director did, in fact, set aside the decision approving the APD, he did so solely on issues relating to the adequacy of the EA's consideration of alternative well sites and production methods and the absence of any justification for imposing limitations on the lessee's surface use greater than that delineated in 43 C.F.R. § 3101.1-2. See SDR UT 97-11, at 3.

In view of the foregoing, we believe the Deputy State Director would have been justified in rejecting SUWA's subsequent attempts to raise the VRM issues on the ground that these matters had been waived in SUWA's original request for SDR. In point of fact, however, the Deputy State Director examined the substance of SUWA's complaints as to visual impacts. For that reason, we believe it appropriate that we do the same. Cf. United States v. Feezor, 130 IBLA 146, 187-89 (1994).

In essence, SUWA argues that approval of the APD violated both the VRM prescriptions contained in the RMP as well as the express stipulation contained in Legacy's lease. Thus, SUWA notes that Lockhart Basin received a VRM Class II designation in the RMP and that approval of the APD violated this classification on two different bases. First, while in some aspects it was admitted that some adverse visual impacts would occur, the EA failed to adequately explore mitigation of these impacts. Second, in other areas, the EA inadequately explored other impacts on visual resources. See Statement of Reasons (SOR) at 8-12. Thus, as an example of the former situation, SUWA complains that while the EA did refer to the possibility of increased dust levels resulting from road usage during drilling, the EA did not explore possible mitigation of this problem such as requiring watering of the road. As an example of its latter complaint, SUWA asserts

7/ At the outset, we note that we have some concern that, while BLM has sent the Board a significant volume of materials, we do not have full and complete copies of a number of the documents involved, including the Draft RMP/Environmental Impact Statement (EIS) (May 1986) and the Draft RMP/Final Environmental Impact Statement (FEIS) (September 1987). We realize, of course, that these documents are quite extensive and involve numerous issues which in no way impact upon our present appeals. We have, therefore, decided to proceed with adjudication of the instant matters under the assumption that BLM has, in fact, submitted all documentation relevant to the issues involved herein.

that the EA failed to consider the visual impacts on scenic air tours and incorrectly assumed that the entire access route to the drill pad will be reclaimed when, in fact, BLM has no authority to require reclamation of that part of the access route which crosses state lands. Id. SUWA also points out that, contrary to the BLM Manual, no contrast rating form was completed.

In response, BLM admits that the Lockhart Basin was, in fact, assigned a VRM Class II status in the inventory of lands. The Bureau argues, however, that, notwithstanding this inventory rating, the RMP determined that the land would be subject to leasing without any stipulations to specifically protect visual resource values and that the APD approved herein was fully consistent with the RMP.

Moreover, BLM emphasizes that, in any event, VRM objectives are ultimately in the nature of guidelines and are not meant to be inflexibly imposed without exception. The Bureau notes that the Draft RMP/EIS had explicitly stated that "by the year 2000, in 271 cases, visual contrast rating scores would exceed the VRM class objectives for that area." (BLM Answer at 10, citing 1986 Draft RMP/EIS at 4-71.) Thus, BLM asserts, the RMP clearly contemplated that management policies would be implemented, consistent with the RMP, which would result in a lowering of the assigned VRM rating for the land in question and which would, therefore, not allow BLM to achieve the VRM objectives for that parcel.

With respect to the impacts involved in the APD herein, BLM admits that no visual rating contrast worksheet was prepared, but discounts the importance of this failure by pointing out that a contrast evaluation was performed by the visual resource specialist and that assessment was considered in the EA. See BLM Answer at 13. The Bureau then quotes from the EA's discussion of the visual impacts both of initial drilling and subsequent development should the drilling be successful and directly challenges SUWA's assertions that it had ignored either delineating impacts which could not be mitigated or attempting to mitigate those which could. Id.

Thus, BLM not only points to revised COA Nos. B-6 and B-7 as evidencing the particular mitigation measures which the SJRA was imposing on the APD, but it also emphasizes that under the "standard operating conditions" which apply to any actions in the SJRA, matters such as trash control and dust abatement would also be subject to regulation. While it admits that the VRM Class II objectives would not be met when viewed from County Road No. 122, BLM points out that the EA had concluded that they would be met from the four primary viewpoints within the Canyonlands National Park. See BLM Answer at 14. In short, BLM argues that it fully complied both with the RMP and with its responsibilities with respect to visual resources.

In our view, there is a certain inconsistency in BLM's arguments. Thus, on the one hand, BLM asserts that the RMP overrode any restrictions

which result from the land's classification as VRM Class II, while, on the other hand, it argues that the VRM objectives are essentially guidelines which need not be met in every circumstance. This latter contention, however, is clearly undercut by BLM's actions in removing the special stipulation relating to VRM Class II objectives from lease UTU-75058 on the ground that it is inconsistent with the RMP's direction that the land be open to leasing without any restrictive stipulations.

[2] Initially, we note that, while an analysis of the RMP tends to support BLM's assertion that the oil and gas prescriptions were intended to override the inventory classification of the land as VRM Class II, it is difficult to reconcile this approach with the BLM Manual. 8/ Thus, the BLM Manual provides that "[v]isual management objectives (classes) are developed through the RMP process for all Bureau lands. The approved VRM objectives shall result from, and conform with, the resource allocation decisions made in the RMP's." BLM Manual 8400.0-6A.2 (emphasis supplied). It seems clear from the foregoing that what the Manual intends is for the resource allocation decisions to determine the VRM classification. It is not contemplated that the RMP resource allocation systems will contravene the VRM classification found in the RMP as BLM apparently contends herein. In other words, if SJRA made the policy decision to allow leasing without any protective stipulations in the Lockhart Basin, it should have expressly altered the VRM classification to the level which would be consistent with that determination.

This is clearly what the BLM Manual intends. For example, the Visual Resource Inventory Handbook (BLM Manual Handbook 8410-1) provides:

> The visual resource inventory process provides BLM managers with a means for determining visual values. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four visual classes. These inventory classes represent the relative value

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8/ Moreover, while we do not find this issue to be dispositive, we also believe that the failure to complete a contrast ratings worksheet is difficult to justify. First, we note that, given the presumed VRM Class II rating, use of the contrast rating system was clearly required. See BLM Manual 8431.14L. And, while BLM asserts that its expert used the contrast ratings system but simply failed to complete the form, the BLM Manual Handbook provides that an individual completes the contrast rating "from key observation point(s) using Bureau Form 8400-4 - Visual Contrast Rating Worksheet." (BLM Manual Handbook 8431-1, at 2.) Clearly, the BLM Manual considers completion of the visual contrast rating worksheet to be an integral part of implementation of the contrast rating system.

