IPNF Implementation Guide for Scenery Management:

Understanding the “how,” “what” and “when” of implementation under the 2015 IPNF, Land Management Plan

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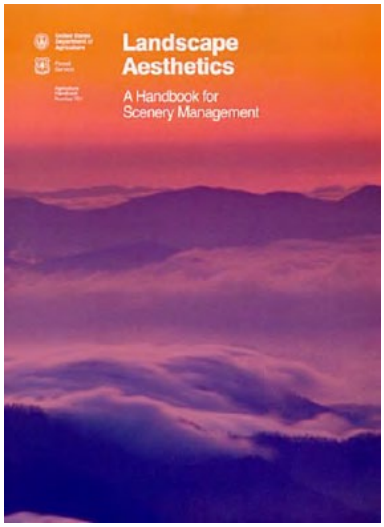
This paper will introduce the Scenery Management System and how it relates to forest plan implementation for landscape managers and decision makers. The tools provided by the SMS will be identified and defined. This guidance paper will also demonstrate the step-by-step process of applying the SMS to your project and show you where to get further guidance in the form of design measures and mitigation.

INTRODUCTION

"The Scenery Management System (SMS) is a tool used to express the benefits values and desires regarding aesthetics and scenery for all levels of ecosystem management." (Landscape Aesthetics: A Handbook for Scenery Management, Agricultural Handbook 701). Observing scenic views for pleasure—whether it on foot, horseback or from the passenger seat of a minivan—is among the top activities people participate in when visiting national forest land. The SMS establishes terminology, techniques and standards that allow us to ensure conservation of valued scenic attributes, both biophysical and social, for future generations. Essential land management tools such as inventory, analysis and monitoring are framed in such a way as to allow for the ever-evolving face of the land to be documented and accounted for from the regional to the project level planning scale.



The 2015 forest plan revision process allowed the IPNF to leave the outdated *Visual Resource Management System* (1973) and become current with the latest national direction for scenery management: *The Landscape Aesthetics Handbook for Scenery Management – Agricultural Handbook Number 701*. Utilizing information available in the previous forest plan (e.g. viewpoints and travel corridors) in combination with National Visitor Use Monitoring (NVUM) data and various scenic inventories, a Scenic Integrity Objectives (SIOs) map was produced. To assist in implementation of the forest plan designated SIOs and to fully integrate scenery management with the management of other resources, Visibility and Scenic Classes (see Glossary for definitions) were also determined and mapped in ArcGIS.

This guidance paper is intended to assist the forest in implementing the 2015 Forest Plan, as well as ensuring consistency with National policy and direction (Forest Service Manual 2380, and The Landscape Aesthetics Handbook for Scenery Management – Agricultural Handbook Number 701).

WHAT'S NEW AND NOTEWORTHY IN THE SMS

VQO's Are Now SIOs

The visual resource management (VRM) used Visual Quality Objectives for scenery where the SMS uses Scenic Integrity Objectives. Below is a cross walk between the two. The cross walk is not intended as a one-to-one correlation between SIOs and VQOs, but rather, displays the hierarchy of ratings between the two systems and how they relate to the level of landscape character "intactness".

Scenic Integrity Objectives	Definition	Visual Quality Objectives
Very High	Positive attributes defined in the Landscape Character description are intact	Preservation
High	Positive attributes appear intact	Retention
Moderate	There are slight deviations to the landscape; deviations are subordinate to the landscape character.	Partial Retention
Low	Deviations begin to dominate the landscape character	Modification
Very Low	Heavily altered landscape, deviations strongly dominate the landscape	Maximum Modification

The Dynamic Character of Naturally Evolving Landscapes

The SMS links objectives for scenery to the landscape's historic range of variability instead of basing them on one landscape condition at one point in time. The VRM suggests a static and binary time line for realizing scenic objectives whereas the SMS links scenic objectives to the dynamic character of "naturally evolving" landscapes. This allows analysis of long-term results while taking into consideration the positive changes that can come from naturally occurring disturbance regimes (e.g. fire, insects and disease) and, in some cases, from valued man-made components such as old barns, fences and historic log cabins.

Determining the Social Values Related to Scenery

Unlike the VRM, the SMS encourages constituent surveys in addition to already mapped/identified Concern Level data. When a constituent survey is not feasible, it is extremely important to communicate with the recreation specialist for the area to gather information on how recreationists are using the landscape of interest. It is also important to be engaged with the groups and individuals who use the area when the opportunity presents itself—such as at public meetings and collaborative sessions. By engaging with these publics and specialists, one can better understand the values associated with the landscape being analyzed.

GENERAL SMS CONCEPTS

The SMS recognizes that landscapes are not static. Instead of basing objectives for scenery on one landscape condition at one point in time, objectives for scenery are grounded by naturally changing and evolving conditions that are described in the landscape (scenic) character description. We know that landscapes change over time naturally. Forests burn; natural succession transforms open meadows to forests; insects and disease change the composition, structure and mosaic of vegetation; etc. The landscape character discusses the types of vegetation and other attributes found within the landscape while also describing disturbance regimes that are part of that landscape. This context ensures that objectives for scenery are linked to ecological changes rather than managing for a specific condition into perpetuity.

Could the no-action alternative for a project negatively affect the landscape character by allowing for insects and disease to wipe-out the vegetation from a critical viewpoint? Possibly...

Things to Consider:

A. Burned landscapes under the VMS were typically deemed unattractive, especially in foreground areas. Under the SMS, burned trees are considered part of a naturally evolving, healthy and resilient landscape. SMS looks beyond one vegetation condition at one point in time. The effects of prescribed fire are often disclosed in both the short term (burned landscape with no understory vegetation), and longer term (lush understory, diversity of species, structure, age classes and mosaics). Longer term effects may be positive and critical to the sustainability of both ecological conditions and the scenic character of the area.

B. Mechanical treatments can also be assessed to disclose short term and long term effects of an action. Immediately upon project completion, the effects may be negative (stumps, slash, disturbed soil and understory vegetation, etc.). In the long term, some treatments (when designed appropriately) may create a more sustainable mosaic of vegetation that contains diversity in the vegetation (patterns, species, composition, age classes, and structure) and that is more resilient to predicted catastrophic outside the natural range of disturbances.

Ecological concepts are integrated by including ecological processes and disturbance patterns in the Landscape (scenic) Character descriptions.
Natural disturbances such as fire, insects, and disease play an important role in how landscapes, and the resulting scenery, change over time. These disturbance regimes are evaluated as part of an evolving landscape and can create positive changes to the scenic integrity of a landscape. A more diverse mosaic of vegetation, increased species diversity, and diversity of age classes are all potential results of natural disturbance processes that relate back to positive attributes defined in the desired Landscape Character description. The SMS recognizes that without these disturbance processes the likelihood of catastrophic events is increased and the resulting landscape will probably not meet established desired conditions for vegetation, scenery, and other valuable natural resources. This interdependency of scenery and disturbance regimes allows managers the flexibility to select tools such as prescribed fire and/or mechanical treatments at scales necessary to meet desired conditions for the ecosystem as a whole.

Things to Consider:

A. The purpose and need for a proposed mechanical treatment is to manage the existing vegetation toward desired (healthy and resilient) vegetation conditions. With appropriate design, the action would increase the diversity in species and size classes and create a mosaic that reflects historic fire regimes. These desired vegetation conditions are also referenced in the desired landscape character description. Rather than being in conflict with each other, the objectives for scenery and the objectives for restoration are striving for the same end result.

B. Using prescribed burning as the example, immediately after a fire, there are short term effects such as: red needles, burned trunks, snags, and possibly little or no understory vegetation. Depending on the intensity of the fires, these effects are often short term. As the landscape recovers, the short term effects diminish and long term changes such as: a mosaic of openings that mimic patterns created by historic fire regimes; increased diversity of specifies and age classes; snags punctuating the new growth canopies; and increased variety in colors and textures characteristic to the landscape. These changes add interest and diversity to the landscape and the effects to the scenic resources are considered positive.

C. Equally important is the need to assess impacts of the no-action alternative. Sometimes a no action scenario results in conditions that deviate even further from desired conditions (further outside the historic or natural range of variation) due to the likelihood of a high intensity, stand replacing fire, or epidemic levels of insects and disease. Although fire and other disturbances are natural to the Region's landscapes, proposed actions may reduce the risk of these disturbances reaching epidemic proportions. The risks and vulnerabilities of landscapes loosing valued components (landscape attributes) need to be considered and disclosed in all alternatives, including the no-action alternative.

SMS recognizes that some constructed features add to, rather than detract from, the scenery.
This is a change from the Visual Resource Management system where man-made features were considered a negative impact to the natural appearing landscape. SMS recognizes that some man-made features add to the aesthetics of specific landscapes and contribute to the sense of place. Examples of positive cultural features are typically historic and include such structures as: old barns, historic log cabins, fire look-outs, buck-and-rail fences, ghost towns, remnant CCC facilities, historic dams and bridges, etc.

Scenery Integrity Objectives (SIOs) do not dictate whether management activities can occur or prescribe what tools and treatments are, or are not, appropriate.
The SIO is simply the desired outcome for the scenic resources upon completion of an action. Project planning, design, and implementation, are also crucial in meeting the assigned SIO. How the management tool is used and what is left behind, as opposed to which tool is used and what is taken, becomes the focus. As described earlier, the analysis will consider natural disturbance regimes and long term effects when determining whether the SIO will be achieved. If the treatment is designed to mimic natural disturbance regimes, achievement of a High SIO may be feasible. It also bears repeating that the proposed action will always be analyzed alongside the no-action alternative. Reference the purpose and need for action to ascertain what the effect(s) of no action might be. Where catastrophic natural disturbances are predicted, there may be negative short and long term effects to the multiple resource values, including scenery, with the no-action alternative.

Scenario to Consider:

Timber harvest is proposed to reduce fuel loading in a Wildland Urban Interface (WUI). The assigned SIO is “High” due its visibility from adjacent residents (Concern Level 1) and the unique combination of landscape attributes (Scenic Attractiveness rating A). This type of scenario will require extra sensitivity in how the fuel reduction is designed and implemented but does NOT eliminate the option of performing vegetation treatments (mechanical or fire use). It simply means that the resulting landscape (post-treatment) meets the project objective (reducing fuel loading) while also meeting the assigned SIO. Mitigation measures may include: leaving stumps no higher than 6” in foreground areas, leaving no slash piles (also reducing fuel loading), creating openings that mimic meadows characteristic to the landscape, and using native seed mixes to establish/re-establish forbs and grasses indigenous to the area.

KEY SMS COMPONENTS

Landscape Character—the ecological context of scenery
Socially valued Landscape Character is the essential scenic resource to be protected and sustained. Every place has a landscape character people value—a unique image and identity composed of scenery attributes, both natural and human, that are evolving through time. It is the physical appearance *and* cultural context of a landscape that gives it an identity and "sense of place." It describes how the landscape has evolved over time while taking into account the landform, vegetative patterns, water characteristics and other distinctive physical attributes while also depicting an overall visual and cultural impression of the landscape. The Landscape Character establishes a reference for the landbase one manages.

Concern Level—the people piece of scenery
Concern level data, aka "sensitivity," is gathered in order to identify people's connections to the land, and their commonly shared image of specific geographic areas, called "Places." The Concern Level assigned to a Place reflects two elements: *expectation* and *use*. The *expectation* piece speaks to the concept of "sense of place;" what is valued by those who use the landscape (what they expect to see and where they expect to see it). Social meanings and attachments make each Place unique in its emphasis and ecosystem stewardship opportunities. Questions to consider are: how do people use the area? What kind of scenery do they value? What are their preferences and thresholds for the scenic condition? What is the context of the viewer(s)?

The second element to understanding Concern Level is *use*. *Use* describes not only how the area is being utilized, but how much the area is being used in comparison to others like it in the same character area. Important information to think about includes: duration of view, degree of discernable detail, seasonal variation, and number of viewers. Questions to consider are: how do people use this area compared to other areas like it? Is this a major recreation destination? Is this a primary thoroughfare for the landscape character area?

Although Concern Level data provided by the IPNF LRMP takes into account the expectation and use of a Place, the SMS stresses the importance of "groundtruthing" the social values associated with the scenic resource by surveying and speaking directly to the users who utilize the area.

Scenario to Consider:

A timber management project is being proposed for a corridor which contains a highly used OHV trail with a Concern Level of 1 (High), and the proposed action will likely affect the viewshed from a popular vista. The Motor Vehicle Use Map and the Recreation Specialist for the district confirm that the trail receives high use in spring and summer by horseback riders and OHV enthusiasts. Even though a Concern Level of 1 has been assigned to the trail, the landscape architect determining effects to the scenic quality of the area should survey the public who use the trail, learn how they use it, and discover how the users view the importance of scenery in the area. Some users may find the presence of timber management reassuring while others may find it distracting or disturbing. Concern Level data should always be confirmed by researching the social values and the sense of place associated with the landscape being assessed.

