

# A 3D VIEW OF THE PAST

## The Coquille River Basin

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# OVERVIEW

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01

## Why I Did It

# WHY?

- Allows for comparisons
- The “Cool Factor”
- A visual of the historical data



**02**

## **How I Did It**

# SOFTWARE USED

## ArcGIS Pro

Digitizing, DEM, Imagery



## Blender

Creating the 3D model



## QGIS

Water Masks, Imagery

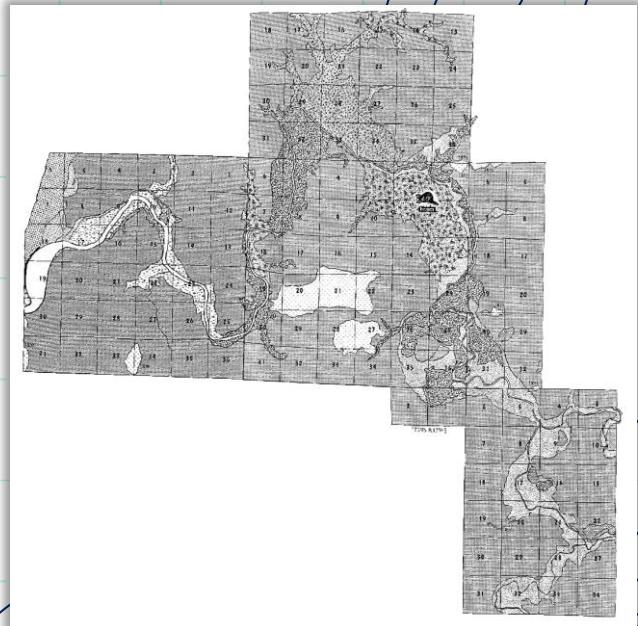
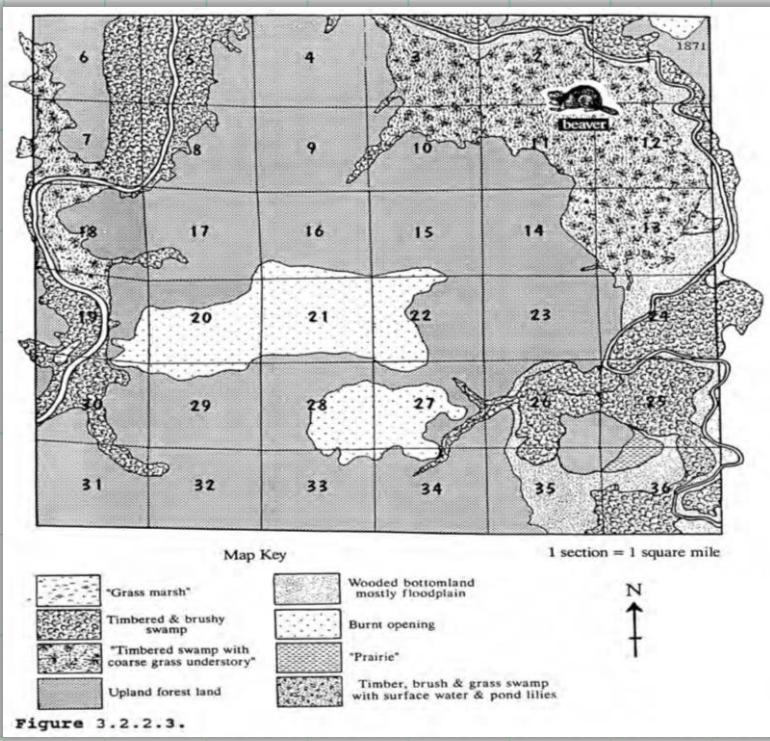


## Photoshop

Manipulating Imagery, DEM

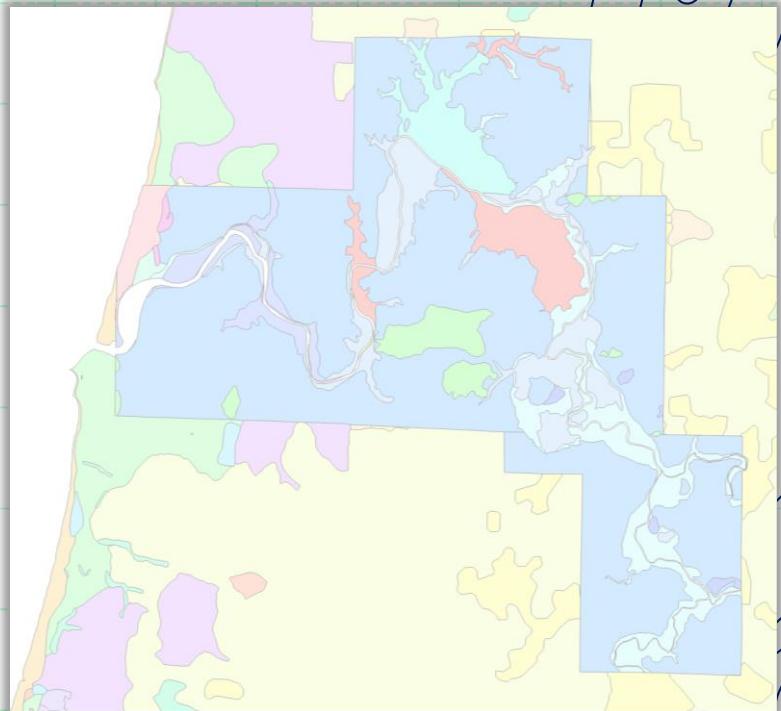
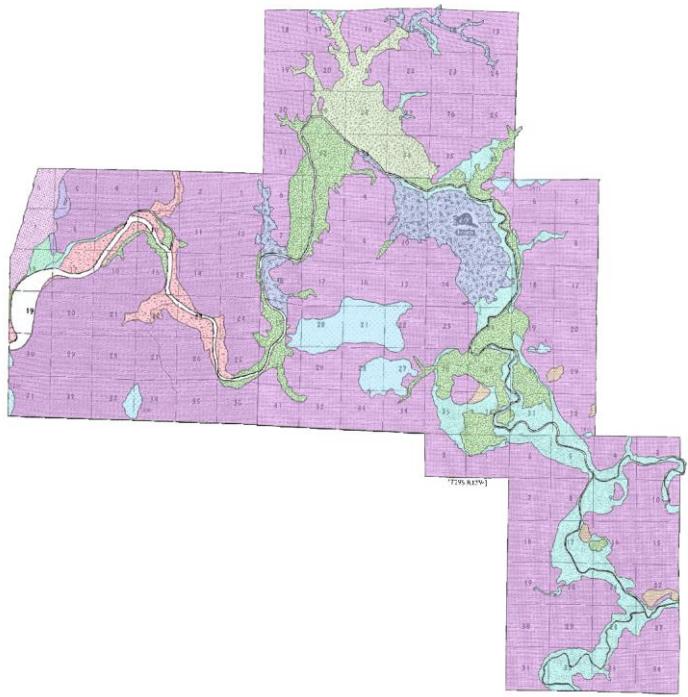
# THE HISTORICAL DATA

