**R1 NEPA Strike Teams GIS Analysis Report**

Project Name: South Otter

Date: 20210113

Date Requested By: ASAP

GIS Request Number: None

Requesting Resource: Wildlife

Requesting Specialist: Graham Neale and Autumn Keller

GIS Analyst: Jeff Erwin

Contents

[Analysis or Task Summary 1](#_Toc93739720)

[Background 1](#_Toc93739721)

[Wildlife request/criteria 1](#_Toc93739722)

[Documentation and tools 2](#_Toc93739723)

[Rulesets for Modeling Runs 3](#_Toc93739724)

[Data used 5](#_Toc93739725)

[Data Terms Explanation 6](#_Toc93739726)

[Methodology 6](#_Toc93739727)

[Modeling Products 7](#_Toc93739728)

[Map Products 8](#_Toc93739729)

Analysis or Task Summary: Run Elk security for South Otter Project area, Sub landscapes (Opportunity Areas), Elk Analysis Units (Elk Herd Units in dataset), and Basic ownership.

Background: To capture recent data changes and adjustments please run elk security for South Otter.

Wildlife request/criteria:

***Submitted by Graham Neale and Autumn Keller. January 13, 2022***

***Analysis or Task Summary: Model Elk Security for South Otter (Existing, Proposed and Post)***

***Request: Please re-run the Elk Secure Areas model for the South Otter project on the Ashland Ranger District. This model is found in the Northern Region Geospatial Group Technical Guide TG-14-2 v.1. This document has been previously provided to you but let us know if you need another digital copy.***

***Please run the model for the South Otter project area, with the ability to query each EAU, Sub landscape (Opportunity Area), and treatment units within South Otter for acreages of security habitat.***

***Please run for three scenarios: 1) Existing Condition: Admin/Private, seasonal closures, and closed roads run as CLOSED; 2) During Project: Admin/Private if used for haul, existing seasonal closures if used for haul, and temp roads run as OPEN; 3) During Project: Admin/Private if used for haul, existing seasonal closures if used for haul, and temp roads run as OPEN; additional proposed seasonal closures run as CLOSED.***

***Post-project is assumed to be the same as EC since no new roads will be restricted or closed.***

***We have attached the proposed seasonal road closure spreadsheet: South\_Otter\_Proposed\_Road\_Closures\_01122022***

***If these route statuses do not make sense, or you want to edit or change, please advise.***

***Please use the appropriate data sets that you have been developing for the South Otter project area, EAUs, and routes designation and status database. Data sets may include INFRA and/or the 2009 Ashland Travel Management Plan, and revisions you have been working on.***

***Provide maps to visualize secure area blocks relative to each EAU, each Sub landscape (Opportunity Area), proposed treatment units, and routes used in analysis. These map products will be useful for timber, recreation, and wildlife resources.***

***The following is information from the first model run and is included for your reference if needed:***

***Data: None given. Establish existing condition from best available data.***

Documentation and tools***:***

***T:\FS\Reference\GeoTool\r01\Toolbox\NRGG\_TG\_14-2\_EA\_Elk.v1.pdf***

***T:\FS\Reference\GeoTool\r01\Toolbox\NRGG\_TG\_14-1\_EA\_DataPrep.v1.pdf***

***T:\FS\Reference\GeoTool\r01\Toolbox\Eastside\_Assessment\_24nov2014.tbx\Elk\_Models\Elk\_SecurityArea\_June12\_2014***

***Modeling Notes:***

***Criteria: Elk Secure Areas***

***Elk security is a route (roads and trails) based analysis. A secure area is defined as an area at least 250 acres and at least one half-mile from an open motorized route. Open motorized routes during the time period 9/1 to 12/1 was used in this analysis. The open routes are buffered by one half-mile and are designated as not-secure (secure = no) areas. The remaining areas that are greater than 250 acres are designated as secure areas (secure = yes).***

***Transportation Routes Preparation – A combined dataset containing Roads, Trails and Proposed Temp roads was created and attributed to facilitate the designation of open motorized routes for the existing and proposed conditions. To facilitate modeling two fields were added to identify routes status during the above listed conditions.***