Distance Zones—the visibility of the area

Distance Zones are assigned according to specified distances of land areas from an observer. They are divided into 3 categories: foreground (within ½ mile from viewer), middleground (1/2 to 4 miles from viewer) and background (4 miles to the horizon).

SCENERY DIRECTION IN THE 2015 IDAHO PANHANDLE FOREST PLAN

Forest-Wide Direction

GOAL-SES-01. Contribute to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources. Provide timber for commercial harvest, forage for livestock grazing, opportunities for gathering firewood and other special forest products, permitted recreation residences, and settings for recreation consistent with goals for watershed health, sustainable ecosystems, biodiversity, and scenic/recreation opportunities.

FW-DC-AR-02. The scenic resources of the IPNF complement the recreation settings and experiences while reflecting healthy and sustainable ecosystem conditions.

FW-DC-TBR-03. Timber cutting on other than suitable for timber production lands occurs for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreational and scenic-resource management consistent with other management direction. Restocking of these lands varies, based on the purpose and need for the project, and is determined through the project-level interdisciplinary process and the silvicultural prescription. Based on the site-specific silvicultural prescription and desired conditions, lands may be restocked within 5 years. In some instances, such as when lands are harvested to create openings for fuel breaks and vistas or to prevent encroaching trees, these lands may not be restocked.

FW-GDL-AR-01. Management activities should be consistent with the mapped scenic integrity objective, see Plan set of documents. The scenic integrity objective is High to Very High for scenic travel routes, including the Pacific Northwest National Scenic Trail, designated Scenic Byways, and National Recreation Trails.

FW-GDL-TBR-01. Timber harvest on other than suitable lands may occur for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreation and scenic-resource management consistent with other management direction.

Other Related Forest-Wide Goals and Desired Conditions Related To Scenery

GOAL-VEG-01. Plant communities are trending toward the desired conditions for composition, structure, patterns, and processes. The ecological integrity of the communities is high and they exhibit resistance and resiliency to natural and man-caused disturbances and stressors, including climate change.

FW-DC-VEG-05. The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities, and compositions. Formerly extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally, there is an increase in the size of forest patches that are dominated

by trees in the seedling/sapling size class, as well as in the large size class. There is a decrease in the size of the patches that are dominated by trees in the small and medium size classes.

FW-DC-VEG-11. The desired forest composition, structure, and pattern for each biophysical setting are described on pages 14 through 18.

Management Area Specific Direction

MA	Guideline	SIO
MA 1a Wilderness MA 1b Recommended Wilderness MA 1c Wilderness Study Area	**MA1a-GDL-AR-01** **MA1b-GDL-AR-02** **MA1c-GDL-AR-03**	Very High
MA 1e Primitive Land	**MA1e-GDL-AR-04**	High to Very High
MA 2a - Wild & Scenic River (**Wild**) MA 2b Eligible Wild & Scenic River (**Wild**)	**MA2a-GDL-AR-04** **MA2b-GDL-AR-05**	Very High
MA 2a Wild & Scenic River (**Recreational**) MA 2b Eligible Wild & Scenic River (**Recreational)**	**MA2a-GDL-AR-08** **MA2b-GDL-AR-08**	Moderate to High
MA 3 Botanical, Geological, Scenic, and Pioneer Areas	**MA3-GDL-AR-05**	High to Very High
MA 3 Emerald Creek Recreational Area	**MA3-GDL-AR-06 -**	High to Moderate
MA 4a Research Natural Areas	**MA4a-GDL-AR-01**	Very High
MA 4b Experimental Forest	**MA4b-GDL-AR-04**	Low
MA 5 Backcountry	**MA5-GDL-AR-04**	Moderate to High
MA 6 General Forest	**MA6-GDL-AR-05**	Low to High
MA 7 Primary Recreation Areas	**MA6-GDL-AR-05**	Low to High

Note:
*No Geographic Area specific direction pertaining to scenery is contained in the IPNF forest plan.
*No scenery related monitoring requirements are contained in the IPNF forest plan.

PROJECT LEVEL ANALYSIS AND IMPLEMENTATION

At the project scale, the mapped Forest Plan SIOs serve as the *minimum* level of scenic integrity (degree of intactness) a management activity can result in. SIOs do not prohibit or allow specific types of management activities, but simply convey the desired outcome for scenic resources. Layout and design techniques are necessary to ensure compliance with the mapped SIO. The following section describes a step-by-step process to use when developing, designing, and then assessing proposed management activities.

Project Initiation
It is critical to consider the scenic resources early in the planning process. Incorporating scenic values at the front end of project development and design will ensure the scenic resources of the IPNF complement the recreation settings and experiences while reflecting healthy and sustainable ecosystems conditions (FW-DC-AR-02).

1. Review the Forest Plan SIO map to determine which SIOs apply within the general project area – including adjacent areas.
2. Review the Forest Plan for any additional direction or guidance specific to the scenic resources (Forest-wide, MA-specific, and SIO map).
3. Verify that the SIOs are correct. Since the SIO is largely dependent on the landscape Visibility, it is important to verify mapped Distance Zones and Concern Levels. Keep in mind that changed conditions (land exchanges, new roads/trails, new development adjacent to the Forest, etc.) may have occurred since the Forest Plan SIO map was developed.
4. Review, the forest-wide Existing Scenic Integrity (ESI) map and compare ratings with the Scenic Integrity Objective (SIO) map. This will help identify potential areas of improvement needed to move existing conditions (ESI) to desired conditions (SIO). (FW-DC-AR-02)
5. Integrate scenic resource information with other resource values (IDT) to develop the purpose and need, project area boundary, proposed action and associated design considerations.

NEPA
As each step (identified below) is completed, it may be necessary to refine and expand upon inventory information (developed at the forest scale) to provide the sufficient level of detail necessary in describing both the affected environment (Landscape Character, Existing Scenic Integrity, Scenic Attractiveness, and Concern Levels) and environmental effects (whether the project will achieve forest plan direction - mapped SIOs).
Affected Environment:

For projects in which potential impacts to scenery can be addressed by incorporating design features, it may only be necessary to **complete the steps with asterisks "**".** For more complex projects where scenery is identified as an "issue", or where there are anticipated effects to the scenic resources, follow the process as outline below.

1. **Summarize how the scenery of the project area contributes to any socio-economic benefits.**
   Examples may include: critical to the area's recreation setting(s) and visitor experience (link to forest plan recreational opportunity spectrum (ROS) class and recreation section of the affected environment); serves as a backdrop to local communities and adjacent residences (contributing to the sense of place and quality of life); draws visitors to the area and is an important aspect of the area's tourism industry; etc.

2. ** **Identify the geographic scope (analysis area) and temporal scope** (duration of effects) for the analysis. It may be important to identify more than one temporal scale since project implementation may produce short term effects that are different from long term effects.

3. ** **Reference relevant forest plan direction and guidance**.

4. ** **Identify references, tools, and method(s)** used in the analysis (i.e. FSM 2380 and AHB 701, field analysis, review of aerial photos, establishment of photo points, Google Earth and GIS analysis, visual simulations, R1 Mitigation Menu, implementation guidance – this document, etc.).

5. Describe the Landscape (scenic) Character

Landscape Character is defined as the combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. It provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

Landscape Character considerations:

It is important to note that only the positive attributes (not the visible impacts from current and past management activities) are included in the Landscape Character description. Human caused deviations are described in the next step--Existing Scenic Integrity.

Ecological units are often used as a starting point for describing the physical and biological attributes of the landscape. The following links contains ecological descriptions:

- http://www2.epa.gov/aboutepa/about-national-health-and-environmental-effects-research-laboratory-nheerl#wed This reference contains ecoregion mapping and descriptions for the state of Montana.
- http://archive.epa.gov/wed/ecoregions/web/html/id_eco.html This reference contains ecoregion mapping and descriptions for the state of Idaho.
- http://www.fs.fed.us/land/ecosysmgmt/colorimagemap/ecoreg1_provinces.html This reference contains Bailey's ecoregions and provinces.

Recent examples of Landscape Character descriptions can be found in Appendix C of the Lewis & Clark/Helena Plan Revision Assessment:
http://www.fs.usda.gov/goto/hlc/forestplanrevision.
Although these descriptions were developed for plan revision, they represent the scale and context appropriate for Landscape Character descriptions and can be used as context for project level planning and analysis.

The geographic area (GA) descriptions in the forest plan may also provide information relevant to the Landscape Character. In addition to describing the landscape's bio-physical attributes (geology, vegetation, soils, water features, disturbance regimes, and topography); note any positive cultural features within the project area. These are typically historic (fire lookouts, cabins, ghost towns, CCC structures), or features that contribute to the area's sense of place (rolling hay fields, reservoirs, etc.).

6. Determine the Existing Scenic Integrity:

Existing scenic integrity (ESI) is defined as the degree to which landscape attributes (described in the Landscape Character) are intact. This is where past management activities are described, e.g., past timber management, mining activities, utility corridors, and other constructed features (buildings, roads, trails, etc.).

There is a modeling process to help establish a preliminary assessment of existing conditions (Existing Scenic Integrity). The model uses corporate GIS layers such as: roads, mining, past vegetation treatments, existing ROS settings, oil and gas activities, etc. An ESI layer was developed for Region 1 using Regional GIS information. The process and ESI maps are housed in the R1 Geospatial Library:
http://www.fs.usda.gov/detailfull/r1/landmanagement/gis/?cid=stelprdb5360066&width=full

To refine the ESI map developed at the Regional scale, it may be helpful to review and refine the regional polygons with information available at the forest, district, and/or project level. Sources of information may include: landscape and/or watershed assessments, MVUMs, monitoring reports, updated GIS layers, FACTS information, and recent NEPA decisions for mining, utility corridors, etc. The objective is to identify past management activities that remain visible. Other tools such as aerial photographs, Google Earth, and photographs taken of the project area can also help convey Existing Scenic Integrity.

Scenic Inconsistencies

At the project scale, existing deviations will be described as part of the existing scenic integrity. Where feasible and appropriate, management actions may be included in one or more alternatives to improve these conditions. For example, there may be evidence of previous timber harvest in which the shape, size, and pattern created by existing units are not characteristic to the landscape. In these situations, techniques such as feathering to soften the units edges, treating areas between existing units to create larger openings (more consistent with what fire would create), or rehabilitating roads and skid trails may be proposed.

It is important to recognize that, in some cases, existing deviations are likely to remain on the landscape. SIO's were developed at a broad (forest-wide) scale. Within many of the SIO polygons, landscapes may contain features or landscape modifications (power lines, roads, mines, vegetation treatments, etc.) that are inconsistent with the assigned SIO. Typically, constructed features such as: roads, power lines, recreation facilities, and pipelines are maintained as long term deviations to the landscape character. Other modifications, such as past vegetation treatments and abandoned mines, may present opportunities for improving the scenic integrity through design and rehabilitation.

7. **Select critical view points from which effects will be analyzed.** In addition to the sensitive viewing areas identified in the Plan, a more thorough analysis will be necessary during NEPA to determine if additional sensitive corridors and/or vantage

points offer views to the project area. Identify key visual routes and points (viewing platforms) within the analysis area. Keep in mind that some of the viewing opportunities may be outside the project area (or even forest boundary) such as: adjacent highways, roads, private lands, and communities. As a starting point, use the forest-wide Concern Level mapping. Photos points should be established at each of the selected critical viewpoints. Critical viewpoints are selected based on: where people are likely to view the area; and where the proposed activities and anticipated impacts will be the most prominent. Photos should be taken and accompanied with narratives describing the existing scenic conditions (ESI). These same photographs will be used later in disclosing the effects of the various alternatives.

8. **Develop design considerations / mitigation measures**. These can be developed to be common to all alternatives, one or more alternatives, treatments types, and/or specific treatment unit(s). Reference Appendix B for a menu of regionally developed and approved mitigation measures pertaining to vegetation treatments. Additional references are available and listed in Appendix D.

Environmental Effects:

1. ** **Describe the effects** (or indicate there are no effects) of implementing each alternative. Where mitigation measures have been developed, base the effects with them in mind. In addition to a narrative describing the anticipated visual changes to the landscape, visual simulations may be necessary to further convey anticipated results of proposed activities. Utilize the critical viewpoints established earlier in the process for these simulations.

It is important to clearly articulate the effects of no action!