Patricia Benner's historical reconstruction report, 1991.  
Discussing data from the 1850s to 1870s.



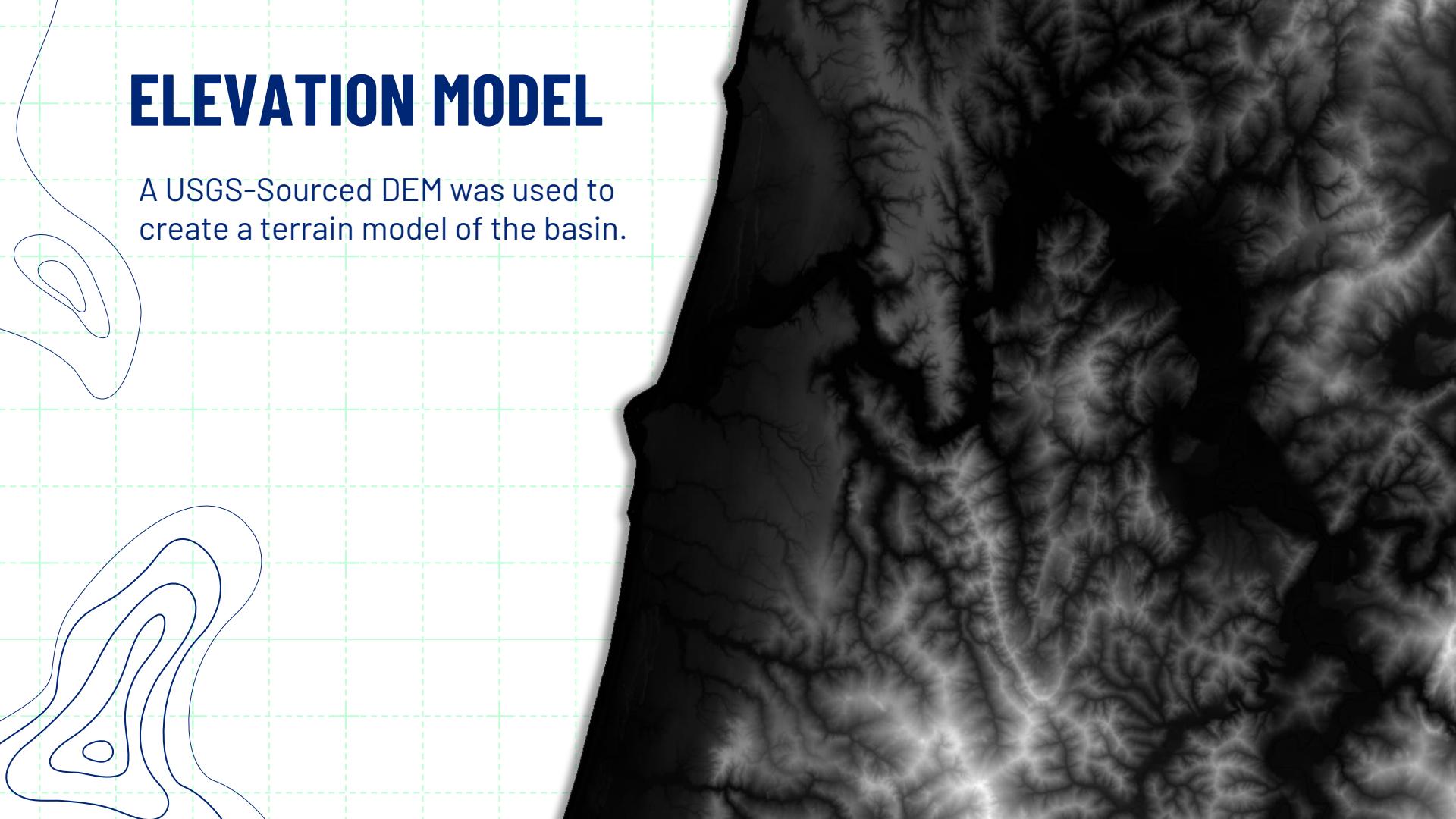
# THE HISTORICAL DATA

Using the report, I created a multi-polygon shapefile of the vegetation types.