1. ***“ElkSecurityRoute” field***
2. ***Used to identify routes that will be used during the proposed action.***
3. ***“ElkSecurityRouteExisting” field***
4. ***Used to identify routes that reflect the existing condition before implementation.***

***Route identification guidance:***

***“This is based on 3Mile and the literature For Existing Condition District-wide, Admin/private and seasonal closures are modeled as Closed (and any additional permanently closed/decommissioned roads if they exist); during project within the EAUs, Admin/private, any system haul routes, and temp roads are modeled as Open due to higher level of use (even though some are seasonally closed to public); after project, back to Existing Condition with Admin/private, seasonal closures are Closed, with temp roads gone.***

***There may be additional closures from decommissioned roads or added potentially seasonally closed roads which will increase Secure Area acreages over Existing Condition”***

Rulesets for Modeling Runs:

The conversation below helps to identify some ADMIN, Open, and some Closed routes.

*Conversation with Kamille Crootof:*

*Hi kamille, Do you know of a field in the MVUM data that will show if the route is classified as "Admin"?*

*[12:39 PM] Crootof, Kamille -FS*

*Yes.  The "OpenTo" field shows admin roads as "Admin"*

*[12:39 PM] Crootof, Kamille -FS*

*"All" means open to the public*

*[12:40 PM] Crootof, Kamille -FS*

*Blank means open to nobody*

*[12:40 PM] Erwin, Jeffrey - FS*

*"Applies to"?*

*[12:40 PM] Crootof, Kamille -FS*

*Sorry yes that's it*

*[12:41 PM] Erwin, Jeffrey - FS*

*Ok. When you say open to nobody does that mean closed?*

*[12:41 PM] Crootof, Kamille -FS*

*Yes.  Blanks mean the road is decommissioned or is closed for another reason*

*[12:42 PM] Crootof, Kamille -FS*

*For example, travel plan determined it should not be an open route*

**Explanation ruleset**: “applies to” = ALL means open to the public, = Admin means open to USFS personnel only, =NULL means closed if it meets this query: ROUTE\_STATUS = 'EX - EXISTING' AND JURISDICTION = 'FS - FOREST SERVICE' AND SYSTEM = 'NFSR - NATIONAL FOREST SYSTEM ROAD' AND APPLIES\_TO IS NULL

Further investigation with Kamille revealed that some of the “NULLS” in the “applies to” field could not be defined due to uncertain issues. Kamille recommended using the following query to identify some of the route “NULLS” that would indicate the route is closed:

ROUTE\_STATUS = 'EX - EXISTING' AND JURISDICTION = 'FS - FOREST SERVICE' AND SYSTEM = 'NFSR - NATIONAL FOREST SYSTEM ROAD' AND APPLIES\_TO IS NULL

This query resulted in 68 routes that can be defined as being closed. The “applies to” field in this data was populated with “Closed”.

To simplify model application three fields where added:

* 1. “ElkExisting” = “Yes” All routes other than those being identified as Admin, Private, Seasonal, or closed.

Ruleset query: Individually queried and populated

* + 1. Step 1 – Query all routes that are admin and populate “No”
       1. APPLIES\_TO = 'ADMIN' 98 results
    2. Step 2 – Query all routes that are private and populate “No”
       1. JURISDICTION = 'P - PRIVATE' 140 results
    3. Step 3 – Query all routes that are closed and populate “No”
       1. APPLIES\_TO = 'Closed' 200 results
    4. Step 4 – Query all routes that are seasonally closed and populate “No”
       1. SEASONAL = 'seasonal' 17 results
    5. Step 5 – Query all temp routes and populate “No”
       1. RouteActivity = 'TempRoute' 258 results
    6. Step 6 -Query all routes that are NOT “No” and populate “Yes”
       1. ElkExisting <> 'No' 440 results
  1. “ElkProposedAction” = “Yes” All routes identified as haul and routes open yearlong except routes identified as Admin, Private, Seasonal, and Closed.