Include all potential activities that may cause a visual change to the landscape. Typical project elements include: new or reconstructed roads and trails, created openings, yarding and landing areas, skylines, skid trails, etc. The effects should not focus on temporary structures and trees that are removed, but rather, on what is left behind. Focus the effects discussion on the resulting vegetation (species diversity, age classes, size and shape of openings, pattern/mosaic) and intactness of other attributes (described in the landscape character). Where appropriate, reference conclusions presented in the vegetation, soils, watershed, fire, and other relevant resource narratives. Where there are distinct temporal differences in anticipated effects, the timeframes for those effects should be defined and discussed separately. For example, where vegetation treatments are intended (Purpose and Need) and designed (proposed action) to move toward improved ecological integrity (FW-GOAL-VEG-01, FW-DC-VEG-05, FW-DC-VEG-11), the immediate or short term (typically from project completion to 3-5 years) effects of proposed treatments may dominate the landscape (achieving the SIO of Low). These short term effects may be due to visible tree stumps, disturbed soils, visible scars created by temporary roads, etc. Longer term (after the first 3-5 years), these impacts may diminish, resulting in a more diverse and resilient mix of vegetation and a mosaic of openings and forests that better mimic what natural disturbance regimes would create. These longer term effects may meet the SIO of Moderate or possibly High. Timeframes of differing effects should be based on site

specific conditions and should reference, and be consistent with, anticipated effects described in other resource sections (vegetation, fire, soils, watershed, etc.). Additional examples can be found at http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/scenery.htm

For example, both prescribed burns and mechanical treatments can have negative impacts (stumps, slash, disturbed soil and understory vegetation, etc.) immediately upon project completion and, depending on site conditions, for the first few years. Longer term, these effects may diminish and (when properly designed) result in positive effects such as: a natural appearing mosaic of vegetation; diversity in the species, composition, age classes, and structure of vegetation; and a landscape that is more resilient to predicted catastrophic (outside the natural range) disturbances

2. **<u>Disclose whether each alternative is consistent with forest plan direction</u>**. Based on the action(s) proposed, and any associated mitigation measures, determine whether the SIO and other relevant direction will be met. IF YES, state how. IF NOT, describe and document why. Ensure the temporal scale(s) of the effects to the scenic resources is defined. Where there are distinct differences between short and long term effects, discuss the effects within each of the defined time frames. The timeframe(s) should be based on: the type(s) of effects being disclosed; site-specific conditions (often influencing the longevity of predicted effects); and whether there are differences between short and long term effects.

   Disclose the extent and magnitude of direct and indirect effects of project implementation. Describe anticipated effects of project implementation to the Landscape Character attributes described earlier. Utilize viewpoints established in the affected environment section. Determine if the changes meet the Forest Plan SIO(s).

   It is important to reference the predicted effects described in the vegetation, watershed, and fire sections of the document. In addition to being consistent with these sections of the analysis, the information will help inform and describe the impacts (positive and negative) to scenery.

   Analyze the cumulative spatial and temporal Scenic Integrity effects of the project. Include past, present, and reasonably foreseeable future actions. Predict ‘what’ and ‘where’ the Scenic Integrity will be after implementation. Compare these predictions to the forest plans Scenic Integrity Objectives.

The project analysis should describe whether the project is consistent with the relevant guideline(s). When the project design varies from the exact wording of a guideline, project documentation must specifically explain how the project design is as effective in contributing to the maintenance or attainment of the guideline. The analysis should conclude with whether project implementation will meet Forest Plan direction. When predicted impacts to the scenic resources are negative in the short term (as defined in the NEPA document) but positive in the long term (as defined in the NEPA document), it can be concluded that the project meets Forest Plan direction by meeting the intent of the Forest Plan guideline (SIO). Where predicted impacts will not meet Forest Plan SIO(s)

within the defined timeframe(s), the analysis should disclose noncompliance with the Forest Plan Guideline (SIO).

The line officer will then decide whether to:

a.) Alter the project to be in compliance with the Forest Plan SIO, or;
b.) Prepare a site-specific Plan amendment to change the SIO.

It is important to recognize that the Idaho Panhandle LRMP SIOs are "guidelines." To be consistent with guidelines, the forest plan states:

Guidelines: A project or activity must be consistent with all guidelines applicable to the type of project or activity and its location in the Plan area. A project or activity is consistent with a guideline in either of two ways:
a) The project or activity is designed in accordance with the guideline, or;
b) A project or activity design varies from the guideline but is as effective in meeting the intent or achieving the purpose of that guideline.

GLOSSARY: Terms to "Grow On"

Below are important terminology definitions which are key to understanding how to implement the SMS.

Concern Level – a measure of the degree of public importance placed on landscaped from travel ways and use areas. Concern Levels are sometimes used in combination with distance zones to describe landscape visibility. Concern Levels are divided into three categories:

1 = High
2 = Moderate
3 = Low

Distance Zones – Classification of landscapes by the distance from the observer(s). Used as a frame of reference to discuss landscape attributes or the effects of proposed management activities. Distance Zones can be used independently or in combination with Concern Levels to describe Landscape Visibility.

Foreground = up to ½ mile from viewer
Middleground = ½ mile – 4 miles from viewer
Background = > 4 miles from viewer

Existing Scenic Integrity - The existing condition (degree of intactness) of attributes described in the Landscape (scenic) Character.

Very High = Landscape is intact with only minor changes from the valued landscape character associated with scenic landscapes.
High = Management activities are unnoticed and the landscape character appears unaltered.
Moderate = Management activities are noticeable but are subordinate to the landscape character. The landscape appears slightly altered.
Low = Landscape appears altered. Management activities are evident and sometimes dominate the Landscape Character but are designed to blend with surroundings by repeating form, line, color, and texture of attributes described in the Landscape Character.

Landscape (Scenic) Character - A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. Scenic character provides a frame of reference from which to determine Scenic Attractiveness and to measure Scenic Integrity.

Landscape Visibility – Addresses the relative importance and sensitivity of what is seen and perceived in the landscape. It includes: the context of the viewers; the duration of the view; the degree of discernible detail; seasonal variations; and the number of viewers.

Scenic Attractiveness - Measures the scenic importance of a landscape based upon human perceptions of the intrinsic beauty of landform, rock form, vegetative patterns,

water characteristics and cultural land use. Attributes described in the Landscape Character serve as the frame of reference. Attractiveness is divided into 3 categories:

A = distinctive or unique
B = typical or common
C = indistinctive

Scenic Classes – Used at a forest scale to spatially convey the relative value of scenery across the forest's landscapes. They essentially serve as a Draft SIO layer during plan development to integrate scenery with other resource values and management emphasis. Through integration, the Scenic Classes are translated into the Plan's Scenic Integrity Objectives (SIOs). Generally, and IPNF (see appendix A), Scenic Classes are:

General SCs: **1 - 2** = High public value; **3 – 5**= Moderate value; **6 – 7**= Low value
IPNF SCs: **1** = High public value; **2-3** = Moderate value; **4-7** = Low value

Scenic Integrity - The highest Scenic Integrity ratings are given to those landscapes where the valued landscape attributes appear complete and little or no visible deviations are evident. Scenic Integrity is used to describe both existing (Existing Scenic Integrity) and desired (Scenic Integrity Objective) conditions. (*Landscape Aesthetics, A Handbook for Scenery Management, USDA, FS HB 701, page 2-1)*

Scenic Integrity Objectives (SIOs) The desired condition (degree of intactness) of attributes described in the Landscape (scenic) Character.

SIO	Definitions
Very High	Landscape is intact with only minor changes from the valued landscape character associated with significant scenic landscapes. Management activities are unnoticed and the Landscape Character appears unaltered.
High	Management activities are unnoticed and the Landscape Character appears unaltered.
Moderate	Management activities are noticeable but are subordinate to the landscape. The landscape appears slightly altered
Low	The landscape appears altered. Management activities are evident and sometimes dominate the Landscape Character but are designed to blend with surroundings by repeating form, line, color, and texture of attributes described in the Landscape Character.

APPENDIX A.
IPNF PLAN SIO DEVELOPMENT DOCUMENTATION

Scenic Classes in the SMS inventory range from 1 (highest) to 7 (lowest) as shown in the table below. SIO groups of SC1-high, SC2-3 moderate, SC4-7 low are mapped in the 2014 SIO map.

Distance zone/Concern Level	Fg1	Mg1	Bg1	Fg2	Mg2	Bg2	Fg3	Mg3	Bg3
A - Distinctive	1	1	1	2	2	2	2	3	3
B - typical	1	2	2	2	3	4	3	5	5
C - indistinctive	1	2	3	2	4	5	5	6	7

Inherent Scenic Attractiveness: measures the scenic importance of a landscape based upon human perceptions of the intrinsic beauty of landform, rock form, vegetative patterns, water characteristics and cultural land use. The Variety Class maps (1987 Forest Plan, Visual Management System) provided a basis for mapping Scenic Attractiveness. Scenic Attractiveness uses three categories:

A – distinctive
B – typical
C – indistinctive

Scenic attractiveness polygons were hand digitized from imagery based on human perceptions of the intrinsic beauty of landform, rockform, water and vegetation.

Existing Scenic Integrity: is the current state of the landscape considering previous human alterations. Although it is not an essential to the mapping of final scenic class assignments, it serves multiple purposes in forest planning and provides important benchmarks for decision making and monitoring. GIS was utilized to develop critieria to map ESI based on the standards and guides in the current forest plans. The Forest wide EIS mapped is broad scale, the existing Scenic Integrity should be reviewed at the project level.

Distance Zones: Distance Zones are assigned according to specified distances of land areas from an observer. They provide a frame of reference for considering landscape attributes or the scenic effect of human activities in landscape.

Bg – background (4 miles to horizon)
Mg – middle ground (½ to 4 miles distance)
Fg – Foreground (300' to ½ mile distance)

Concern Level: Concern Levels measure the degree of public importance placed on scenery. The Visual Resource Management System used Sensitivity Levels as "a measure of people's concern for the scenic quality of the National Forest". The Sensitivity

Level inventory established travel routes, use areas and water features of primary and secondary importance.

Concern Level measure of degree of public importance places on landscape viewed from travel ways and use areas (seen area)
1 – high
2 – moderate
3 - low

Visibility: Distance Zones and Concern Levels data is used to create a Visibility map. Landscape visibility is a combination of a seen area in relation to the context and types of viewers viewing it. The interconnected elements of landscape visibility include: context of viewers, duration of view, degree of discernable detail, seasonal variation, and number of viewers. Visibility labels are a combination of distance zone and concern level (e.g. FG2 – foreground with moderate concern level).

Definitions from Landscape Aesthetics – a Handbook for Scenery Management on pages 4-8 and 4-9 were used to determine Concern Levles. Primary traveways such as Highway 2, 37, 200, 56, and 508 were mapped as High Concern level.

Secondary travel routes such as FSR154 Vermillion, FSR152 Big Beaver and FSR215 White Pine (county portions only) were mapped with Moderate Concern levels. Recreation sites and important vista sites were also mapped such as Sex Peak Lookout as concern level 2.

APPENDIX B.
NORTHERN REGION SCENIC RESOURCE MITIGATION MENU

NORTHERN REGION

Scenic Resource Mitigation Menu & Design Considerations For Vegetation Treatments

March 12, 2009

Scenic Resource Mitigation Menu & Design Considerations For Vegetation Treatments

Introduction

The objective of the Scenic Resource Mitigation Menu is to provide a variety of techniques to minimize impacts to the scenic resources and meet Land and Resource Management Plan direction. The menu is not all-inclusive, nor is it to be used as a cookie cutter for automatic inclusion into NEPA documents and timber contracts. Each project will have unique conditions (biophysical and/or social) and specific vegetation management objectives that must be met.

Contents borrow heavily from work done in Region 8. Since landscapes across the Northern Region are extremely diverse, ranging from grasslands to old growth forests, techniques are not associated with specific silvicultural prescriptions or designated objectives for scenery. Instead, design considerations are categorized by common treatment activities that can be applied under multiple silvicultural prescriptions and under the full range of scenic integrity objectives. The valued attributes of the specific landscape and the ability of that landscape to absorb proposed management changes will determine which design techniques to employ.

This menu is dynamic and will evolve as managers continue to learn from the results of applying these techniques. In addition, new technology and practices may emerge requiring adjustments or additions to this document. References used in developing listed design considerations and mitigation techniques are listed at the end of this document.

Need for Guidance

Translating objectives for scenery into practical on-the-ground actions has typically been the role of landscape architects in the forest service. As the Region continues to downsize, it is not always feasible to involve a landscape architect in every project. Although general concepts and techniques to mitigate impacts to scenery were developed in the 70s and are outlined in a series of landscape management handbooks, there is now a need for a more condensed and accessible reference.