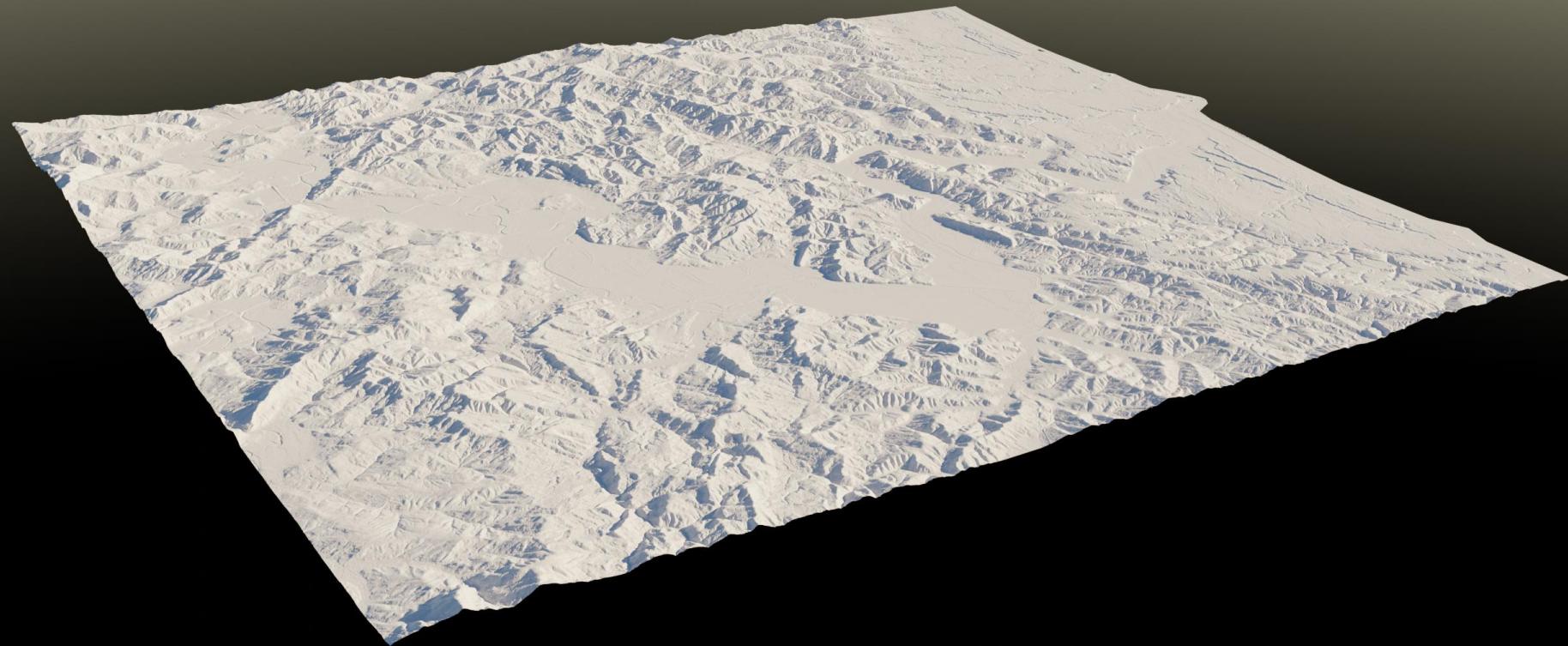


# ELEVATION MODEL

A USGS-Sourced DEM was used to create a terrain model of the basin.