> of the visual resources. Classes I and II being the most valued, Class III representing a moderate value, and Class IV being of least value. The inventory classes provide the basis for considering visual values in the resource management planning (RMP) process. Visual resource management classes are established through the RMP process for all BLM-administered lands (see also Manual 1624.3). During the RMP process, the class boundaries are adjusted as necessary to reflect the resource allocation decisions made in RMP's. Visual management objectives are established for each class. (See Section VB.)

(BLM Manual Handbook 8410-1, at 1.) Once the visual resource management classes are established, however, they are more than merely guidelines. Rather, having been developed through the RMP process, meeting the objectives of each of the respective visual resource classes is as much a part of the RMP mandate as any other aspect of the resource allocation decisions made in the RMP.

A review of the Draft RMP/EIS clearly shows that, rather than alter the visual resource inventory ratings to reflect visual resource management decisions, the RMP simply promulgated the inventory ratings as if they were management ratings. Thus, the Draft RMP/EIS provided:

> Inventory work in the SJRA under the VRM system was begun in 1978 and completed in 1984. All three resource allocations have been mapped on 1 inch to the mile maps at the MDO [Moab District Office]. VRM classes are shown in figure 3-18. Acreages are shown in table 3-18.

(Draft RMP/EIS at 3-81.) Table 3-18 clearly delineated the Lockhart Basin as a VRM Class II. But while this table was labelled "Visual Resource Management Classes," what it actually represented was the "inventory" rating not the ultimate "management" rating.

If it were assumed, as the Draft RMP/EIS explicitly stated, that under the RMP resource allocation decisions the "visual contrast rating scores would exceed the VRM class objectives" for a number of areas, the proper response would have been to delineate those areas and expressly lower the VRM inventory rating to reflect the RMP's resource allocation decisions in those areas. More particularly, where acreage which had been inventoried as VRM Class II was thereafter determined to be best suited to leasing without any restrictive stipulations and BLM realized that a result of this resource allocation decision would be an inability to manage that acreage as required under VRM Class II, the VRM classification should have expressly been adjusted to at least VRM Class III. This was not done.

Instead, the RMP noted that the visual resource management classes "have been identified based on inventory work in the SJRA." See RMP at 80. It is clear that, in preparing the RMP, rather than identify areas where

the existing inventory visual resource classes could not be maintained under the selected resource allocation decisions, SJRA simply repromulgated the inventory classes as if they represented the management determinations when, in fact, they did not. 9/

It is because of the failure of SJRA to differentiate between inventory and management visual resource classes in preparing the RMP that it has been forced to take the position in the instant appeal that VRM class objectives are something that can be contravened under the RMP. This is also not correct.

VRM objectives properly designated in the RMP process are as binding on the SJRA as are any of the other resource allocation decisions made in the RMP. Thus, for example, VRM Class II objectives provide:

> The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

(H-8410-1, at 6.) Obviously, the Class II objectives allow for some minimal level of impact to be apparent from management activities. But, where that level of impact which may result from management activities can no longer be said to be "low," where it "attracts the attention of the casual observer," such discretionary management activities are prohibited until the RMP VRM classification can be changed.

Of course, where the activities which impact upon the visual resources are not "discretionary," as, for example, in the case of valid existing rights, these impacts must be allowed after due efforts, consistent with those valid existing rights, are made to minimize the adverse impacts. But the RMP does not contemplate that such valid existing rights will be

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9/ That this was an improper use of the inventory process is made clear from the BLM Manual Handbook for Visual Resource Inventory. Thus, it notes:

"Inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities. * * * The assignment of visual management classes is ultimately based on the management decisions made in RMP's." (H-8410-1, at 6.)

created, after the adoption of the RMP, by the issuance of oil and gas leases since the very act of lease issuance is, itself, discretionary.

[3] The problem which this case thus presents is that the RMP, as adopted by the SJRA, embraces two inherently contradictory positions. First, in its resource allocation decisions, it clearly intends to allow oil and gas leasing in certain areas, including the Lockhart Basin, even if these activities result in adversely affecting the existing visual resources. On the other hand, by essentially adopting the visual resource inventory results as its management prescriptions, SJRA has, in effect, committed to maintaining the status quo so far as visual resources are concerned. As the instant case shows, these two positions can be mutually exclusive.

We believe that the proper way to resolve this conflict is to give force and effect to those management resource allocation decisions clearly made in the RMP. While its visual resource analysis is, as noted above, fairly muddled, the RMP's desire to permit oil and gas leasing in the Lockhart Basin, even if it resulted in degradation of the visual resources, is clear. Indeed, as BLM points out on appeal, SUWA expressly commented on what it perceived as the inadequacy of the protection which would be afforded to Lockhart Basin under Alternative E (the preferred, and ultimately selected, alternative). See Proposed RMP/FEIS at 2-148, to 149. We believe it altogether consistent with both the clear intent of the RMP, as well as the understanding of those who provided comments thereto, to enforce the resource allocation decisions even where they conflict with the visual resource determinations. Accordingly, we hereby reject SUWA's challenge to the approval of the APD on the ground that it violated the VRM classification for the subject lands. Moreover, to the extent that SUWA argues that the EA failed to adequately consider either the impacts upon visual resources or possible means of mitigating such impacts, our review of the record fails to sustain its allegations. Rather, we find that BLM not only fully considered the relevant impacts but also attempted to mitigate, to the extent possible given the RMP's resource allocation determination, the impacts that might result to visual resource values.

The foregoing discussion, however, brings the issues involved in IBLA 98-207 into sharper focus. While, under our above analysis, the RMP would not require that Legacy adhere to VRM Class II objectives, the inclusion of a stipulation into its lease could independently require the same result. Legacy and BLM both assert that inclusion of this stipulation was an inadvertent mistake which they mutually desire to rectify, while SUWA contends that the stipulation was required by the RMP. Compare BLM's Answer at 16-19 with SUWA's Supplemental Memorandum at 2. Clearly, in light of our above analysis, SUWA's argument cannot be sustained. With respect to the position espoused by Legacy and BLM, we note that, while situations might occur in which BLM and a prospective oil and gas lessee jointly agree to the application of a stipulation to a lease which is more

stringent than that which is otherwise required, there is no indication in the record that such is the case herein. Accordingly, we will affirm BLM's decision removing the VRM Class II stipulation from lease UTU-75058. 10/

The next issue to be decided, i.e., the allowability of the APD in view of its possible impact on desert bighorn sheep, is, in many ways, the most problematic. Unlike the situation with respect to visual resources, the problem here is not one of a failure of the original RMP process. Given the facts then assumed to exist, namely that the Lockhart Basin desert bighorn sheep herd had been wiped out by disease, the failure of the RMP to provide protection for desert bighorn sheep in the Lockhart Basin was altogether understandable. What is more difficult to comprehend is the subsequent failure to amend the RMP to affirmatively provide the protection mandated for the herd by the Rangewide Plan for Managing Habitat of Desert Bighorn Sheep on Public Lands (Rangewide Plan), after information had been obtained showing that the Lockhart Basin herd had, in fact, survived. See note 4, supra.