This menu provides general guidance to the field on what types of design considerations are available and should be discussed in an IDT context. The menu includes commonly practiced techniques that have proven to be effective when appropriately applied. As stated in the introduction, this is simply a menu of techniques. Landscape attributes, resource values, and vegetation management objectives will drive which techniques are best suited for the specific landscape and treatment being proposed. The intent is for IDTs, regardless of the mix of specialized skills, to consider landscape management techniques in the planning, design, implementation and monitoring of vegetation treatments in the Region.

Menu of Design Considerations and Mitigation Measures

SHAPE OF INDIVIDUAL UNITS

The goal is natural appearing opening(s) when viewed individually and a natural appearing mosaic when viewed within the broader landscape.

1. Created openings and treatment units should not be symmetrical in shape.

2. Straight lines and right angles should be avoided.

3. Created openings should resemble the size and shape of those found in the surrounding natural landscape.

4. Treatments should follow natural topographic breaks and changes in vegetation.

5. Where small landforms exist, consider treating the entire landform rather than creating artificial lines and patterns.

6. Along roadways, vary unit sizes, widths, shapes and distance from the center line.

EDGES OF INDIVIDUAL UNITS

The goal is a natural appearing transition between treated and untreated vegetation.

7. Utilize natural breaks in topography and vegetation type to delineate treatment edges.

8. Edges will be shaped and/or feathered to avoid a shadowing effect in the cut unit.

9. Where the unit is adjacent to denser forest, the percent of thinning within the transition zone will be progressively reduced toward the outside edge of the unit. In addition, vary the width of the transition zone.

10. Where the unit interfaces with an opening, the percent of thinning within the transition zone will be progressively increased toward the outside edge of the unit. In addition, vary the width of the transition zone.

11. Soften edges by thinning adjacent to existing unit boundaries, removing taller, older trees and favoring younger ones. This will reduce a vertical wall effect.

12. Treatment boundaries should extend up and over ridgelines to avoid the “Mohawk” look. This is especially important along ridgelines silhouetted against the sky.

13. Avoid widely spaced trees that are silhouetted along the skyline.

14. Consider leaving single trees and/or groups of trees to visually connect with the unit’s edges.

PATTERN CREATED BY MULTIPLE UNITS

The goal is a natural appearing mosaic of vegetation across the landscape.

15. Where multiple clear cuts are planned, vary the size and spacing across the project area.

16. Interlock individual openings to prevent a “floating” appearance.

COMPOSITION OF VEGETATION

The goal is to maximize diversity of species and age class that are within the landscape's natural range of variation/Forest Plan Desired Condition.

17. Where feasible, leave a diversity of species and age classes.

18. Leave healthy, wind throw resistant trees and groups of trees to add variety and interest.

19. A range of stem diameters should be left where compatible with project objectives.

ROAD, SKID TRAIL, and LANDING CONSTRUCTION

The goal is to minimize long-term visual impacts of access roads, skid trails, and landings.

20. Where feasible, locate and orient roads to minimize cut and fill.

21. Side cast topsoil during the construction of temporary roads and use for later obliteration and recontouring.

22. Where new access roads and skid trails meet a primary travel route, they should intersect at a right angle and, where feasible, curve after the junction to minimize the length of route seen from the primary travel route.

23. Where feasible, retain screening trees one tree-height below roads and landings (including cable landings) when viewed from below. Avoid creating a straight edge of trees by saving clumps of trees and single trees with varied spacing.

24. When viewed from above, retain, screening trees one tree-height above roads and landings and/or prescribe a higher leave basal area. Avoid creating a straight edge of trees by saving clumps of trees and single trees with varied spacing.

25. Log landings, roads, gravel pits, borrow areas, and bladed skid trails should be minimized within sensitive view sheds.

26. Cut and fill banks will be sloped to accommodate natural revegetation.

27. Cut and fill slopes will be revegetated with native species where ever possible.

SLASH TREATMENT

The goal is to minimize slash piles and residue that appears man-made.

28. Ensure slash is abated near landings by scattering, chipping, or other techniques.

29. In sensitive foreground areas, stumps should be cut to 8 inches or less in height.

30. Slash, root wads, and other debris will be removed, buried, burned, chipped or lopped to a height of 2 feet or less in sensitive view sheds. If slash is buried, locate in previously disturbed areas where possible.

SKYLINE TREATMENTS

The goal is to minimize the long term visual impacts of skyline operations.

31. Minimize the number of skyline corridors in visually sensitive areas.

32. Select skyline systems with lateral yarding capabilities.

UNIT MARKING

The goal is to minimize the visibility of tree markings post treatment.

33. Use *cut tree* (as opposed to *leave tree*) marking in visually sensitive areas.

34. Utilize species designation where appropriate to minimize the amount of necessary marking.

35. Unit boundaries will be marked with water based paint.

RELATED RECREATION AND TRAIL MITIGATION

The goal is to minimize both short term and long term impacts to recreation infrastructure and use.

36. Coordinate treatment timing to minimize conflicts with recreation use.

37. Temporary road and/or skid trail crossings across designated forest trails will be kept to a minimum.

38. Any crossings will be perpendicular to designated forest trails.

39. Minimize overlaying skid trails/haul roads on non-motorized system trails.

40. If trails are used as skid trails/haul roads, trail cleanup/rehabilitation will be included in the contract.

41. Trail width should not be increased.

42. Character trees and trees that define the trail corridor should be retained where ever feasible.

43. Changes to trail alignment and surfacing will be minimized; the trail will not be straightened nor its surface be changed with an alternate material unless such actions are needed to enhance the trail and protect resources.

44. Warning signs will be placed on all trail access points and along the trail where activities are occurring.

45. When activities are occurring along open trails, slash will be treated within 100' of the corridor within specified timeframes (check with recreation specialist).

46. If trails are temporarily closed due to harvesting, trail tread will be cleared of all slash.

Frequently-Asked Questions in Meeting Objectives for Scenery

Q: *What is the timeline for meeting the Scenic Integrity Objective (SIO)?*
A: The Scenery Management System Handbook does not specify a timeframe within which the relevant SIO must be met. This is largely due to the differing ecosystems and treatment objectives, some of which are long-term. Timeframes for meeting all project objectives, including those for the scenic resources should be discussed and disclosed in the project-specific NEPA document.

Q: *In what circumstances can a temporary SIO of Rehabilitation be used?*
A: If an area's existing scenic integrity is lower than the planned objective and/or if the area contains visible disturbances that detract from the natural or socially valued attributes of the landscape, due to natural or human-caused alterations, the Scenery Resource Specialist may choose to assign a short-term SIO of Rehabilitation in consultation with an interdisciplinary team. *Landscape Aesthetics* defines rehabilitation as "a short term management goal used to return a landscape with existing visual impacts and deviations to a desired level of scenic quality formerly found in the natural landscape." The Big Eye Book suggests that rehabilitation may be achieved through alteration, concealment or removal of obtrusive elements. *(National Forest Landscape Management, volume 2, chapter 1: The Visual Management System, pg 40).*

Q*: In what circumstance might I need a Visual Simulation for a project?*
A: Visual simulations provide graphic representation of the effects of a project on the scenery resource. Consider using if your project contains high visibility viewsheds from major corridors, if the SIOs and/or Scenic Classes warrant special attention, if the project contains major human-constructed elements such as cell towers, wind turbines, power lines, mining operations, etc., and/or if there is a question about how a road or a regeneration treatment will appear on the landscape. Visual simulation is a powerful analysis tool that is fairly expensive to implement, so make sure your project warrants the cost and time. Often simulations are not created for areas with Low Scenery Integrity Objectives (or, under the VMS, classified as "Modification.") Here is a source for some examples of Visual Simulations: ftp://ftp2.fs.fed.us/incoming/nfsnc/ecrews/globe/

Q*: It seems as though only the Low SIO allows for timber management.*
A: The SIO of low is often an appropriate place for timber management. That doesn't mean that trees can't be harvested for a variety of reasons in other SIO's (Moderate and High and Very High). Forest management direction on what is the most appropriate place for timber management can be found in Forest Plans, Area Analyses, Watershed Assessments, and Environmental Analysis (EAs).

It is important to understand that an SIO does NOT allow or preclude activities from occurring. The SIO is simply the desired condition for the scenic resources of a particular area. Depending on the ecosystem in which the treatment is proposed, an SIO of low in a relatively homogenous landscape may be more difficult to achieve than in a more diverse landscape that has an assigned SIO of High or Very High. This is due to the ability of some landscapes to better absorb changes that go un-noticed. For instance, creating openings on a steep, north facing slope with even aged timber is more difficult to "hide" than creating opening on a landscape with varied topography and vegetation patterns. The characteristics of the landscape as opposed to the assigned SIO are more important to creating openings that blend with the natural surroundings.

In addition, it is important to disclose impacts of the no-action alternative to the scenic resources. Close coordination with the Forest silviculturist and an understanding of the Purpose and Need of the proposed action will be critical in assessing both short term and long term effects of all alternatives, including the no action alternative. The outcomes (including the scenic integrity) of the proposed treatment are more often than not, linked to desired ecological conditions. By doing nothing, resulting effects to the scenic resources can include less variety in the landscape or changes which are outside the HRV or DC for the landscape as a whole.

Q*: How flexible are timber contracts in being able to do these treatments? For example, can leave trees be marked so as not to be visible from sensitive corridors? What if I specify slash should not to exceed 2 feet in height or removed altogether?*
A: Timber contracts are flexible and can accommodate the treatments identified in this menu. Usually, the TMA (Timber Management Assistant) is responsible for coordinating the project design to ensure contracts can accommodate mitigation measures. Pre advertisement reviews are then conducted as a check point to ensure the contract is consistent with the NEPA documents. In the example case, although USUALLY leave trees are marked, it is possible to mark the trees to be taken. The TMA would make sure the operator is aware that in some areas there are special circumstances. This same principle applies to the slash treatment and other mitigation measures.

Q*: There are some vegetative conditions that make meeting the mitigations harder. How can they be handled?*
A: Some treatments will require more intensive work than others, including hand work. It is important in areas where concern for scenery is high to carefully consider all the options, including chipping, burning, lop and scatter or total removal. It may be possible to vary the treatment even within the area to achieve a more natural appearance, like total removal in some parts and leaving some parts with two feet of slash. Projects often have areas like these that require hard thought on how to accomplish the desired goals. Collaboration with silviculturists and foresters can lead to new thoughts and ways to get all the goals accomplished.

Q*: What treatment do I select if there are several that fit?*
A: Select the treatment that applies to your project's purpose and need. Is your project harvest-related or is it initially intended to be an enhancement? Don't confuse treatments with mitigation.

Q*: How do I describe the effects to scenery from prescribed burning?*
A: Timing is important. Consider burning in the spring prior to "green-up," to keep the area from looking burned for the remainder of the year. In addition, it is important to keep in mind that "no action" does not equate to "no change". When conducting an effects analysis, disclose the effects of the no action alternative. Often, without a prescribed burn, the area would be highly susceptible to a large, high intensity burn. Coordination with fire ecologists and others will be critical in accurately describing anticipated effects to existing vegetation and landscape character in the no action alternative. In addition, the purpose and need for the proposed action should be helpful in disclosing the effects of doing nothing.

It is also important to discuss both the short term and long term effects of a proposed burn. Often, the short term effects may be perceived as negative while long term effects may be positive.

Q: What is Visual Absorption Capacity and how / when should it be used?
A: Visual Absorption Capacity, or VAC, is an indicator of the relative ability of any landscape to accept human alteration without loss of landscape character or scenic condition. VAC can help specify the most efficient location for a human alteration on the landscape, helping to make project accomplishment easier, at a lower cost and with minimal reduction in scenic quality. Terrain (slope) and vegetation cover are the two most important factors available in determining how much VAC is available on a given landscape. Unlike with the inventory for determining scenic quality objectives (SIOs), vegetation cover is used in determining VAC and, along with the slope, aids in making the perception of an activity more subtle than it really is. A landscape architect can provide guidance in determining a landscape's visual absorption potential of a management activity.

Q: *Once my team and I have selected appropriate mitigation measures for a project, would there need to be any changes in their wording to be used for definitive mitigation or included in work contracts?*
A: It is critical to work with your contracting officer to ensure mitigation measures identified in the NEPA document, and used as the basis for analysis conclusions, are technically and economically feasible. These discussions should occur prior to completing NEPA to ensure measures can be included in the contract and implemented on the ground.

References:

Department of Transportation and USDA Forest Service. *Scenic Byways, A Design Guide for Roadside Improvements*. July, 2003.

American Association of State Highway and Transportation Officials. *A Guide for Transportation Landscape and Environmental Design*. June, 1991.