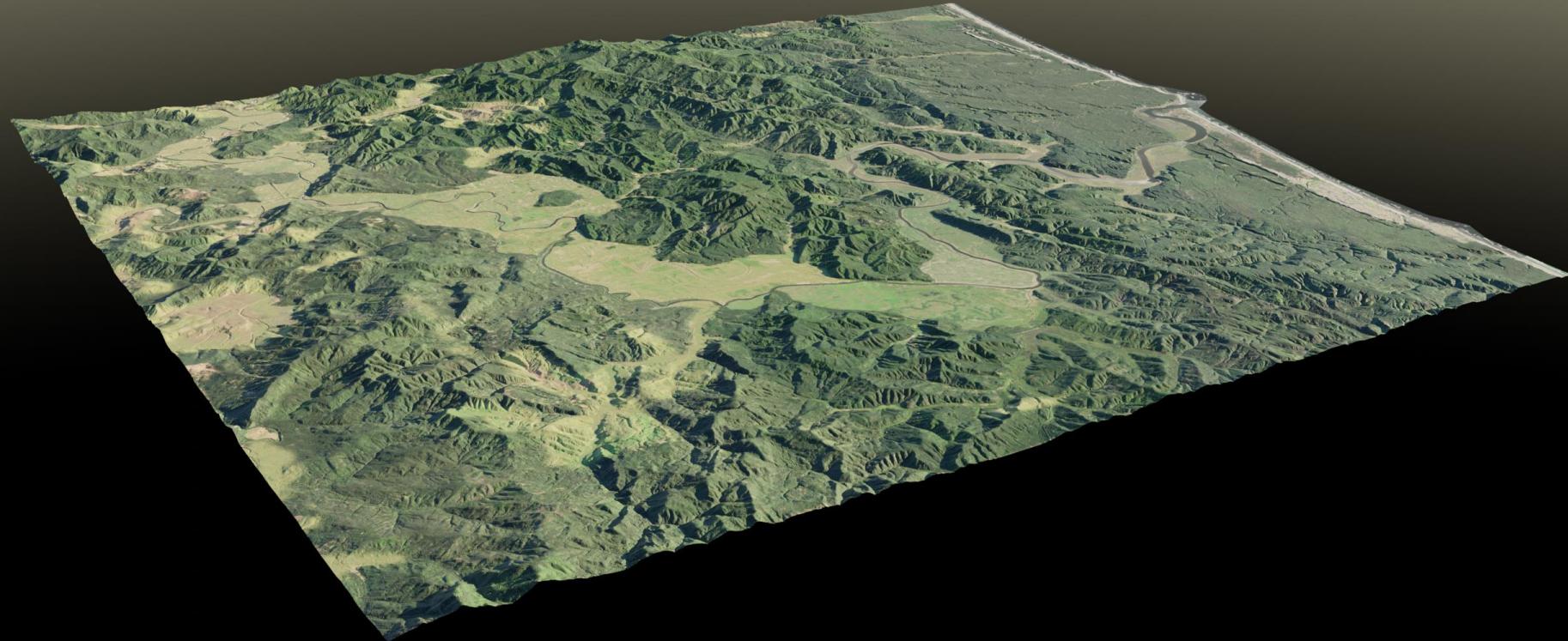


**BlenderGIS used to import the DEM into a 3D mesh.**



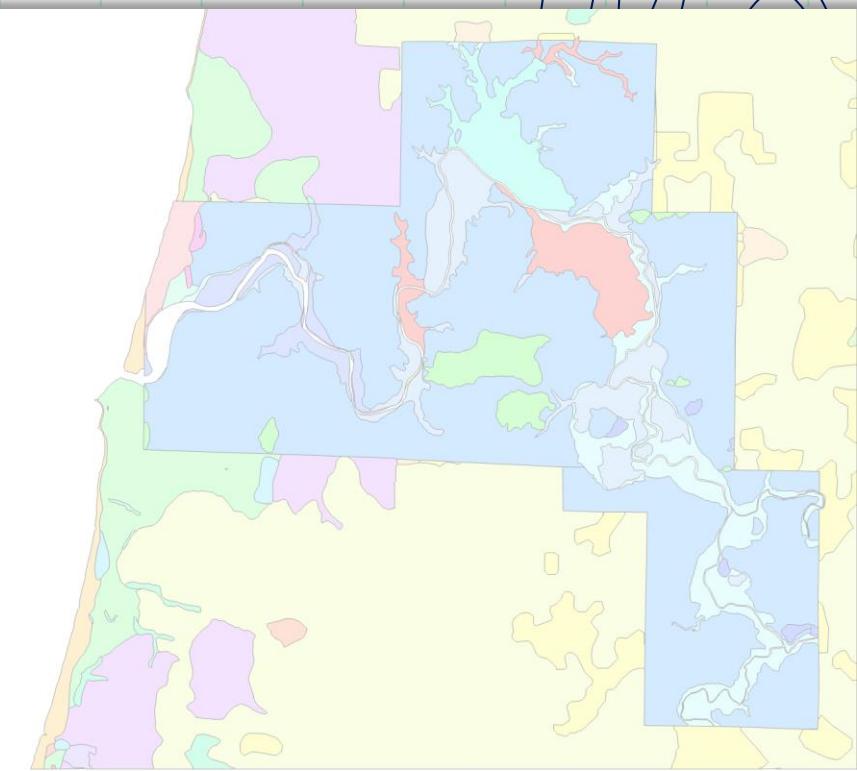
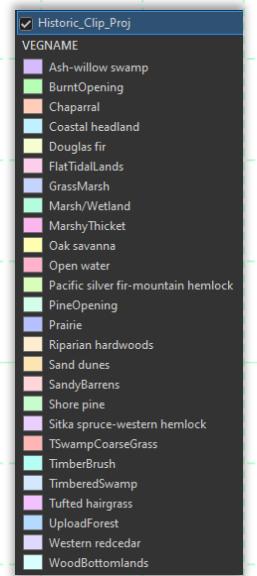


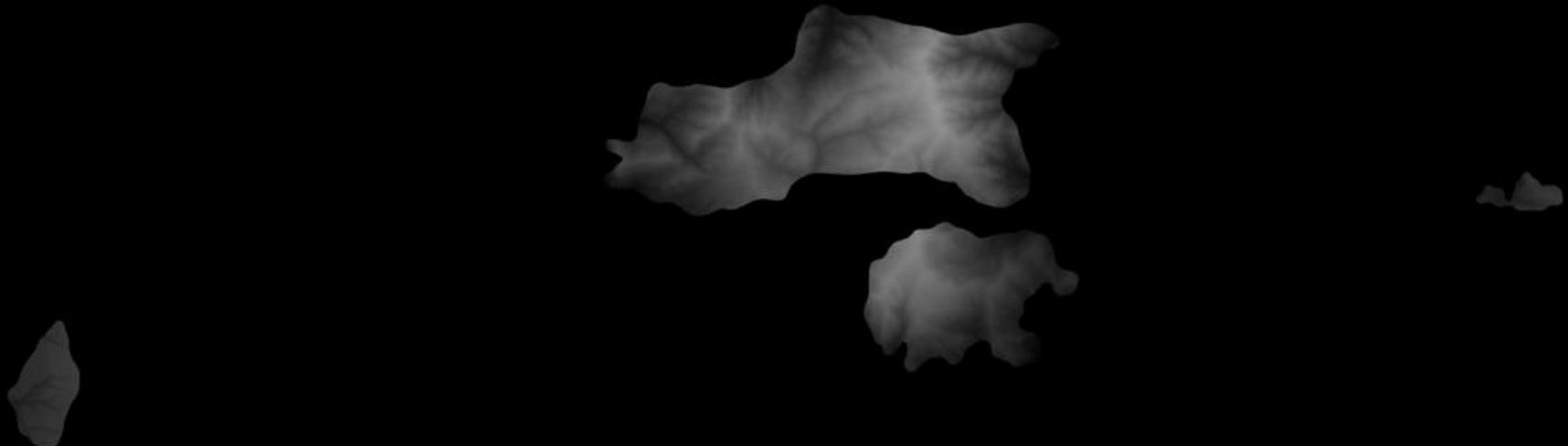
**Manipulated imagery on the terrain.**



# VEGETATION RENDERING

- The digitized vegetation polygons act as a mask for different vegetation types
- Polygons draped on the DEM
- Trees rendered on draped polygons