[4] The argument proffered by BLM on appeal that neither the Moab District nor the Statewide Desert Bighorn Sheep Management Plans amended the RMP ultimately begs the question of why action was not undertaken by the SJRA to formally amend the RMP once it became obvious that the RMP management prescriptions failed to accurately reflect the presence of bighorn sheep in Lockhart Basin. This is either a failure of communication (between the individuals responsible for wildlife and those responsible for oil and gas leasing or, alternatively, between the SJRA and the Utah State Office) or a failure of management.

An RMP is not to be viewed as some static document which, once adopted, remains fixed for all time. On the contrary, for an RMP to have any ultimate vitality, it must be seen as a management tool which is necessarily circumscribed by the values and knowledge existing at the time of its formulation. Certainly, there is a reasonable expectation that, considering the amount of effort and analysis which goes into its development, an RMP would normally be expected to remain in place for at least some duration. But, as is true in virtually all areas of public land management, situations can also be expected to arise in which an RMP no longer accurately reflects the factual knowledge available to BLM decisionmakers on a matter ultimately critical to the resource allocation decisions

10/ This does not, of course, mean that it is improper for BLM to endeavor to minimize visual impacts beyond that required by a VRM classification below level II. On the contrary, as the Manual itself notes, "[s]ince the overall VRM goal is to minimize visual impacts, mitigating measures should be prepared for all adverse contrasts that can be reduced" and this includes "reduction of contrast in projects which have met the VRM objectives." (BLM Manual Handbook, Visual Resource Contrast Rating, 8431-1, at 6.)

implicit in the RMP. When such a situation arises, it becomes the obligation of the appropriate BLM officials to initiate actions leading to the revision or amendment of the RMP. And this is true regardless whether the knowledge becomes available 10 years or 10 months after the RMP is adopted.

The consequences which can result from a failure to so act are manifest in the case before us. Thus, we have a situation in which the revised EA, prepared in 1997, clearly demonstrates the importance of the Lockhart Basin herd. Yet, only 2 years earlier, in 1995, BLM issued an oil and gas lease to Legacy which contained no protection for bighorn sheep beyond that which BLM might impose to prevent unnecessary and undue degradation. While SJRA has, indeed, attempted to mitigate impacts on the herd, it has admittedly not fully enforced the limitations prescribed in the Rangewide Plan since these limitations would either make drilling impossible or prohibitively expensive. 11/ Before this Board, BLM justifies its actions by arguing that it is merely recognizing valid existing rights held by Legacy as it is required to do.

It is true, of course, that all management plans routinely recognize that the management prescriptions being devised can only be implemented "subject to valid existing rights." But, it is almost restating the obvious to observe that the "valid existing rights" to which these management plans refer are rights existing at the time the management plans are adopted. In other words, it is not expected that BLM officials will authorize the creation of future rights whose exercise would be inimical to the very values which a management plan seeks to foster. 12/

Herein, once BLM was apprised of the survival of the Lockhart Basin desert bighorn sheep herd it should have, at a minimum, immediately suspended the issuance of oil and gas leases in the basin. Instead, BLM proceeded to issue such leases, without any restrictions aimed at protecting the herd. While BLM now asserts that it was required to do so by the RMP, this is simply not true.

11/ For example, the Rangewide Plan provides that "[c]rucial areas, such as lambing grounds * * * and areas within 1 mile of permanent water sources, will receive maximum habitat protection." (Rangewide Plan at 18.) Yet, if BLM were to attempt to enforce this on lease UTU-75058, it would either require that the drill pad be located off-lease or at such a distance away from the target formation that directional drilling would be required at a prohibitive cost.

12/ Admittedly, in certain areas, such as the mining laws, future valid existing rights can come into being without any action by BLM. Such, however, is not the case with rights obtained under the Mineral Leasing Act of 1920 since, until such time as an oil and gas lease issues, one generally does not acquire any rights enforceable against the United States.

Until such time as a lease actually issues, BLM always reserves the right not to lease at all. See, e.g., Harris-Headrick, 95 IBLA 124 (1987). Nothing in the adoption of the RMP diminished this discretionary authority. The most that the RMP can be seen as requiring is that if BLM chose to lease it could do so without restrictive stipulations. The adoption of the RMP did not, however, constitute a determination that BLM would automatically issue an oil and gas lease should any applicant so desire. Thus, BLM was not compelled to issue a lease to Legacy. Rather, BLM chose to do so in this case, just as the Grand Resource Area Office (GRA) chose not to permit issuance of a lease for adjacent lands in sec. 5 because of its concerns that the GRA RMP had become outdated because of its treatment of desert bighorn sheep. 13/ See Letter dated May 1, 1997, from Legacy Energy Corporation to Assistant District Manager, Moab District Office.

We think that, under the facts of this case, there is little question that, had issuance of the lease to Legacy been challenged on the ground that inadequate protection was afforded the desert bighorn sheep herd, this Board, at least, would have sustained the challenge. However, no such protest was filed or pursued and Legacy obtained its lease without any stipulations for the protection of bighorn sheep attached to it.

There is no indication in the record that Legacy was ever other than forthcoming in its dealings with BLM and it seems likely that Legacy acquired lease UTU-75058 in relative ignorance of the problems described above. Thus, notwithstanding the various serious deficiencies apparent in BLM's actions with respect to the Lockhart Basin desert bighorn sheep herd, we must conclude that Legacy has acquired valid rights under lease UTU-75058 which must be recognized.

It also seems clear that SJRA has recognized, albeit somewhat belatedly, the problems with respect to the existing RMP's treatment of the desert bighorn sheep herd in Lockhart Basin since it has now initiated the process of amending its RMP. See SUWA's SOR, Ex. E (Letter dated Jan. 28, 1998, from Moab District Manager to SUWA). While this course of action could be expected to obviate future problems, it is still necessary to deal with the problems attendant to the present appeal.

Regardless of our views as to how BLM should have handled Legacy's original application to lease, the fact is that it granted Legacy a lease which had no special stipulations for the protection of the desert bighorn sheep. In doing so, while the State Office may have acted in technical

13/ We note that the boundary of the San Juan and Grand Resource Areas is the canyon rim which runs through sec. 5. Thus, areas west and below the rim are in the SJRA while the areas to the east and above the rim are in the GRA. One of the consequences of the issuance of the lease by SJRA and the refusal to issue a lease by GRA is that Legacy is being forced to drill a well with open acreage almost immediately adjacent to its well-site.

compliance with the RMP, the result was a considerable erosion in the protection which the Rangewide Plan intended to provide for the Lockhart Basin herd. To a large extent, BLM has, with Legacy's concurrence, attempted to mitigate adverse impacts on the herd to the maximum extent possible, given the exigencies of Legacy's drilling program. Our own analysis convinces us that these restrictions, if observed, would likely result in minimal, if any, impacts on the Lockhart Basin herd, at least during the initial drilling program. And, we expect that the monitoring of any impacts will be a matter of some priority in the SJRA.