Ruleset query: Individually queried and populated

* + 1. Step 1 – Query all routes that are admin and populate “No”
       1. APPLIES\_TO = 'ADMIN' AND HaulRoute = 'No' 55 results (Hauling on 43 admin)
    2. Step 2 – Query all routes that are private and populate “No”
       1. JURISDICTION = 'P - PRIVATE' AND HaulRoute = 'No' 76 results (Hauling on 64 private)
    3. Step 3 – Query all routes that are closed and populate “No”
       1. APPLIES\_TO = 'Closed' 200 results
       2. APPLIES\_TO = 'Closed' AND HaulRoute = 'Yes' 36 Results
          1. Populate these to “Yes”
    4. Step 4 – Query all routes that are seasonally closed and populate “No”
       1. SEASONAL = 'seasonal' AND HaulRoute = 'No' 4 results (Hauling on 14)
       2. Step 5 – Query all temp routes and populate “Yes”
       3. RouteActivity = 'TempRoute' 258 results
    5. Step 6 -Query all routes that are NOT “No” and populate “Yes”

ElkProposedAction <> 'No'854 results

* 1. “ElkProposedActionWithClosures” “Yes” All routes identified as haul and routes open yearlong except routes identified as Admin, Private, Seasonal, Closed, and “applies to” field as closed and without the routes identified in the proposed closure spreadsheet.

Ruleset query: Individually queried and populated

* + 1. Step 1 – Query all routes that are admin and populate “No”
       1. APPLIES\_TO = 'ADMIN' AND HaulRoute = 'No' 55 results (Hauling on 42 admin)
    2. Step 2 – Query all routes that are private and populate “No”
       1. JURISDICTION = 'P - PRIVATE' AND HaulRoute = 'No' 76 results (Hauling on 68 private)
    3. Step 3 – Query all routes that are closed and populate “No”
       1. APPLIES\_TO = 'Closed' 200 results
    4. Step 4 – Query all routes that are seasonally closed and populate “No”
       1. SEASONAL = 'seasonal' AND HaulRoute = 'No' 4 results (Hauling on 14)
       2. Step 5 – Query all temp routes and populate “Yes”
       3. RouteActivity = 'TempRoute' 258 results
    5. Step 6 -Query all routes that are NOT “No” and populate “Yes”

ElkProposedActionWithClosures <> 'No'779 results

* + 1. 20 routes were proposed for closure with 11 being haul routes and 9 being non-haul routes.

Data used:

Units

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\SouthOtterNEPA.gdb\ProposedAction\SOPAUnits20211206

Elk Herd Units

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\SouthOtterNEPA.gdb\Wildlife\SOEAUCE20210401

Project Boundary

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\SouthOtterNEPA.gdb\ProjectBoundary\SOProjectBoundary20220103

Sub Landscapes (Opportunity Areas or Sale Areas)

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\SouthOtterNEPA.gdb\Vegetation\SOSubLandscapes20210428

Basic Ownership

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\SouthOtterNEPA.gdb\Land\S\_R01\_CUSGAL\_BasicOwnership

Routes (Modified schema for wildlife analysis. Fields are not available in the Project PARoutes)

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOPARoutes20220106 (Base routes dataset with fields added for WL modeling)

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SORoutesClosureFinal20220117 (This will have a field “ProposedClosure” that shows the 20 routes designated by the WL staff)

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SORoutesClosureFinal20220118 (Updated routes dataset with the “ProposedClosure” field removed.

## Data Terms Explanation

Due to the longevity of this project and personnel changes over there have been several terms used for the definition on the same data. Here are the terms I have identified, and the definitions are what I understand to be correct:

*Sub Landscapes* = This has been called opportunity areas and sale areas. It is a polygon featureclass that has provided a means to separate the large project area into smaller areas for various uses.

Elk Analysis Units (EAUs) = This is referred to as “Elk Herd Units” in the data.