**DEM clip of one of the vegetation polygons.**

# PLUGINS USED FOR VEGETATION

## SEQUOIA

Beautiful 3D Trees, but  
buggy interface

## ALPHA TREES

High-performance  
billboard trees, but low  
visual quality

## SCATTER 5

Immense control over  
scattering and density

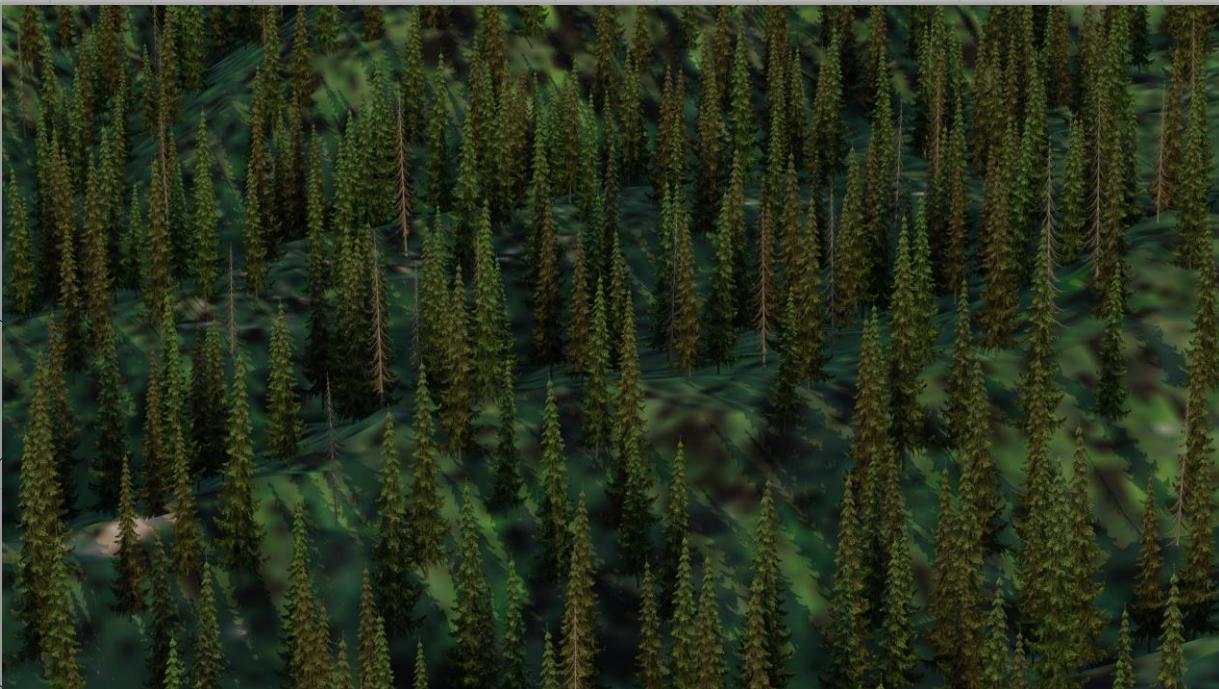
# BEAUTIFUL 3D TREE MODELS

Sequoia provides a large library of 3D modelled trees. These interact with light and cast shadows realistically, at the cost of rendering performance.



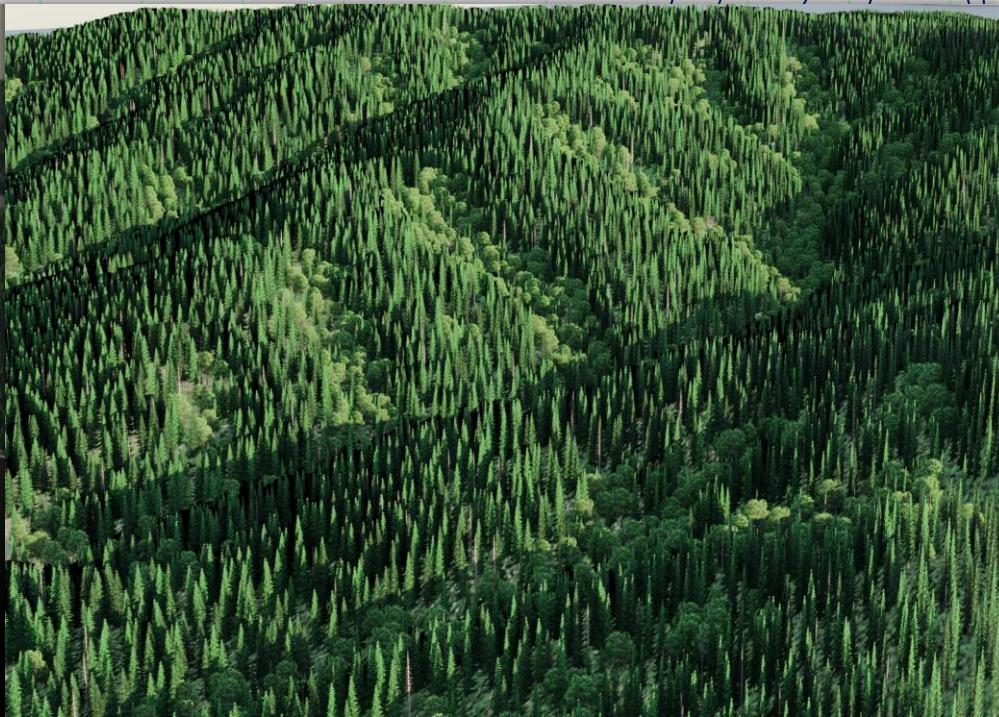
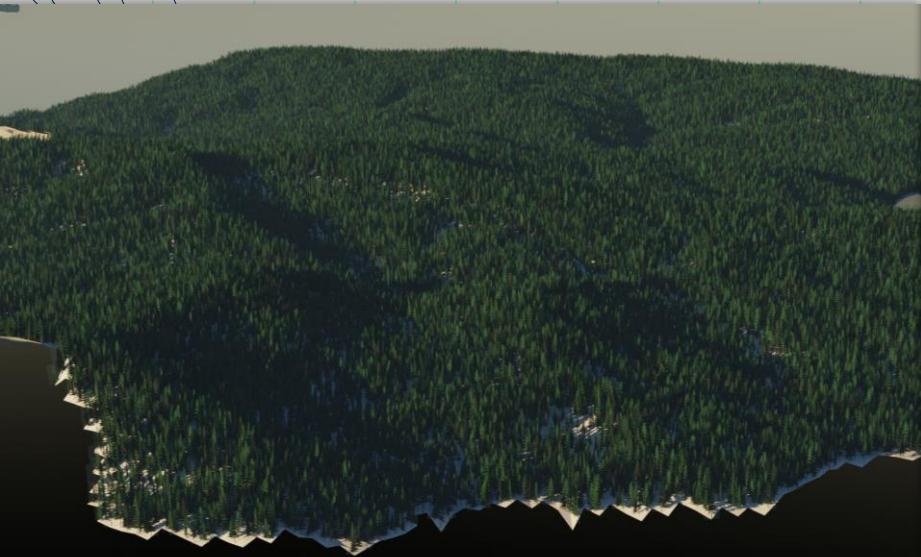
# HIGH-PERFORMANCE MODELS