Given the legal framework in which this appeal has arisen, we are constrained to recognize that the approved APD, with the COA's designed to ameliorate the impacts that drilling might be expected to cause, probably represents the fairest and most desirable outcome now obtainable. The challenges which SUWA mounts on this issue are, therefore, rejected.

[5] Finally, SUWA argues that an EIS is needed because of the substantial impacts that drilling of a well and any ultimate production therefrom will have on both the visual resources of the area and the Lockhart Basin desert bighorn sheep herd. We have noted many times in the past that a FONSI determination that no EIS is required for a specific project will be affirmed on appeal where the record establishes that BLM has taken a hard look at relevant areas of environmental concern and has concluded that, taking into consideration measures designed to minimize environmental impacts, no significant impact on the human environmental will result. See, e.g., Southern Utah Wilderness Alliance, 141 IBLA 85 (1997); Southwest Resource Council, 96 IBLA 105, 94 I.D. 56 (1987). In our view, when the proposed action is viewed in the context of the special restrictions imposed by BLM, it seems reasonably clear that the proposed action will not significantly impact upon the human environment and, therefore, an EIS is not needed. Appellant SUWA may disagree with BLM's conclusions with respect to some of the measures which it has directed be taken, but simple disagreement is insufficient to show error in BLM's determination.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 C.F.R. § 4.1, the decisions in IBLA 98-144 and IBLA 98-207 are affirmed, the appeal in IBLA 98-168 is dismissed, and the petitions for stay in IBLA 98-144 and IBLA 98-207 are denied as moot.

James L. Burski
Administrative Judge

I concur:

C. Randall Grant, Jr.
Administrative Judge

VRM Inventory for the New Millennium

From December 11th through 14th, Chris Horyza of the Phoenix Field Office, Russ Jackson of the Branch of Photogrammetric Applications, National Science and Technology Center (NSTC), with guidance from Rich Hagan Landscape Architect, WO, met to discuss how to use current GIS and Image processing technology to facilitate new Visual Resource Management (VRM) inventories, or improve on existing inventories. During this meeting, several assumptions guided the process:

First, we assumed that different offices possess differing levels of technical expertise, and the process needs to be flexible enough to allow for that.

Second, we assumed that regardless of the offices' level of GIS expertise, some minimum level exists and will be made available, since GIS has been decided on as a tool for storing, analyzing, and producing map products from geospatial information for all upcoming land use plans.

Third, that any process devised must address the inventory method in Handbook H-8410-1.

And finally, with 41 planning starts in the Bureau in Fiscal Year 2001, an acceptable procedure, data standards, and general guidance for them needs to be provided to the field as soon as possible.

To address all of these, we decided on a three-stage approach, what we referred to as a "three model approach."

Model "A" could be called the "Low Tech" model. This model represents a process guided primarily by a traditional VRM inventory, using GIS basically as a storage and map production medium. Some fairly simple overlay analysis and reporting may be done, but most would require only basic training in GIS applications and could even be provided by state office, NSTC, or contract experts on a periodic, or on a "as needed" basis. This model requires local inventory labor (may be labor intensive) and some local GIS support (possibly by resources specialist(s) with GIS ability or as-needed off-site support). Also, some data preparation would be necessary prior to any GIS analysis being performed. If these skills already exist, this too could be accomplished by existing field office staff. If not, it could be provided by state offices, NSTC, or by contract.

Examples of GIS analysis that may be conducted: buffers at various distances; view-shed analysis (for visible or not visible); conversion of polygon data to grids and adding multiple grids together; conversion of grids back to polygons (conversion to shape files;) overlay (intersection or clip) to assess acreage; and the production of some map products for field or office use.

Examples of data preparation that may be needed; digitizing or scanning of overlays; registration of those same overlays; acquisition of digital elevation models; and the projection or re-projection of data.

Model "B" could be described as the "GIS Based" model. In this model, collection of various components of the VRM inventory rely on GIS or image analysis techniques for initial data, and field verification to finalize the classifications. This model assumes a fairly high level of GIS expertise at the local office and the necessary hardware and software (ArcView and Arc Info) to support it. This model recognizes that some aspects of VRM inventory are very subjective and cannot be adequately represented by objective analysis, so must still involve simple mapping and digitizing of those factors. Use of the

procedures in this model, when perfected, should reduce field time necessary to conduct a VRM inventory, reduce the overall cost of VRM inventory, produce a more "repeatable" product that is more "accurate" than traditional inventory.
Examples of GIS analysis that may be conducted: analysis described under model "A" and; view-shed analysis with a frequency option; neighborhood analysis on grids generating statistical products; some image processing and analysis.
Model "C" could be described as the "Developmental Model" or the "High Tech" model. In this model, most analysis techniques would mirror model "B" above, but additional techniques, which require expertise not commonly found in a local field office, would be required. This model takes further advantage of "state-of-the-art" geospatial and visualization technology to reduce field time, make landscapes that change seasonally or over many years more easily visualized, to demonstrate visually "What if?" scenarios, and to expand the audience for these to a larger "community." This model has a risk of seeming to reproduce a real world landscape in a "virtual" setting. It remains imperative that people with local knowledge be always involved and field verification of classified products be conducted to ground any results in the real world.
Examples of analysis for model "C": like model "A" and "B" and including 3D visualization of the project area like might be done in World Construction Set or similar 3D visualization software.
These models not only represent various technological levels, they also represent a staged approach to getting VRM Inventory guidance to the field. Since Model "A" is a slightly modified version of the traditional VRM inventory necessary guidance to support field data collection (data standards and support data requirements) could be provided in a fairly short time frame. It is our goal to provide documentation to the field to be able to begin inventories in this manner by February 15, 2001.
Model "B" incorporates some analysis techniques that have not been perfected. These should be tested in various landscapes and a prototype process developed. It is our goal to conduct these tests and have a field-available prototype within 18 months (or by about June 2002.) To accomplish this goal, we will need additional assistance from the GIS

and Image Processing community, or a formalized project, which would allow shedding enough current workload to conduct the necessary tests unfettered.
Model "C" is based in the analysis of Model "B", and on developing expertise in the technology of 3Dimensional Landscape Visualization. Since this 3D visualization technology is maturing rapidly and only recently has become practical on computer systems found commonly in BLM, it will require extensive testing of its capabilities and to develop VRM inventory techniques that can take advantage of it. It is our hope that we can have a prototype process for early 2003. As in Model "B" above, additional assistance will be needed to achieve this goal.
As stated above, a basic assumption of these three models is that they address the VRM inventory as described in H-8410-1. It may be argued that some adjustments to the VRM inventory procedure are made with each model. Handbook H-8410-1, Section I, Implementation Options states that adaptations to the inventory method may be made if they "(1) provide a more cost-effective way to complete a quality inventory, and (2) keep the conceptual framework of the Visual Resource Management (VRM) system intact." We feel the inventory process models described here accomplish this. But in fact, if no

savings in time or dollars is demonstrated, the model must be either discarded or modified. The following is a discussion of the components of the VRM inventory and how each model addresses it.