Montana Forest and Conservation Experiment Station, University of Montan. *Aesthetics and Timber harvesting in the Northern Rockies*. 1972

British Columbia Ministry of Forests. *The Public Response to Harvest Practices in British Columbia at the Landscape and Stand Scale.* February 2006

US Department of Agriculture. Agriculture Handbook 701*. Landscape Aesthetics: A Handbook for Scenery Management*. 1995.

US Department of Agriculture. Agriculture Handbook 462. *National Forest Landscape Management, v. 2, chapter 1: The Visual Management System*. 1974.

US Department of Agriculture. Agriculture Handbook 478. *National Forest Landscape Management, v. 2, chapter 2: Utiltities*. 1975.

US Department of Agriculture. Agriculture Handbook 483. *National Forest Landscape Management, v. 2, chapter 4: Roads*. 1977.

US Department of Agriculture. Agriculture Handbook 559. *National Forest Landscape Management, v. 2, chapter 5: Timber*. 1980.

US Department of Agriculture. Agriculture Handbook 608. *National Forest Landscape Management, v. 2, chapter 6: Fire*. 1985.

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APPENDIX C.
TOOLS AND REFERENCES

Forest Service Policy and Direction pertaining to the management of scenic resources:

- Forest Service Manual (FSM) 2380
  http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?2300

- U.S. Department of Agriculture, Forest Service. *National Forest Landscape Management: "Landscape Aesthetics: A Handbook for Scenery Management."* Agriculture Handbook 701. Washington, DC: U.S. Department of Agriculture; 1995. 257 pages.
  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/sms_hanbook_701-opt.pdf

- U.S. Department of Agriculture, Forest Service. *National Forest Landscape Management: Volume 1.* Agriculture Handbook 434. Washington, DC: U.S. Department of Agriculture; 1973. 76 pages.
  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/volume1_1973-opt.pdf

- U.S. Department of Agriculture, Forest Service. *National Forest Landscape Management: Volume 2, Chapter 1.* Agriculture Handbook 462. Washington, DC: U.S. Department of Agriculture; 1974. 47 pages.
  (often referred to as the **"Big Eye"** Book)
  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/volume2_ch1-opt.pdf

- U.S. Department of Agriculture, Forest Service. *Landscape Management: Volume 2, Chapter 2: **Utilities**.* Agriculture Handbook 608.
  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/utilities_scanned_opt%20.pdf

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  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/roads-opt.pdf

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  http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/handbooks_references/timber_opt.pdf

- U.S. Department of Agriculture, Forest Service. *National Forest Landscape Management: Volume 2, Chapter 6: **Fire**.* Agriculture Handbook 608. Washington, DC: U.S. Department of Agriculture; 1985. http://naldc.nal.usda.gov/naldc/download.xhtml?id=CAT85839632&content=PDF

- U.S. Department of Agriculture, Forest Service. *National Forest Landscape Management: Volume 2, Chapter 8: **Recreation**.* Agriculture Handbook 666. Washington, DC: U.S. Department of Agriculture; 1987. 86 pages. http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/references/volume-2-chapter-8-recreation.pdf

BLM Reference Pertaining To Oil and Gas:
http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/technical_information.html

Regional GIS layers and metadata:
http://www.fs.usda.gov/detailfull/r1/landmanagement/gis/?cid=stelprdb5360066&width=full

Regional Intranet site with Scenery Management references, tools, and examples:
http://fsweb.r1.fs.fed.us/rmlhw/scenery_mgmt/scenery.htm

APPENDIX D:
3-D VISUAL OVERLAY MODELING USING GOOGLE EARTH, ARCMAP AND PHOTOSHOP SOFTWARE

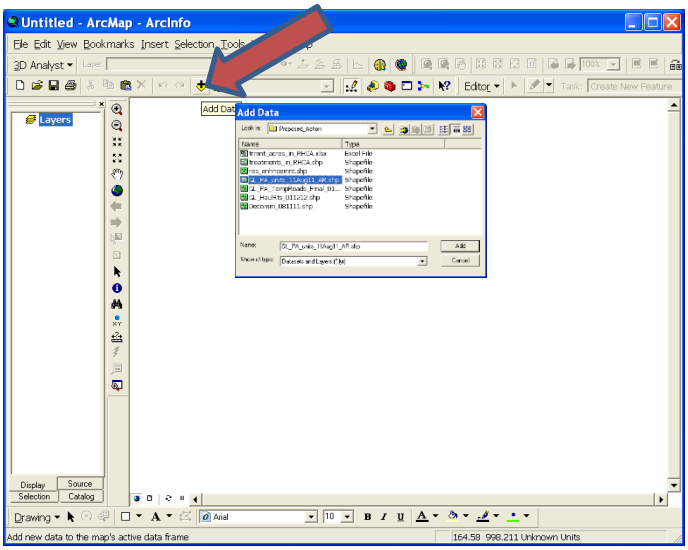
3-D VISUAL OVERLAY MODELING USING GOOGLE EARTH,

ARCMAP AND PHOTOSHOP SOFTWARE.

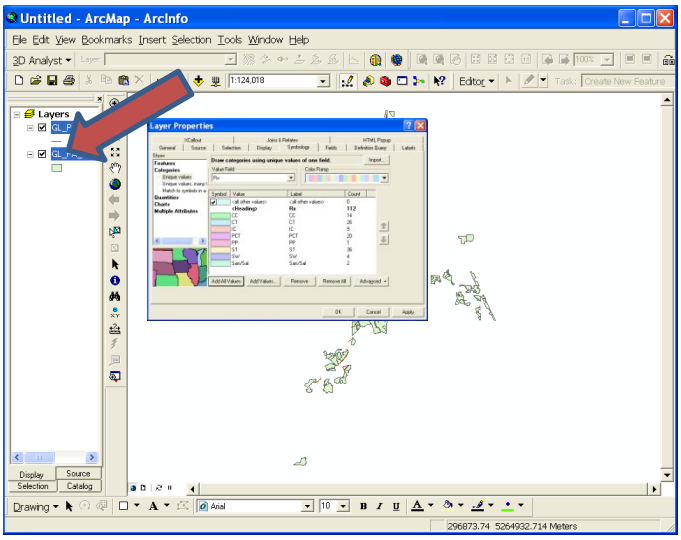
3-D VISUAL OVERLAY MODELING USING GOOGLE EARTH, ARCMAP AND PHOTOSHOP SOFTWARE.

The purpose of the guideline is to demonstrate an easy, fast, and inexpensive 3D modeling process that can be effectiveA in helping to visualize impacts from vegetation treatments (primarily in assessing potential form, shape, and edge effects of treatment units). This process will show you how to convert KML files from ArchMap, how to use Google Earth to create 3D viewpoints, and a Photoshop technique to scale Google Earth images.

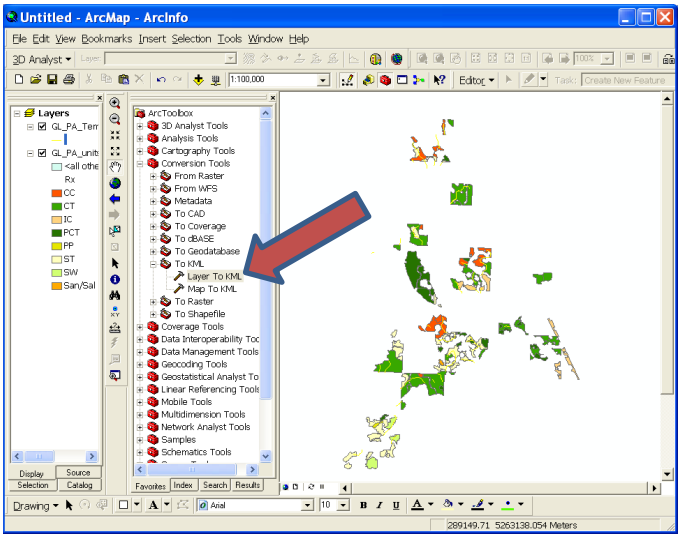
Step 1: Convert ArcMap layer to a Google .kml file in ArcMap.
First: Open up ArcMap and add your project data including proposed roads and vegetation treatment units (I'm using *GL_PA_units_Aug11_AR.shp* and *GL_PA_TempRoads_Final_01.shp as an example).*



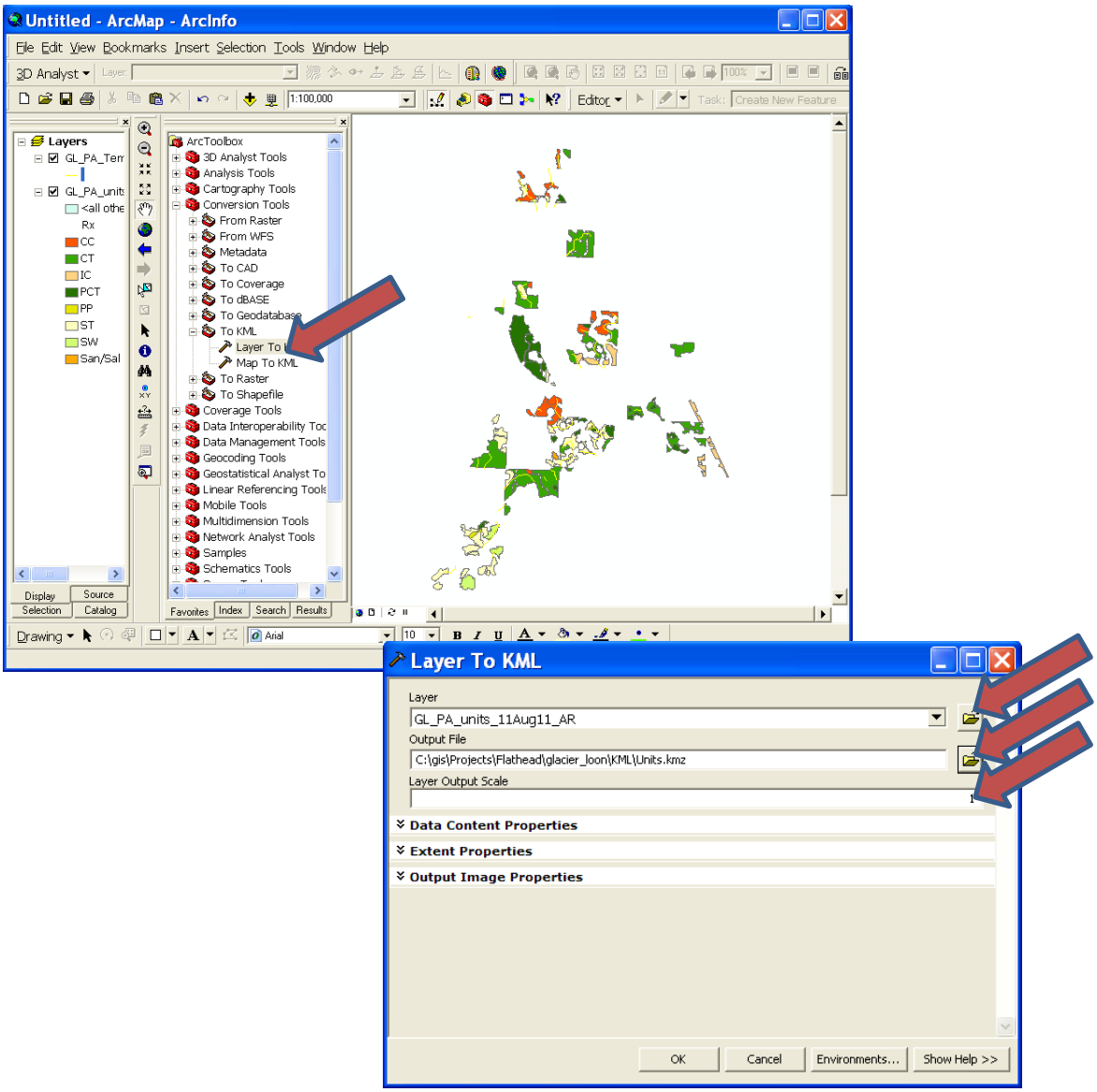
Next: Adjust the L*ayer Properties* (right click over your layer) and using *categories/unique values* color your vegetation units (depending on the project I will usually distinguish between all or portions of similar unit prescriptions i.e. regeneration harvests & thinning or between logging systems i.e. skyline and ground). Repeat this process for your roads layer where you can distinguish between the types of roads. FYI-You can also adjust the colors later in Google Earth and in Photoshop.