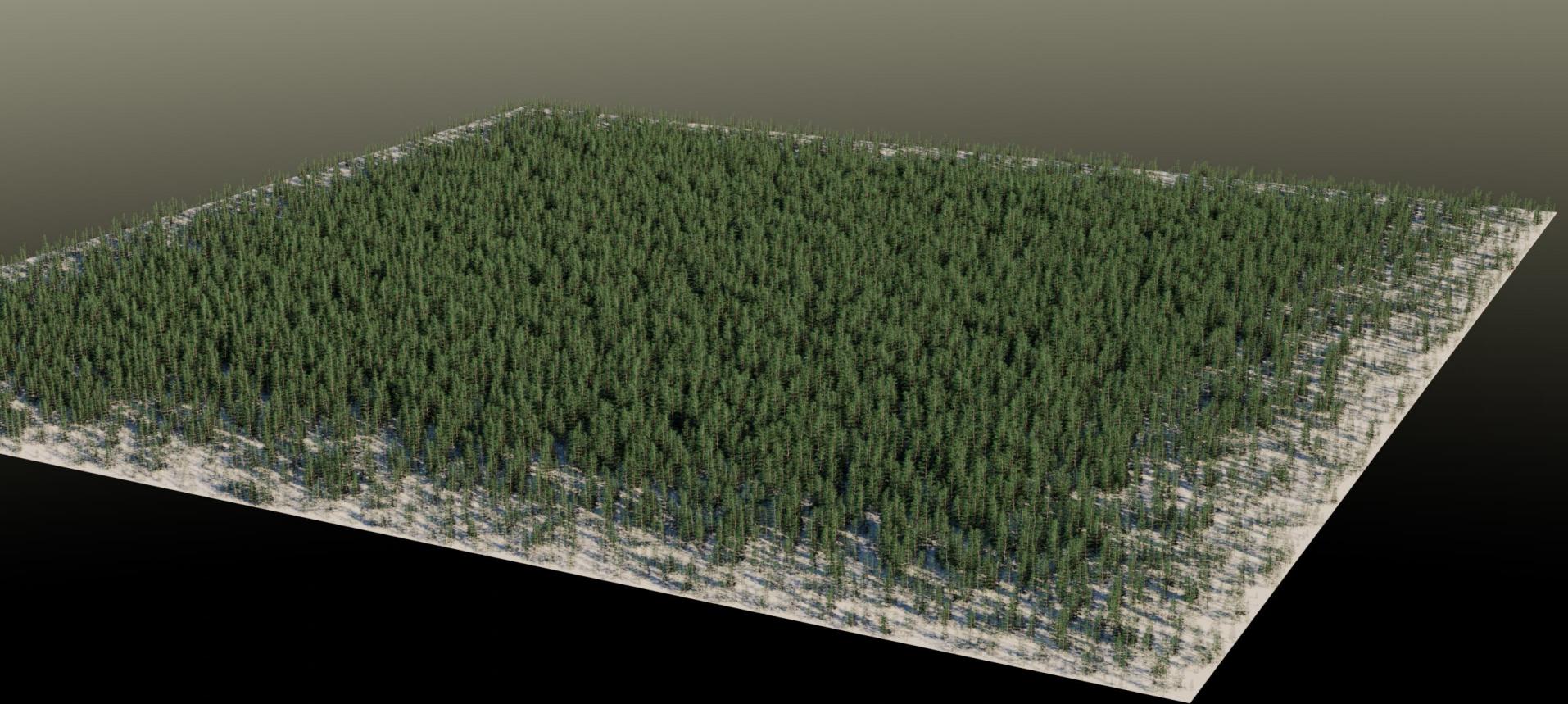
AlphaTrees uses billboard models to improve performance mass rendering of models.



# REALISTIC TREE SCATTERING

Using Scatter 5, you can create realistically scattered trees throughout the scene.





**Another example of what can be done with the Scatter plugin.**

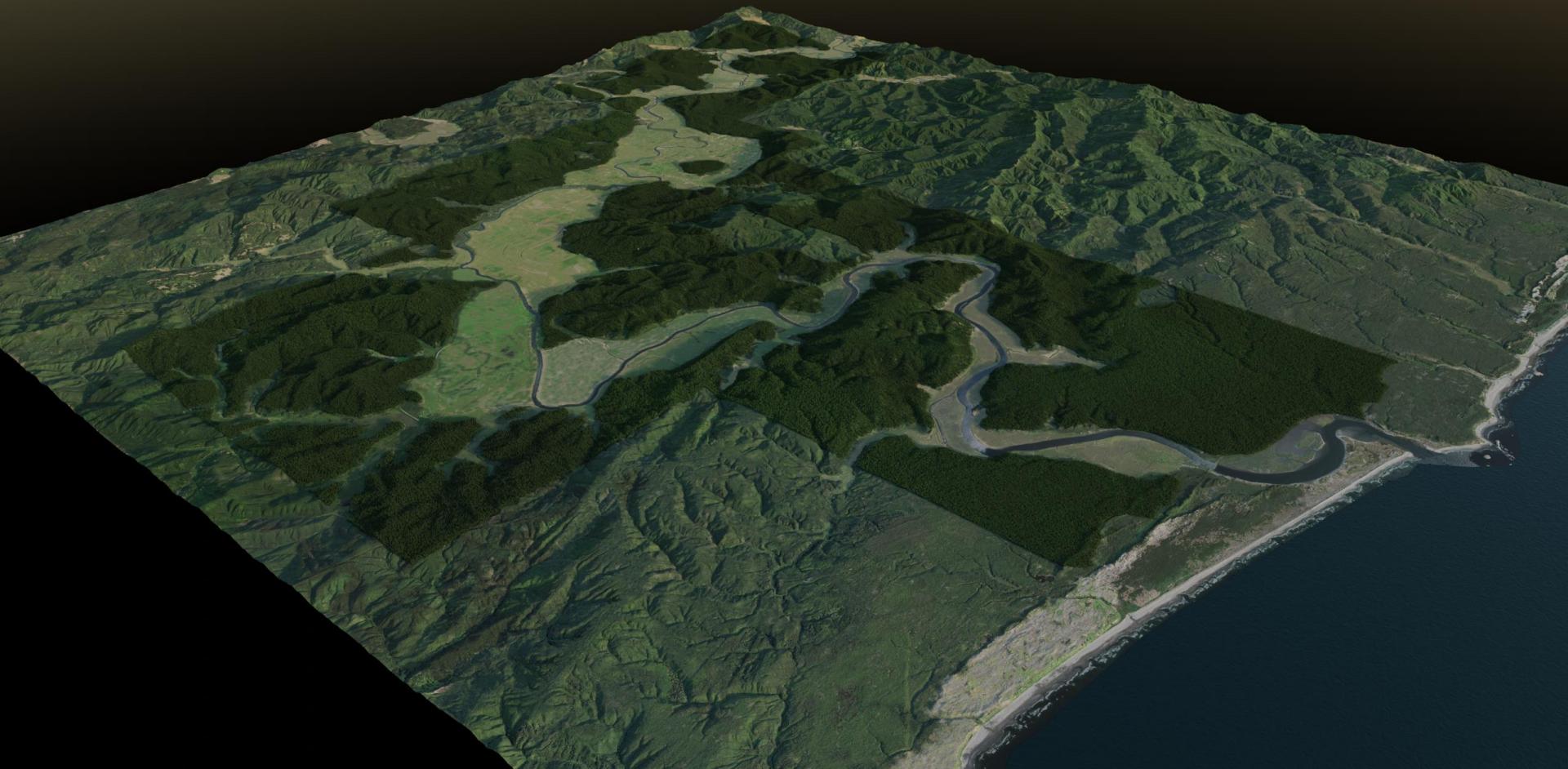
Early test render.