In all of the models, some decisions must be made before any major analysis or mapping is done. First, a decision must be made on what the management objectives of Visual Resource management will be, and these will be expressed by the selection of "Key Observation Points or Areas" (KOP.) Much of the analysis and mapping will be based on the locations of these KOPs and they should be selected at the beginning of the process. How this selection is made may vary from model to model. Second, a decision must be made as to the "minimum mapping unit size" which is a way to express what the smallest manageable VRM unit can be. This is important because GIS can generate a large number of very small areas (or polygons, or pixels) that, in a practical sense, are not manageable. By deciding at the beginning of the project what is the minimum size area that is practical to manage, techniques in GIS can be used to keep the product maps as simple as possible and to reflect realistic management objectives. Of course, these two decisions will be based on the unique characteristics of the inventory area and the objectives driving the management of the visual resources. Since these will vary from office to office, and possibly between inventories within offices, one would expect that, even with inventory and data standards, inventories conducted by different offices, or by different teams at different times, may not seamlessly fit together in a larger map if one attempted to do so.

SCENIC QUALITY RATING

For evaluating the Scenic Quality component of the VRM inventory, it was decided to evaluate each of the rating factors separately, allowing the combination of these factors to define the boundaries of differing "Scenic Quality Rating Areas." Though the handbook calls for defining Scenic Quality Rating Units before rating the evaluation factors, even in its most rudimentary application, GIS can assist with the complex overlay analysis required to allow the landscape to define the units. Each rating factor and the model solutions will be discussed.

Landform

The characteristics of landform that is quantified in this factor are described by the statement (from Handbook H-8410-1) "Topography becomes more interesting as it gets steeper or more massive, or more severely or universally sculptured."

Model "A"

The ID team evaluating the inventory area would map areas according to their landform rating as described on the "Scenic Quality Inventory and Evaluation Chart." Mapping would be done at 1:100,000 scale, or larger, as appropriate to the inventory area. These overlays would then be digitized or scanned and converted to grid (cell, or raster) data for later analysis.

Model "B"

In model "B", emphasis is placed on deriving topographical variety. Landform can be analyzed by conducting a statistical neighborhood analysis of digital terrain models. It is recommended that the 30 meter Digital Elevation Models, mosaiced together for the inventory area, be used for all analysis using terrain models. For landform, the analysis would be to use a large roving window (75x75

cell window up to as large as 125x125 cells) and create a new cell map of the variance of the roving window. If you cannot calculate the variance directly, the analysis can use the standard deviation, then square the resulting map to create a map with variance values. When the variance map is displayed in three standard deviation categories, the landscape is divided into three classes, which can be attributed as the three landform classes. The product will vary with changes in roving window dimensions and several attempts may need to be run to determine the best size for the particular landscape being classified.

An alternative analysis method may be to use the Terrain Ruggedness Index value as defined by Riley et. al. in their article titled "A Terrain Ruggedness Index that quantifies topographic heterogeneity" in the *Intermountain Journal of Science* (vol. 5, no. 1-4, 1999) and used by Jacek Blaszcynski (BLM National Science and Technology Center) for various landscape analysis techniques.

Model "C"

Analysis in Model "C" may be the same as in "B", but the reference data may be more precise and generated from sources other than USGS DEM. Other terrain data sources (ex. Radar, lidar, etc.) should be assessed and the affect on the roving window dimensions, or other analysis variables should be described. Further, Model "C" could include additional subjective input from people viewing 3-dimensional landscape representations in workshop settings.

<u>Vegetation</u>

Vegetation characteristics that are quantified in this factor are described in Handbook H-8410-1 as, "…consideration to the variety of patterns, forms, and textures created by plant life."

Model "A"

Vegetation is classified as described in the traditional inventory method on the "Scenic Quality Inventory and Evaluation Chart" and mapped on 1:100,000 scale overlays (or a scale appropriate to the inventory area.) The overlays are digitized and converted to grid for later analysis.

Model "B"

In model "B", emphasis is placed on methods to derive vegetation variety. Several possible analytical techniques could be tried, or possibly combined to derive this factor.

One possibility could involve using existing vegetation data, reclassified according to its visual characteristics and a roving window analysis similar to the landform discussion above to derive vegetation variety.

Another possibility is to use image processing on natural color, black and white, or false color infrared imagery to create textural communities. Electro-optical (E/O) imagery should be used to mimic as near as possible what is seen on the ground. This process might involve:

1) Unsupervised classification
2) Use of variance analysis on the product

Or

1) On original imagery (or vegetation maps) attempt to capture vegetation variety.

The technique developed in model "B" could increase the repeatability and reliability of mapping this factor, and reduce the time and people commitment to its compilation for final VRM inventory classification.

Model "C"

Analysis similar to model "B", except might be able to add analysis of vegetation relief. Model "C" could also incorporate 3 dimensional landscape visualization for simulating vegetation changes over seasons, or long-term as one might expect in various land treatments like timber harvests, range seedings, annual wildflower displays, prescribed burns or wildfires, etc.

Water

The characteristics of water to consider in the Scenic Quality rating are described in the H-8410-1 handbook as "That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score."

Model "A"

Manual mapping of areas rated for the dominance of visible water's contribution to the scene as described above. This is mapped on 1:100,000 scale maps and digitized, then converted to grid for later analysis.

Model "B"

For purposes of deriving this factor, the elements of distance and visibility are emphasized in the analysis. Water bodies (streams, lakes, waterfalls, etc.) are mapped as points, lines or polygons as appropriate. The team defines distances from these waters that allow us to infer dominance i.e. The closer the observer is to the water body, the greater that feature dominates the scene. View-shed analysis is then conducted from these water bodies at the various dominance inferred distances and combined to derive an overlay reflecting the water factor.

Model "C"

Include and analyze visible motion of water bodies and infer a higher level of dominance in the landscape. Use 3 dimensional representations to assist with the classification of dominance. The 3D representations, if realistically rendered, can reduce field time and aid in viewing features that may be difficult to get to on the ground. Furthermore, they can allow us to share these features with a much wider audience than is usually possible in a normal field visit.

Color

The H-8410-1 handbook describes color as "…the overall color(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use." Key factors to use when rating "color" are variety, contrast, and harmony."