## Methodology

In addition to using the aforementioned tools and guidance a series of manual geoprocessing operations were implemented to produce a hybrid product that was requested by wildlife specialists. Here is an overview of how each dataset was created that was not described in th tools and guidance provided:

1. Elk Security Proposed Action with 10 Non-Haul route closures
   1. The initial Elk Security PA was used and the portions that had the 10 proposed closures where erased. Those sub landscapes (Opportunity Areas) included Poker Jim, Wild Hog, Tooley Creek, Taylor Creek, and Elk Creek.
   2. The data created for proposed action for the 10 closures were added to the PA for the entire project boundary with the intent to increase security overall within the project boundary. This effort increased security during PA from 19 to 21 Percent.
2. 15 Mile Sale Area Proposed Action with remaining existing (This method is the same for the remaining sale area specific datasets)
   1. The initial Elk Security EC was used to create this dataset. Each sale area was erased one at a time with only the proposed action for the sale area added to the existing condition. This was done for every sale area resulting in an increase from 19 to 26-29 percent PA depending upon the sale area.
3. Taylor Creek Sale Area Proposed Action with closures and remaining existing (This method is the same for Elk Creek, Poker Jim, Tooley Creek, and Wild Hog)
   1. The initial Elk Security EC was used to create this dataset. Each sale area was erased one at a time with only the proposed action with closures for the sale area added to the existing condition. This was done for every sale area listed above which the 10 routes intersected resulting in an increase from 19 to 26-29 percent PA depending upon the sale area.

The following are products that resulted from these operations:

## Modeling Products

***\*Note: Metadata will only be created for the final products. Intermediated data will be kept, and this document can be referenced for related information.***

\*Elk Security Existing Condition

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOExistingSecurityFinal20220114

\*Elk Security Proposed Action

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOProposedActionFinal20220118

\*Elk Security Proposed Action with 10 Non Haul route closures

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOProposedActionClosureSecurity20220119

\*15 Mile Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOProposedAction15MileFinal20220118

\*Elk Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOElkCreekProposedActionSecurity20220120

\*Taylor Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOTaylorCreekProposedActionSecurity20220120

\*Bloom Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOBloomCreekProposedActionSecurity20220120

\*Reanus Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOReanusCreekProposedActionSecurity20220120

\*Tooley Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOTaylorCreekProposedActionSecurity20220120

\*Wild Hog Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOWildHogProposedActionSecurity20220120

\*Poker Jim Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOPokerJimProposedActionSecurity20220120

\*Green Creek Sale Area Proposed Action with remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOGreenCreekProposedActionSecurity20220120

\*Taylor Creek Sale Area Proposed Action with closures and remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOTaylorCreekProposedActionSecurityClosure20220120

\*Elk Creek Sale Area Proposed Action with closures and remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOElkCreekProposedActionSecurityClosure20220120

\*Tooley Creek Sale Area Proposed Action with closures and remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOTooleyCreekProposedActionSecurityClosure20220120

\*Wild Hog Sale Area Proposed Action with closures and remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOWildHogProposedActionSecurityClosure20220120

\*Poker Jim Sale Area Proposed Action with closures and remaining existing

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\Data\WildlifeAnalysis\SOElkAnalysis20220118.gdb\SOPokerJimProposedActionClosureSecurity20220120

## Map Products

*Note: If edits or additional map products are required, please contact me either by using my* [*GIS request form*](https://forms.office.com/Pages/ResponsePage.aspx?id=5zZb7e4BvE6GfuA8-g1Gl3TlR7TsYOZIhBfbDU3UJQJUOVdYTExRMUFRSExWMUMxRjFQOFA1UFczNy4u) *or email. If email is used provide a detail description of the request. Thanks!*

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\MapProduct\2-Scoping\Wildlife\20221020SOElkSecurityExisting.pdf

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\MapProduct\2-Scoping\Wildlife\20221020SOElkSecurityPA.pdf

T:\FS\NFS\Custer\Project\Ashland\SouthOtter\GIS\MapProduct\2-Scoping\Wildlife\20221020SOElkSecurityPAMB.pdf