Spruce forest. Incorrect color and trees too similar to one another.



The draped shapefile mask for this spruce forest can easily be seen in this render.



Spruce forest. Better tree colors and more diverse tree scale.



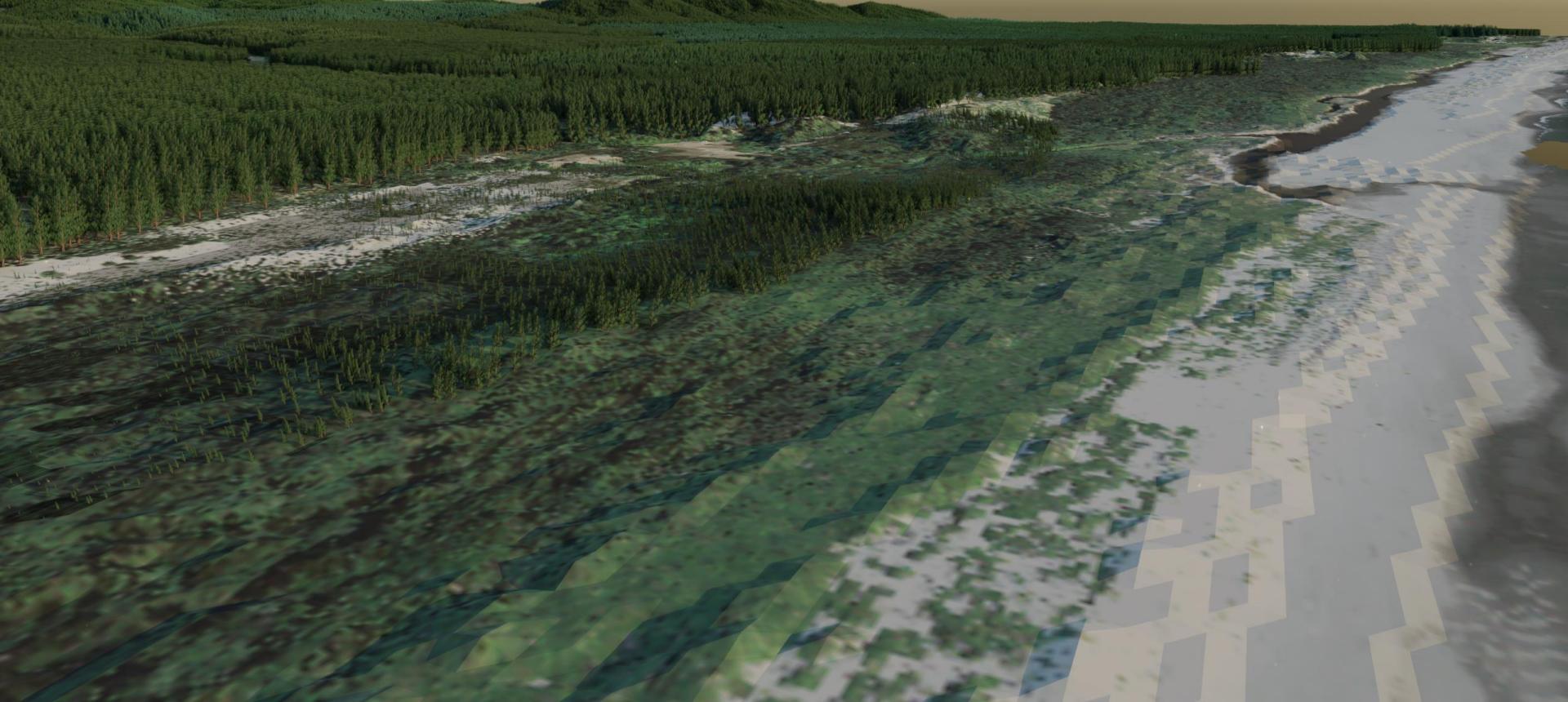
First render where a water mask was used to create reflections on water.

Douglas Fir and Spruce forest. Experimenting with tree color variation.