Model "A"

Based on knowledge of ID team and field visits as necessary, map areas of rich color contrasts, and variety and rate them as described on the Scenic Quality Inventory and Evaluation Chart. This mapping, at 1:100,000 scale will be digitized and converted to grid for later analysis.

Model "B"

Analysis techniques would emphasize the elements of color contrast and variety. By using natural color imagery, may be able to use a neighborhood analysis technique similar to that described for landform, to derive an index of color variety. Also, there may be ways to use image analysis to derive contrast and richness from the color values of hue, saturation, and intensity (or value) or the

Red-Green-Blue values, or the Cyan-Yellow-Magenta-Black values as plotted in a 3 dimensional color space. If analysis techniques fall short of deriving the inherently subjective key factors for color, mapping as described for model "A" may be required. Even if analysis techniques show promise in capturing some aspects of rating color, adjustments to the overlay boundaries based on local knowledge may be necessary to fully characterize this factor.

Model "C"

Analysis techniques like in model "B" may be done, but use of realistic 3 dimensional landscape renderings can help to view more areas in the inventory area, visualize those landscapes with more realistic colors, and share those landscapes with a much wider audience than the other two models. Inherently subjective characteristics of color and the temporal changes caused by seasons or vegetation aging after human or natural treatments can be better described and shared in a virtual environment.

Scarcity

The H-8410-1 handbook says that the scarcity factor "…provides an opportunity to give added importance to…scenic features that appear to be relatively unique or rare…" Rating scores are based on the degree of the feature's rarity and on the opportunity for consistent exceptional wildlife or wildflower viewing. This is the only key factor that allows a rating score higher than 5 with written justification.

Model "A"

Landscape features that are unique or rare in the physiographic region are mapped and rated according to the criteria in the Scenic Quality Inventory and Evaluation Chart. These overlay(s) are digitized and converted to grid for later analysis.

Model "B"

Scarcity may be difficult, if not impossible, to derive from GIS and Image processing analytical techniques. For now, model "B" is the same procedure as model "A".

Model "C"

Model "C" may not have any new analysis techniques, but using a realistic 3 dimensional landscape visualization tool, scarce features can be rendered and shared with a larger audience. This could help to build consensus on the contribution of scarce features to the aesthetic landscape, and therefore, to their management prescriptions.

Cultural Modifications

These are described in the H-8410-1 handbook as "Cultural modifications in the landform/water, vegetation, and addition of structures… may detract from the scenery…

or complement or improve the scenic quality of a…" landscape. This is the only Scenic Quality key factor that can receive a negative score, reducing the overall scenic rating.

Model "A"

A view-shed analysis could be run from the identified Key Observation Points/Areas. Existing cultural modifications can be mapped in the "visible" area and, based on local knowledge and field visits where considered necessary, landscapes can be mapped and rated according to the visual impact of those features. These overlays would be digitized and converted to grid for later analysis.

Model "B"

An analysis similar to the model "B" example for Water could be devised. In this analysis, all cultural modifications would be scored (or, the analysis could be simplified by using only the cultural modifications within the view-shed of the KOPs as in model "A") according to their potential affect on the scenic quality rating. These scores could be distance based, such as a range fence could score a –2 up to 30 meters away, -1 from 31 to 100 meters, and 0 beyond 100 meters. Or a rustic cabin may score a –2 up to 100 meters away, and +2 from 100 to 3000 meters and 0 over 3000 meters. View-shed analyses could be run from these features and controlled by the coded distances and ratings assigned to the results according to the coded rating scores. If conducted on all cultural modifications, this could reduce the dependence of the final VRM classifications on visibility from set Key Observation Areas.

Model "C"

An analysis process as described in model "B" may still be employed, but a realistic 3 dimensional landscape rendering tool could assist the ID team, and a larger audience as well, to visualize the cultural modifications being analyzed and reach a consensus on rating scores.

Adjacent Scenery

The H-8410-1 handbook describes adjacent scenery as "The degree to which scenery outside the scenery unit being rated enhances the overall impression of the scenery within the rating unit." It goes on to say that "This factor is generally applied to units which would normally rate very low in score, but the influence of the adjacent unit would enhance the visual quality and raise the score." In a practical sense, since the Adjacent Scenery key factor can add from 0 to 5 points to a scenic quality rating, a preliminary Scenic Quality Rating score must be between 7 and 11 for this factor to have an effect on the overall Scenic Quality Rating for a particular landscape. Regardless of the analysis model, the scores for the other Scenic Quality key factors should be added together first, and if the Scenic Quality total score is between 7 and 11, only then should the Adjacent Scenery Key Factor be analyzed, scored, and added to the Scenic Quality total score.

Model "A"

For those areas determined to have a preliminary Scenic Quality Rating of "C", but close enough to the "B" rating to potentially benefit from an Adjacent Scenery score, the team can adjust the Scenic Quality rating based on consensus of the influence of adjacent scenery. This is a subjective rating and adjustments to the GIS database would be done manually.

(Note: Here's a proposed methodology to get to this point. First, the grids that were created throughout the model "A" discussions above are mathematically

added together. Second, the product grid can be reclassified into 3 categories based on the Scenic Quality Rating guidance in H-8410-1 where scores of 0 to 11 = C scenery, 12 to 18 = B scenery, and scores of 19 and above = A scenery. Third, areas with scores of 7 to 11 can be extracted separately for consideration of the Adjacent Scenery key factor. And finally, once a final Scenic Quality Rating grid is made, it can be vectorized and any polygons smaller than the agreed upon minimum mapping unit absorbed (eliminated) into the larger surrounding units. Or, the grid may be analyzed for clumps of cells of similar value which total less than the agreed upon minimum mapping unit size and those can be absorbed into the majority surrounding rating unit. This small area elimination process could wait until the final VRM Inventory classification is done but may keep the overall process "cleaner" if it is done here. At any rate, a grid should be the product of Scenic Quality for later analysis with the other major VRM components)

Model "B"

Analysis of Adjacent Scenery would be essentially the same for model "B" as in model "A". The main difference is the way the previous six key factor "overlays" are derived. The Note under model "A" applies as well.

Model "C"

Overall analysis of Adjacent Scenery would be as in the previous two models, except a realistic 3 dimensional landscape visualization tool could improve the ability of the ID team, and a larger audience too if desired, to assess the influence of adjacent scenery to those units for which it may contribute to its overall Scenic Quality Rating.

(Note: It should be noted that a realistic 3 dimensional landscape visualization, or essentially a virtual reality rendering, of inventory landscapes is a common thread throughout this model. It should be stated that the degree of realism is a critical factor to the contribution of this technology to the VRM inventory process. Because these renderings will most likely be developed at a site remote to the field office conducting the VRM inventory, the realism of the product(s) must be assessed by people with extensive local knowledge and validated in the field. There exists a risk of biasing the computer generated landscapes to make them look better (or worse) than they really are. As with any influential technology, it MUST be applied with integrity and frequently validated and verified in the field by knowledgeable people.)