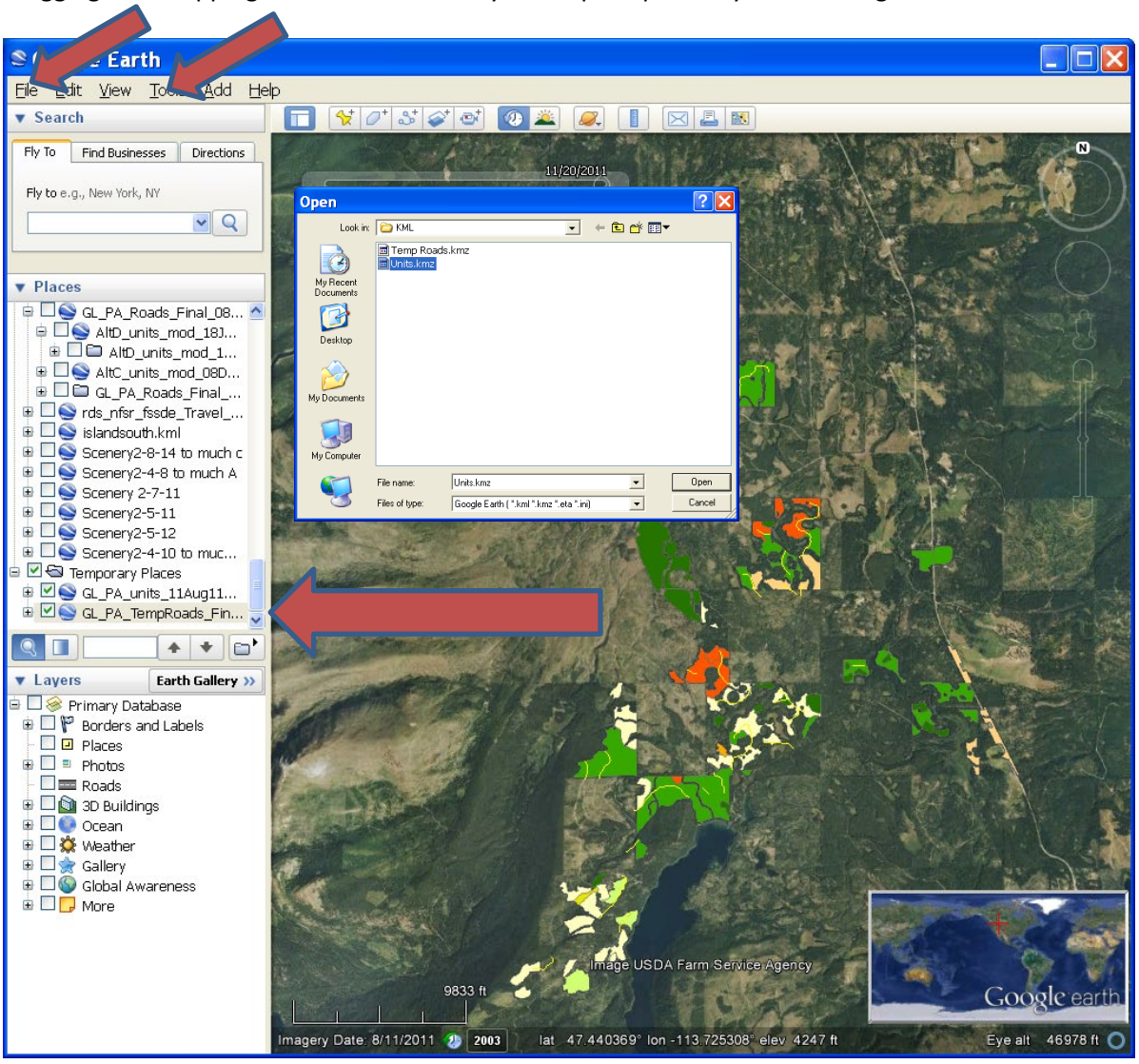
Next: Click on the *Arc ToolBox* icon and then click on the *Conversion Tool s* from the drop down items, and then Click on the *To KML*. A *Layer To KML* window will then open.



Next: After your *Layer To KML* window is open, find your vegetation units layer that you would like to export in the first text field labeled *Layer*. Then in the next text field *Output File*, find the location where you would like to save the new .kml file and then place a value of "1" in the last *Layer Output Scale* text field. Hit OK and repeat the process for your project roads file. After you are done with that you should have two KML files ready for Google Earth. If you were not successful in creating a .kml file you could always ask a GIS gooroo to e-mail you your project vegetation treatments and roads as a KLM file.

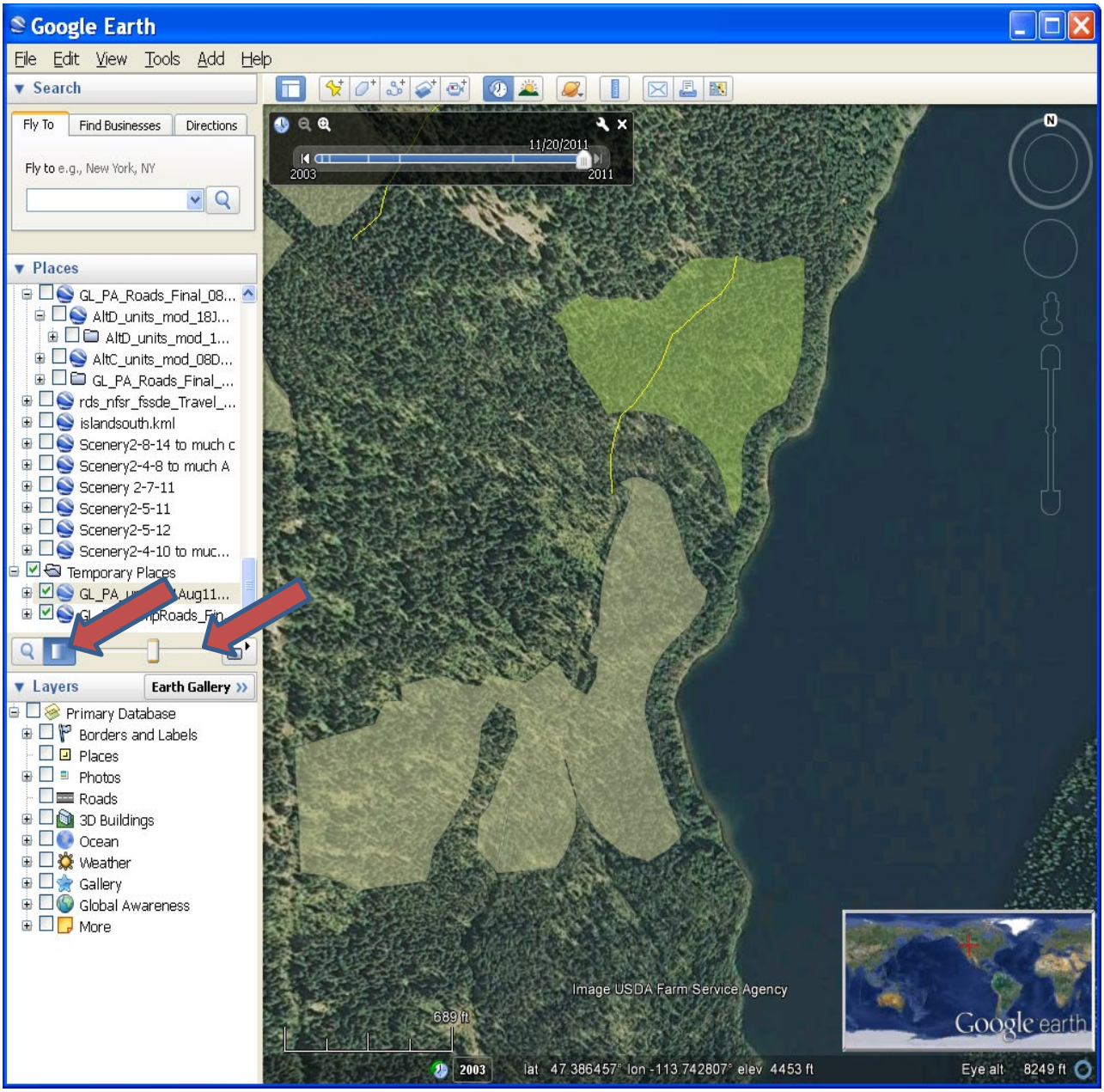

Untitled - ArcMap - ArcInfo
File Edit View Bookmarks Insert Selection Tools Window Help
3D Analyst
1:100,000
Editor
Create New Feature
Layers
GL_PA_Terr
GL_PA_units
<all othe
Rx
CC
CT
IC
PCT
PP
ST
SW
San/Sal
Display
Source
Selection
Catalog
ArcToolbox
3D Analyst Tools
Analysis Tools
Cartography Tools
Conversion Tools
From Raster
From WFS
Metadata
To CAD
To Coverage
To dBASE
To Geodatabase
To KML
Layer To KML
Map To KML
To Raster
To Shapefile
Coverage Tools
Data Interoperability Tools
Data Management Tools
Geocoding Tools
Geostatistical Analyst To
Linear Referencing Tools
Mobile Tools
Multidimension Tools
Network Analyst Tools
Samples
Schematics Tools
Favorites
Index
Search
Results
Drawing
Arial
10
Layer To KML
Layer
GL_PA_units_11Aug11_AR
Output File
C:\gis\Projects\Flathead\glacier_loon\KML\Units.kmz
Layer Output Scale
Data Content Properties
Extent Properties
Output Image Properties
OK
Cancel
Environments...
Show Help >>

Step 2: Viewing Google .kml file in Google Earth and creating viewpoint Google jpegs.
First: Open up Google Earth (under *Tools, Options*… adjust to *high resolution* and make sure the *Show terrain* is on) and then click *File, Open* and add the vegetation units and roads KLM files. Notice the location of the files under *Places* folder on the left of the screen. Also notice the new files are located in the Temporary Places folder. You will need to move the files from the *Temporary Places* to the *Places* by dragging and dropping or save them when you are prompted as you *Exit* Google Earth.

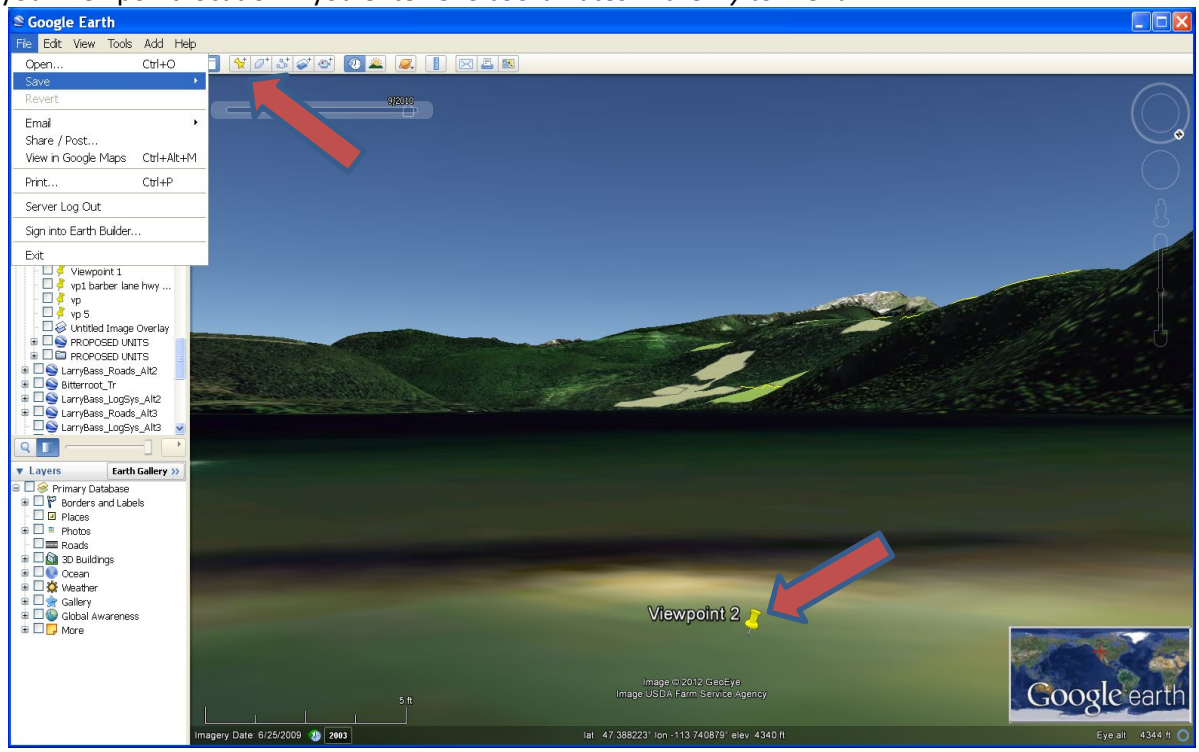


Option: Notice that the color selections are the same for the units as they were in ArcMap. If needed, you can adjust the colors and border by expanding the file folders (on the left side of the screen) by right-clicking over individual unit and selecting *Properties*, and then *Style/Color*.