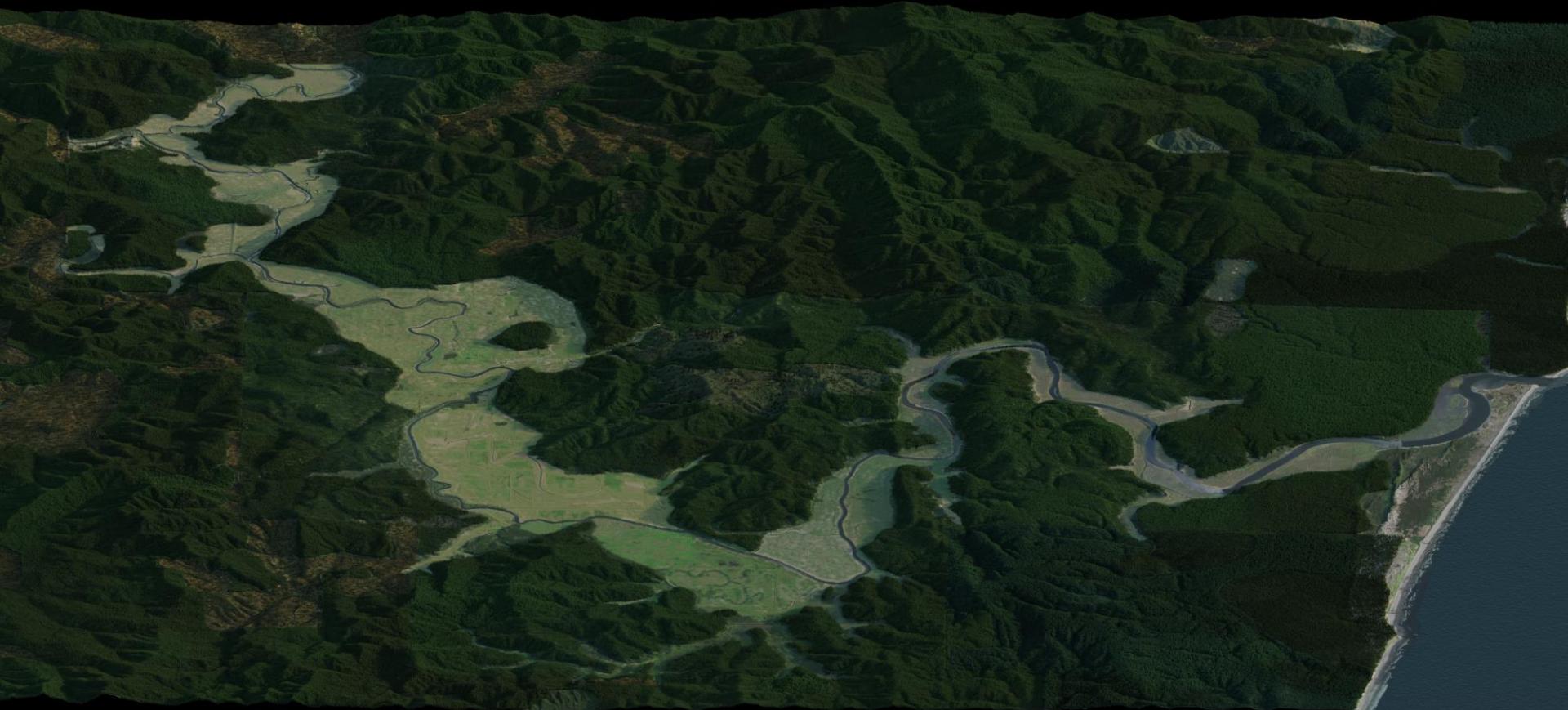
This render also now uses the manipulated imagery.



**Shore pine along beach. Repeated tree models are obvious in this render.**



**Isometric render of the scene as of present.**



**03**

## **Troubleshooting**

# PRIMARY ISSUES ENCOUNTERED

- Drawing trees onto the polygon proved to cause serious trouble.  
There seemed to be an error in the mesh when importing them  
into Blender causing the trees not to draw properly.

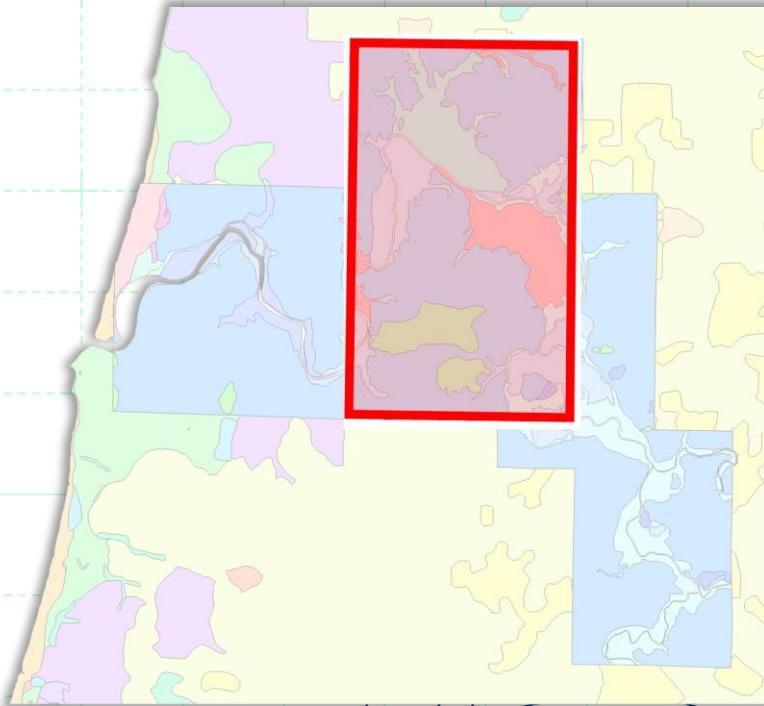
# PRIMARY ISSUES ENCOUNTERED

- A visible issue with the tree rendering was merging different types together. The vegetation polygon created in ArcGIS Pro had hard edges which didn't translate well to a rendered environment.



# PRIMARY ISSUES ENCOUNTERED

- The computing power of my personal computer. Rendering thousands of high-detail trees onto terrain with millions of vertices is extremely taxing.



**04**

**Questions?**

# Thank You!

**Do you have any questions?**

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