SCENIC SENSITIVITY RATING

For evaluating Scenic Sensitivity, we agreed the ratings were potentially very subjective. Because of the level of GIS expertise needed to characterize the landscape for this component of the VRM inventory, the differences between Models "A" and "B" are greater than with the Scenic Quality component. However, some offices may find an analysis methodology that is somewhere between the model "A" and model "B" suggested here.

Model "A"

Using traditional techniques to assess Visual Sensitivity, delineate Sensitivity Level Rating Units (as described in Handbook H-8410-1 at 1:100,000 scale) and

score their sensitivity. Digitize these overlays and convert to grid for later analysis with the other two VRM inventory component overlays.

Model "B"

Design for model "B" is similar to that for Scenic Quality, i.e. constructing a separate overlay for each key factor to be rated, and then combining those overlays to create an overall Scenic Sensitivity Rating overlay. The following is a discussion of each of the key factors for rating Visual Sensitivity and how they could be addressed using GIS in a model "B" philosophy.

Type of User

Meetings would be held and informal contacts made with different user groups. At these meetings, maps would be made of the areas they use and discussions would be geared toward how they would react to various kinds of possible activities happening in the areas they use. In this way, we could map where the fisherman go, where hunters go, where OHV users go, where backpackers go, and, from the discussions on reactions to activities, gauge their sensitivity to activities we might entertain. It must be remembered that in the context of VRM, the area of use extends beyond the places people camp or the roads and trails they use to the landscape that is visible from those camps, roads, and trails. So, this being the case, once the areas people go to are mapped, view-shed analysis is conducted to derive the landscape that is being inventoried for sensitivity. The results of the various view-sheds can be added together to derive a map showing areas of high, moderate, and low use, (high given a score of 5, moderate a score of 3, and low a score of 1) which can then move forward for later analysis in derivation of a final Visual Sensitivity rating.

Amount of Use

This layer is mapped in the context of visual use. To begin this process, use data from various existing sources (car counters, visitor registers, etc.) to derive overlays of use levels for features in the inventory area, and distinguish them as High, Moderate, or Low using the visitation standards described in Handbook H-8410-1, Illustration 8, page 2, "Table for Classifying Amount of Use." View-shed analysis is then run from these features to define the visual landscapes that are

represented. These are then coded as to the use category and combined so high, moderate and low use areas are all on the same Visual Use overlay.

One way to combine them would be to add them together and reclassify the cell values so values > 4 are assigned the value of 5, values of 2 and 3 are assigned 3, and the value of 1 remains 1. ***Chris*** -- ***QUESTION – Why break it here? How many cell values would/could there be? Can you clarify?***

Sensitivity Levels

Sensitivity Level is an attempt to map the publics' interest in the visual landscapes within the inventory area. Some of this will be done in conjunction with collection of Type of User information. Other ways to collect this information are:

1) Informal contact with land users in community gathering places. Take maps of the inventory area to these gathering places and have people show you (actually draw on the map) where they like to go and where their "special" places are. Get

as many of these contacts as possible. If it would be useful, could show pictures of different kinds of possible activities to get peoples' reactions.

2) Have public workshops and invite locals who spend time in and around the inventory area to show on maps their "special" areas. As in 1) above, show pictures or slides of possible activities to get peoples' reactions.

3) Put maps on the internet along with pictures of possible activities. Have people delineated the areas that they consider "special" and get information similar to 1) and 2) above.

All the maps collected in the process above would be aggregated into a single layer of public interest and coded with 5 for high, 3 for moderate, and 1 for low.

Adjacent Land Uses

Identify land uses adjacent (or within five miles) of the inventory area that might have an effect on the visual sensitivity of the inventory area. For example, residential areas from which BLM lands are visible may have high sensitivity to visual changes on those lands. Parks or recreation areas adjacent to, or near, BLM lands may infer high sensitivity to visual changes on the lands visible from them. These possible sources of sensitivity should be identified and mapped. View-shed analysis would be run from them to identify the visible landscape affected. If several view-shed analyses are run, they should be aggregated and coded with 5 for high sensitivity, 3 for moderate sensitivity, and 1 for low sensitivity. ***Chris – another question – what criteria do you suggest to base the sensitivity on? Number of viewers? Density of homes? Number of visitors to adjacent parks?***

Special Areas

Special management areas such as wilderness, wilderness study areas, wild and scenic rivers, ***(Chris, do you know how the new monuments and NCAs are to be classed?)*** and others with special Visual Resource Management objectives are mapped and coded according to their visual sensitivity. Some special management areas, such as historic trails, may have visual objectives for the landscape visible from them as well as within the special management area. For these, view-shed analysis should be conducted from them to derive the affected landscape.

*Note: In most cases, the sensitivity ratings for this key factor will be high and will supercede any lower rating from other key factors. When the key factor overlays are combined, the other 4 or 5 should be done first, then the Special Areas overlay can be combined with the product for a final Visual Sensitivity overlay. Or, the Special Areas overlay can be added together with the others at the same time if a numeric value is assigned to the mapped Special Areas that will assure a high sensitivity rating. (For example, if all special management areas were coded with a "20," the sensitivity would automatically fall into the high range.) Or, especially in the case of Wilderness Areas, which are managerially mandated as VRM Class I, keep these as a separate overlay for combination at the end of the process.

Other Factors

If there are other factors that were not considered in the previous 5 key factors, that affect public sensitivity to changes in the visual landscape, they could be mapped and coded here. Assign values to the landscapes as in the other key factors with 5 for high sensitivity, 3 for moderate sensitivity, and 1 for low sensitivity. Be sure to identify and justify these additional factors. Care should be taken to not use this miscellaneous category to justify personal, or special interests to achieve a predetermined solution.

Model "C"

The common thread with model "C" throughout this discussion has been development of realistic 3 dimensional landscape representations. For sensitivity analysis, this could be used as a presentation tool to great advantage. This tool could be used by the inventory team to possibly reduce field time, but primarily as a presentation tool for the public and for management. "What If" scenarios can be viewed showing various management activities that may change the visual landscape. Temporal changes of season or of longer term can be portrayed so sensitivity portraying short and long term changes can be assessed. And, if done well, the cumulative effect of activities over the years could be assessed. Realistic 3 dimensional representations would make potential management activities more real to the public than the traditional slides and photographs. And the audience reached could be expanded beyond the Bureau's traditional constituents by placing these representations on Bureau websites for wider distribution.