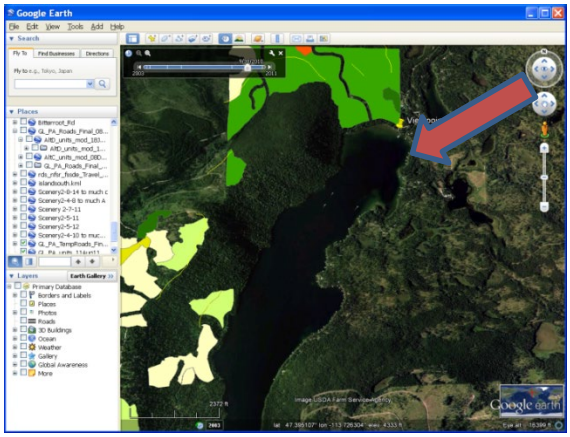
Next: Zoom in on any unit. You can adjust the transparency of the vegetation units by clicking on the transparency icon (located at the bottom of the Places to the left on the screen) and adjusting the sliding bar (make sure you have the units layer selected when you adjust the bar).



Next: Take a look at your units in 3D by using your mouse to pan while holding down the center scroll button to navigate in 3D. Using your mouse and the Google Earth navigation tools (upper right corner of screen), identify your viewpoints and adjust your viewing position to approximately 5-feet above the ground looking toward the treatments. (You may lock into the ground-level view mode… to exit this mode click the *Exit ground-level view* icon on the top right corner of the screen.) Tip- You can also find your viewpoint location if you enter GPS coordinates in the *Fly to* menu.

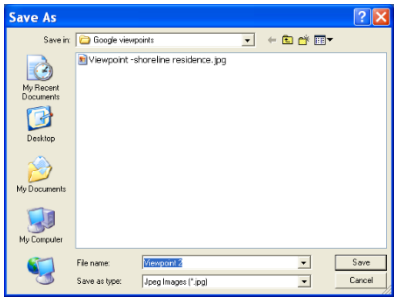


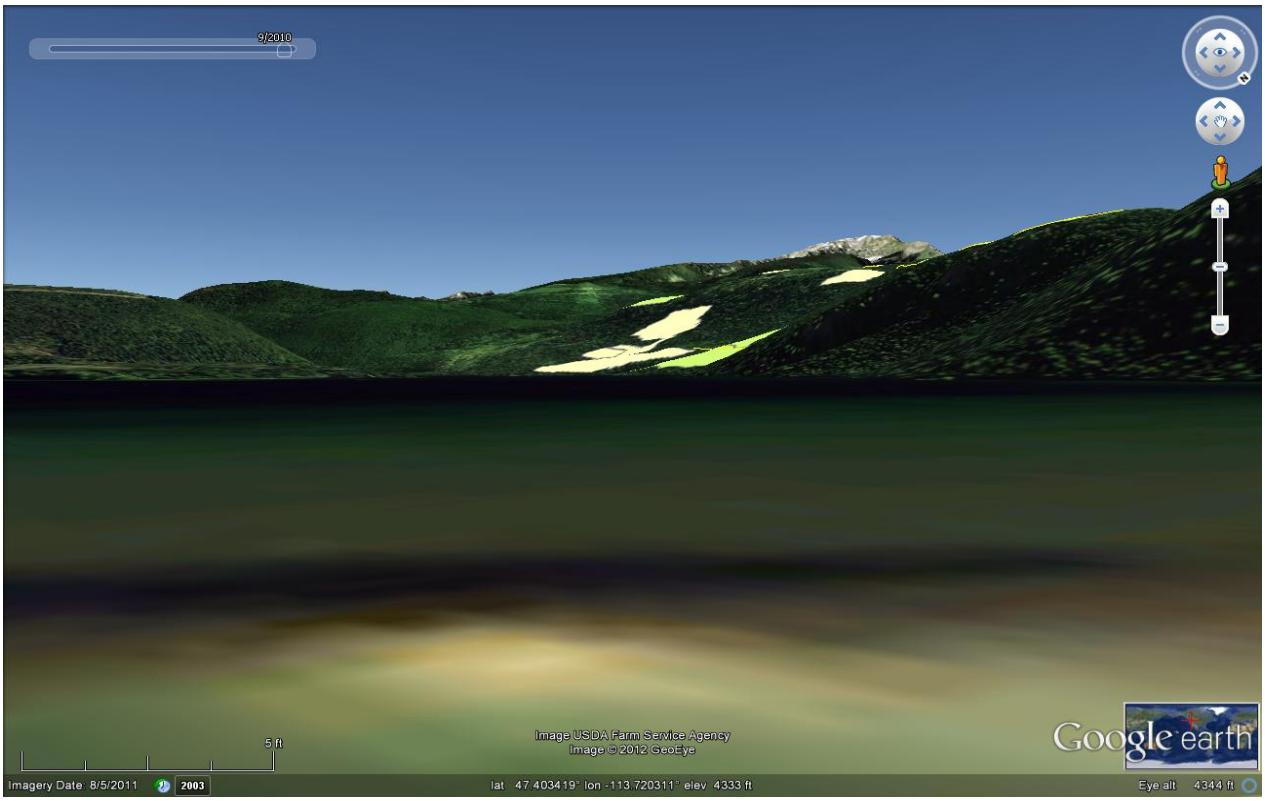
You can use existing photographs you have taken in the field to help get the correct viewing angle. After you have identified the correct viewing angle, create at Google Earth viewpoint. Click on the Add Placemark icon and name your viewpoint. Using your mouse and the Google Earth navigation tools you can zoom back out and that viewing angle is saved (don't forget to move your Viewpoint from the *Temporary Places* folder). Repeat this for all of the viewpoint locations that you plan on creating an overlay model.



Tip- Be consistent with any zooming when you take viewpoint photographs. Why zoom? Typical 50mm digital cameras may offer a wider (more distant) view than is representational relative to the size of smaller media formats (i.e. report vs. posters).

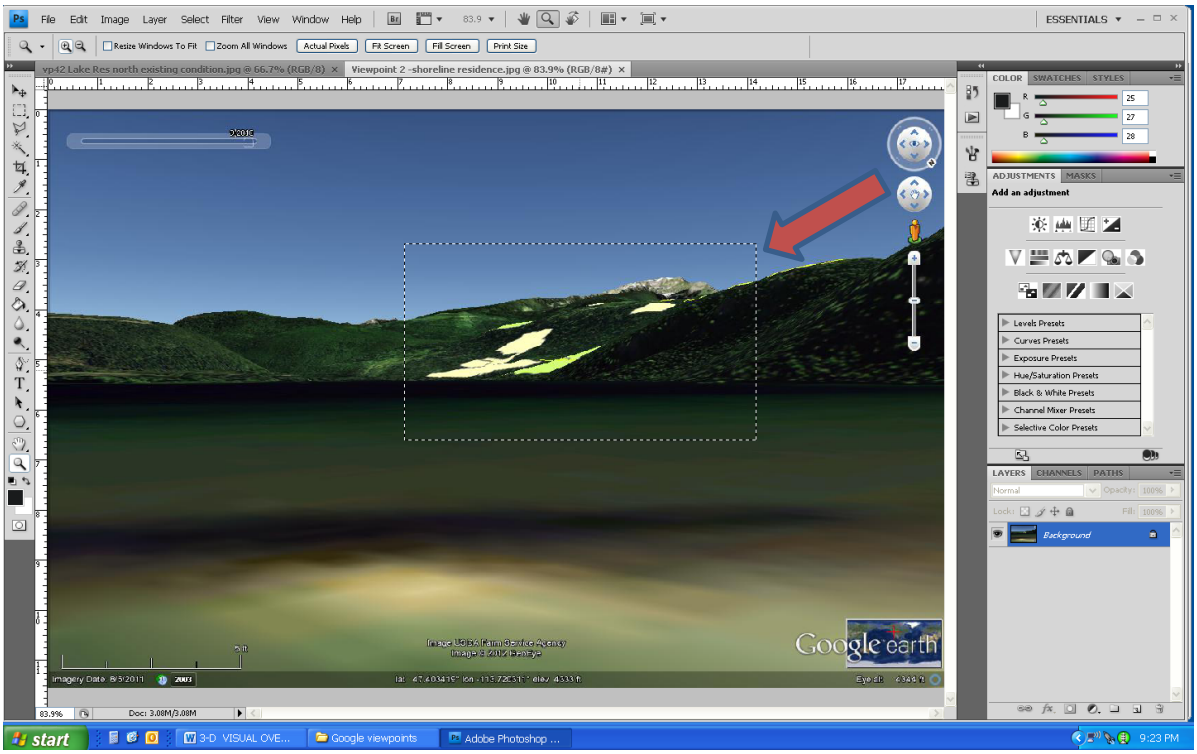
Next: After you have created your viewpoint Placemark then create a jpeg image in Google Earth by selecting *File, Save, Save Image.* Repeat this for all of the viewpoint locations that would benefit from a 3D model. Some examples of viewpoint locations that would not benefit could include immediate foreground viewpoints on very flat terrain and/or that are screened heavily by vegetation.



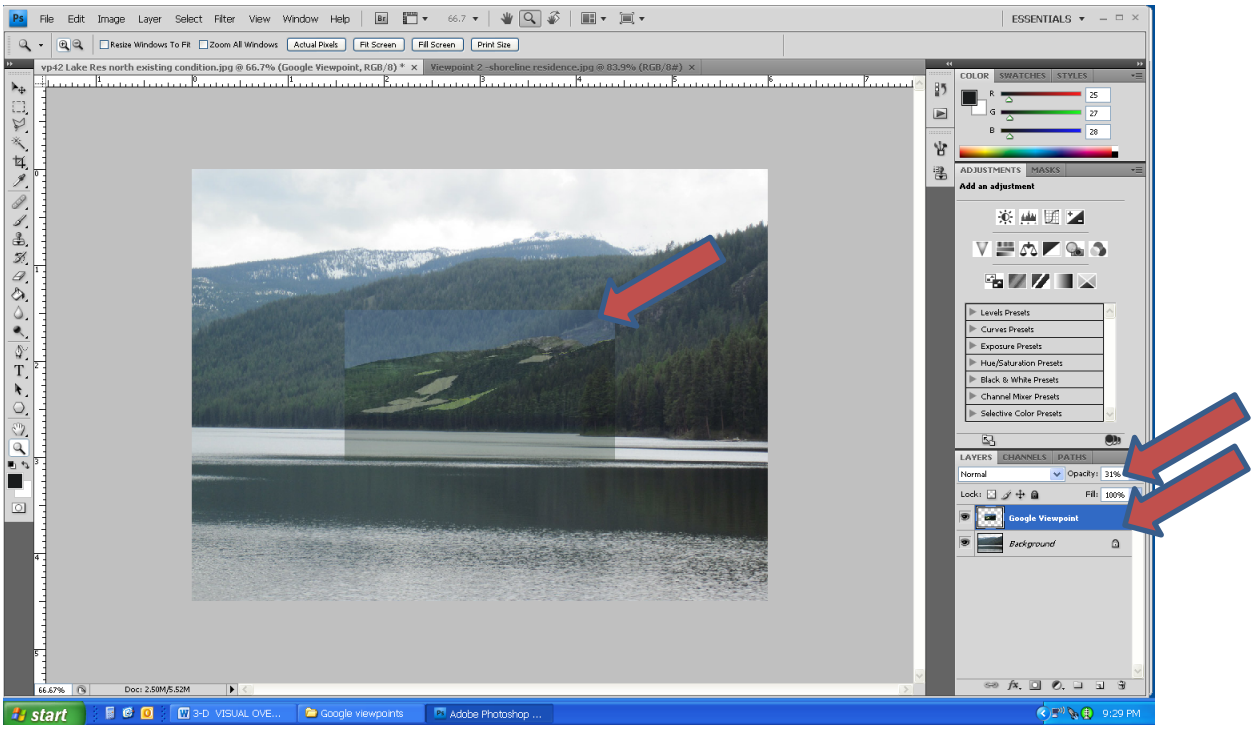


These Google Earth viewpoint images can be used to help identify potential visual impacts primarily by helping to determine potential contrast in edge, line, form and shape from sensitive views. **Note: A portion of unit(s) will be screened by vegetation, which will reduce the see unit area in these Google images.** The wide-angle scale of the view from Google Earth should also be taken in to consideration if these images are used to discuss impacts (i.e. the Google Earth image appears very far away relative to the real life viewing distance). However these raw Google Earth images are very useful in the preliminary phase (i.e. NIFMA, development of Proposed Actions) but also could be used to help accurately describe visual impacts within the context of missing vegetation screening. Whenever possible, existing photographs should be used in comparison of the Google Earth images.