In conclusion, each of the key factors for rating the Sensitivity Levels would be represented by a coded raster overlay. These overlays could be added together (see note under Special Areas) and sensitivity classes extracted from the product by reclassifying as:

Values greater than or equal to 19 = high,
Values 9 to 18 = moderate,
Values less than or equal to 8 = low.

Chris – suggest we use different numeric ranges than what is found on the Scenic Quality Inventory and Evaluation Chart. As this is an arbitrary numbering scheme, how about less than 5 = low, 6 – 10 = moderate, 11 - 15 = high? We can look at this closer as we get further into the Model B analysis. But right now, I'm concerned that having the same values as Scenic Quality, reviewers of this document will be confused about the scoring of Sensitivity as opposed to Quality.

DISTANCE ZONES

The basic assumption of distance analysis is that visual change is more significant the closer it is to the observer. In the traditional approach to this VRM component, key observation points or areas are defined at the beginning of the inventory and this component is analyzed from those. The question was asked if we could do analysis to account for future key observation areas? Though it is theoretically possible, this would result in one of two outcomes. First, analyzing for varying distance zones from any possible key observation area would result in a volume of data beyond the storage capacity of most computers. Or, the entire landscape would be treated as foreground/middle ground (the near-observer class) and the Visual Resource Management classes may not accurately reflect reasonable management prescriptions. In a sense, Scenic Quality and especially Visual Sensitivity are components of the VRM

inventory that emphasize protection of landscapes from visual change. The distance zone analysis brings the inventory into context with the visual management objectives for the studied landscape and ameliorates the possibility of excessive restrictions.

Use of GIS technology, even in the model "A" concept can result in considerable timesavings and a more accurate representation of the visible landscapes from pre-mapped Key Observation Points and Areas. The result of this analysis, if documented, is also more repeatable than traditional methods of calculating this component.

Model "A"

Key Observation Areas are defined and mapped. Distance buffers are run from these consistent with guidance in handbook H-8410-1. View-shed analysis would them be conducted using medium resolution terrain data (30 to 90 meter) to define the Seldom Seen class. The products of the distance buffers and the seldom seen analysis would be combined for a final Distance Zone overlay.

Model "B"

Key Observation Areas defined and mapped as in model "A". Then, view-shed could be run from these using the frequency method and controlled distances for a

more detailed "visibility" analysis. The landscape could be divided further than in model "A" by defining a "not visible" class, a "seldom seen" class, and low, moderate, and high visibility within the various distance ranges based on the frequency value. (The frequency value product of this analysis is the number of Key Observation Points the particular cell in the product map is visible from. For example, if a cell has the value of 5, that place on the ground is visible from 5 Key Observation Points. View-shed analysis handles areas such as roads or the surface of a lake as a set of points, each of which would be considered a Key Observation Point for this analysis.) The product grid could be reclassified so that if the value of the cell is 0, it is considered "not visible." If the value is less than 5% of the total Key Observation Points defined, it could receive a classification of "seldom seen." Other visibility classes could be defined if they help to refine Visual Resource Management objectives, or they could be handled the same as the distance zones in the handbook guidance.

Model "B" could also incorporate varying Minimum Mapping Unit sizes into the process. (*Note: These minimum mapping units are a measure of our ability to manage VRM in potentially isolated islands. It characterizes the possibility that small areas of either high visual sensitivity, or low visibility (therefore low sensitivity) close to the observer may be important enough to warrant managing for very small land areas.) For example, from 0 to 1.5 miles away from the Key Observation Area, classifications as in the previous paragraph would be retained for areas over 2.5 acres. But, from 1.5 to 3 miles, the minimum area size would need to be more than 5 acres. From 3 to 5 miles away, the minimum mapping unit could be 25 acres, and in excess of 5 miles, 100 acres.

Model "C"

Model "C" could incorporate algorithms that account for varying distance zones based on observer viewing time. For example, if a Key Observation Area is an interstate freeway, travel speed narrows the distance zones of the viewer and reduces the time a particular point on the landscape is visible. However, if delays

such as traffic bottlenecks commonly occur in some places, speed slows (or maybe even stops) and observers have more time, widening the distance zones and increasing viewing times. Distance zones could be fluid based on these kinds of inputs.

Model "C" might be able to address ridge top skylines also. Activities that may not be particularly visible on the face of a slope may stand out if conducted on a ridge top as viewed from a Key Observation Area or Point. At present, Model "B" has no good way to analyze this.

VRM INVENTORY CLASS DELINIATION

The process of defining the VRM Inventory classes is the same with models "A" and "B." Using raster processing capability, the overlays for the three components (and

Special Management Areas if there are any) are added together or re-combined for the final classes. Two possible methods are described here.

Method 1

1> Assign the value of 1000 to all features of the Special Management Areas (Wilderness) overlay.
2> Assign values to the Scenic Quality where "A" scenery = 500, "B" scenery = 300, and "C" scenery = 100.
3> Assign values to Visual Sensitivity where High = 50, moderate = 30, and Low = 10.
4> Assign values to the Distance Zones where foreground/middle ground = 5, Background = 3, and Seldom Seen = 1.

Then, add the reclassified raster maps together and reclassify the product as follows:
1> Values greater than or equal to 1000 = VRM Class I.
2> Values greater than or equal to 355 but less than 1000 = VRM Class II.
3> Values of 155, 335, and 353 = VRM Class III.
4> The value of 351 is VRM Class III if it is adjacent to VRM Class III, II, or I. If adjacent to Class IV, it is Class IV.
5> Values of 111, 131, 133, 135, 151, and 153 = VRM Class IV.

Method 2

If the GIS supports Boolean analysis, the cell values are not as important as in Method 1, as long as they can be defined by their appropriate class. A Boolean formula, such as follows, could be written to define the VRM Inventory classes from the separate overlays.
If Special Management Areas = yes, VRM Class I.
Or, if Scenic Quality is "A", VRM Class II,
Or, if Scenic Quality is "B," and Sensitivity is "high," and
Distance is "foreground/middle ground", VRM Class II,
Or, if Scenic Quality is "B," and Sensitivity is "high," and Distance is "background," VRM Class III,
Or, if Scenic Quality is "B," and Sensitivity is "medium," and Distance is "foreground/middle ground," VRM Class III,
Or, if Scenic Quality is "B," and Sensitivity is "high," and Distance is "seldom seen,' and adjacent to VRM Class I, II, or III, VRM Class III,

18. Appendix B.
Manuals and Handbooks

A. Manual 8400 Visual Resource Management

B. Handbook 8410-1 Visual Resource Inventory

C. Handbook 8431-1 Visual Resource Contrast Rating

19. Appendix C
VRM Forms

A. Form 8400-4 Visual Contrast Rating Worksheet

B. Form 8400-1 Scenic Quality Field Inventory

C. Form 8500-5 Scenic Quality Rating Summary

20. Appendix D.
Miscellaneous Handouts