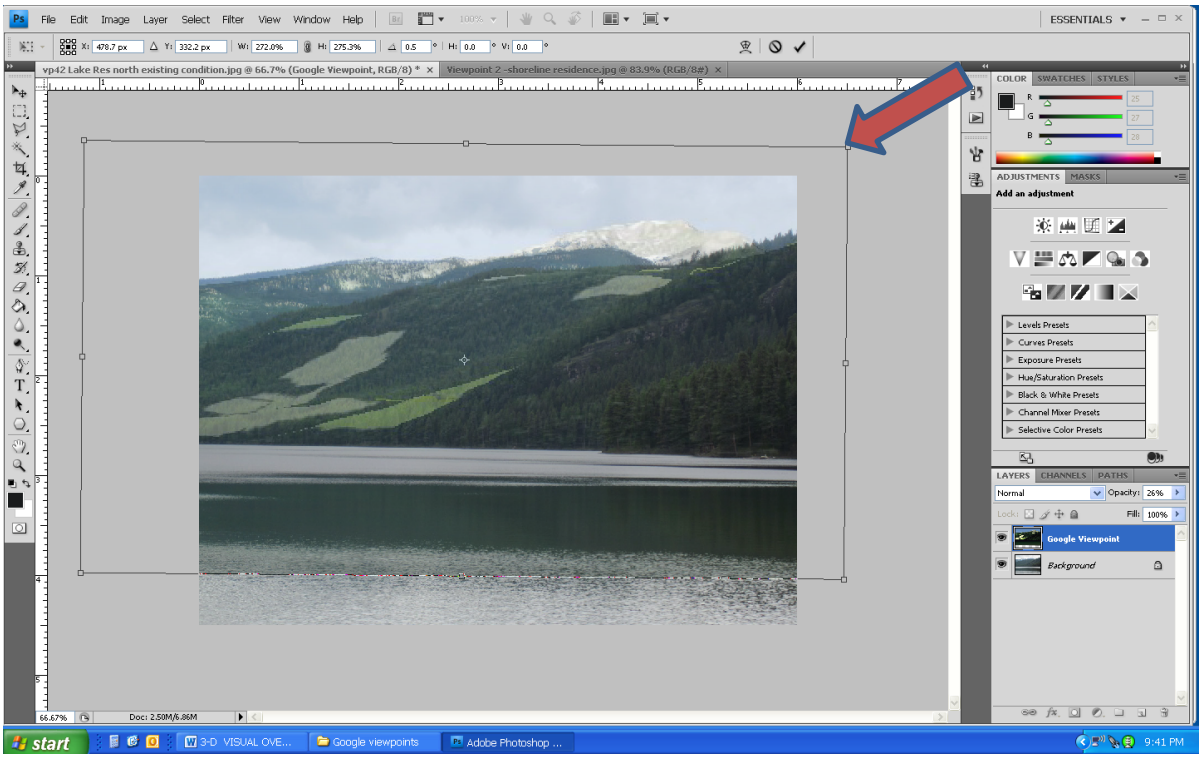
Step 3: Using Photoshop to crop Google Earth viewpoint to compare against exiting condition photo.
First: Open up both viewpoint photograph and Google Earth viewpoint image in Photoshop. *Select* the approximate area relative to your viewpoint photograph and *Copy* (Familiarity with Photoshop software would be needed to complete this step).

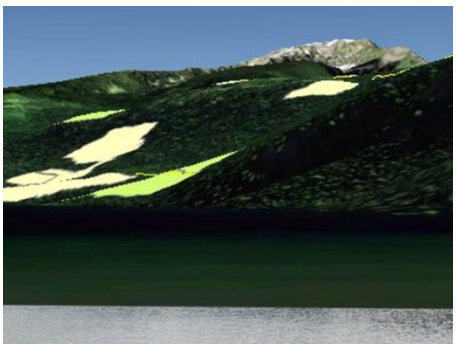


Next: Create a new layer and *Paste* your Google Earth image. Then adjust the Opacity to between 30to 60%.



Next: *Edit* the cropped Google Earth viewpoint image using the *Free Transform* command under *Edit.* Rotate, scale, stretch, and skew to adjust the image. Scale and align the skyline first and then use water edge, rock outcrops, existing vegetation treatments and terrain to scale the image properly. The closer the treatment is within the photo view the greater distortion relative to the Google Earth viewpoint image and in turn vertical stretching edits will need to occur (i.e. Photos with treatments within ¼ mile will have a lot more distortion than treatments 4 miles away). Note also that the skyline edge is true when there is exposed rock but will need to be adjusted below the horizon to compensate for the tree line height, which will need to be scaled accordingly (For example look at the tree line height difference in the background and foreground in the image below) . This process is never exact but you should get the overlay very close.

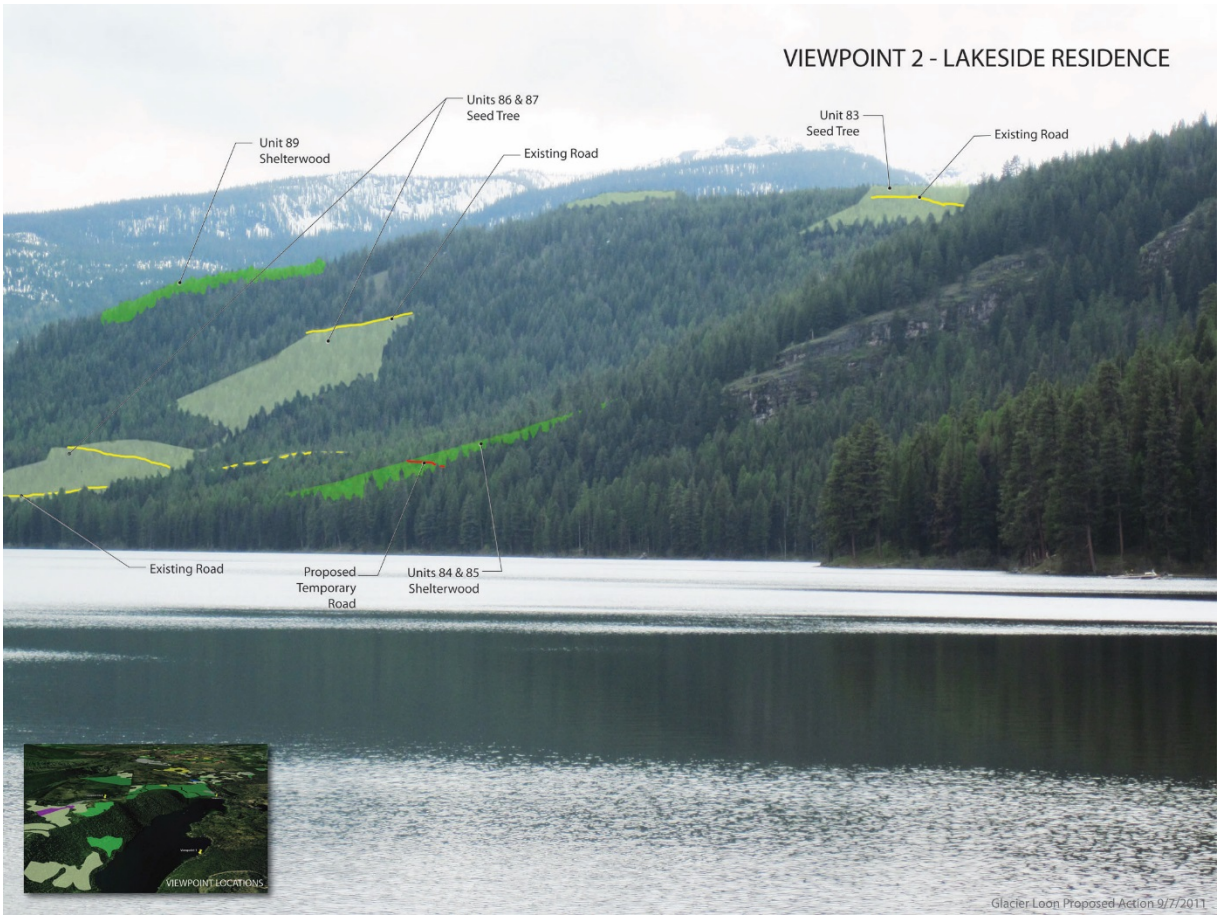




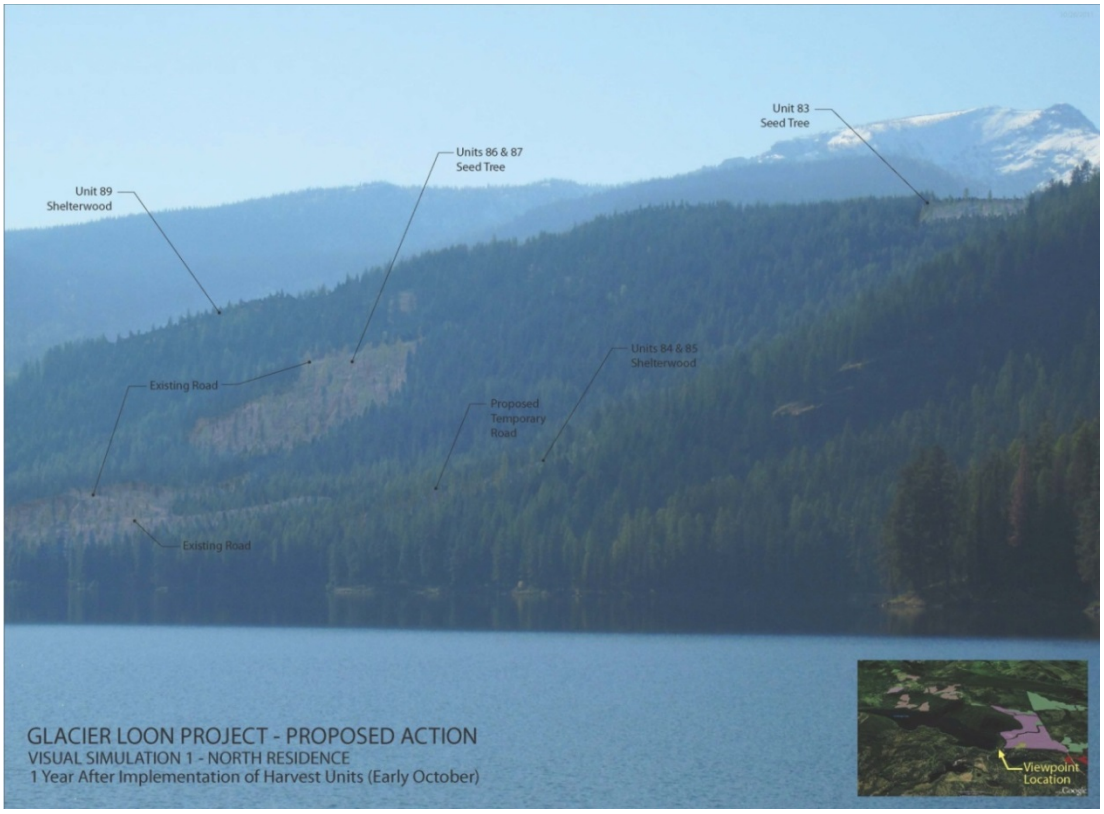
Finally: Crop both images to the same size. This is very useful for comparing potential impacts with existing conditions. The scale of both images is the same. Note that the vegetation screening would still need to be factored in when considering potential impacts.

Option: Using Photoshop you can create a more accurate representation of the impacted areas by overlaying the Google Earth viewpoint image cropped to the unit areas. Additionally, the existing roads and temporary road are highlighted. Vegetation screening is also factored in and reduces the seen area of the units, which is scaled to the appropriate height. With additional editing, the units and roads can be highlighted and labeled to produce an image that helps convey potential impact. Note that the contrasting elements including form, shape, and edge effects of treatment units are defined within the image. However, the texture and color contrasting elements are not shown.

A full simulation would need to be created to demonstrate all of these impacts.



Option: If there is very high concern for vegetation treatments, visual simulation might be warrented. These should be created by persons trained in software and with an adiquite understanding of vegetation treatment effects.


Unit 83
Seed Tree
Units 86 & 87
Seed Tree
Unit 89
Shelterwood
Units 84 & 85
Shelterwood
Existing Road
Proposed
Temporary
Road
Existing Road
Viewpoint
Location
GLACIER LOON PROJECT - PROPOSED ACTION
VISUAL SIMULATION 1 - NORTH RESIDENCE
1 Year After Implementation of Harvest Units (Early October)


Viewpoint
Location
GLACIER LOON PROJECT - EXISTING CONDITION
VIEWPOINT 1 - NORTH RESIDENCE
(Early October)