



WESTERN CABIN

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SHOWCASE

WESTERN CABIN



(Figure 1: Final Scene Render)



(Figure 2: High Angle Shot Render)



(Figure 3: Detail Render)



(Figure 4: River Render)



(Figure 5: Forest Render)

PRE-PRODUCTION

WESTERN CABIN

OVERVIEW

During the project's preproduction phase, time was allocated to research essential fundamentals, gather references, and plan the layout and aesthetics of the final environment.

INITIAL RESEARCH

For this project, the main priority was to identify the type of forest depicted in the Concept Art reference while also maintaining an Old West vibe from the 1860s. Combining two different styles posed a bit of a challenge. To simplify things and gather relevant references, the decision was made to place the scene in a forest biome located in Ohio. The biome selected was a temperate deciduous forest as it is one of the most common types. Specifically, the foliage from Beaver Creek State Forest was used as a reference.

ASSET LIST

During this phase of the project an asset list was made containing different plants, trees and assets that could be made for the environment along with estimations of the time it would take for each task.

Looking back the amount of assets originally planned along with the variety of some of the Foliage, there was some over scoping for the first time attempting a heavily nature-based environment. More time should have been set aside for learning the necessary skills to construct the scene. One key example of this was the 3 trees planned for the scene, it took much longer than predicted to produce a tree of a high quality.



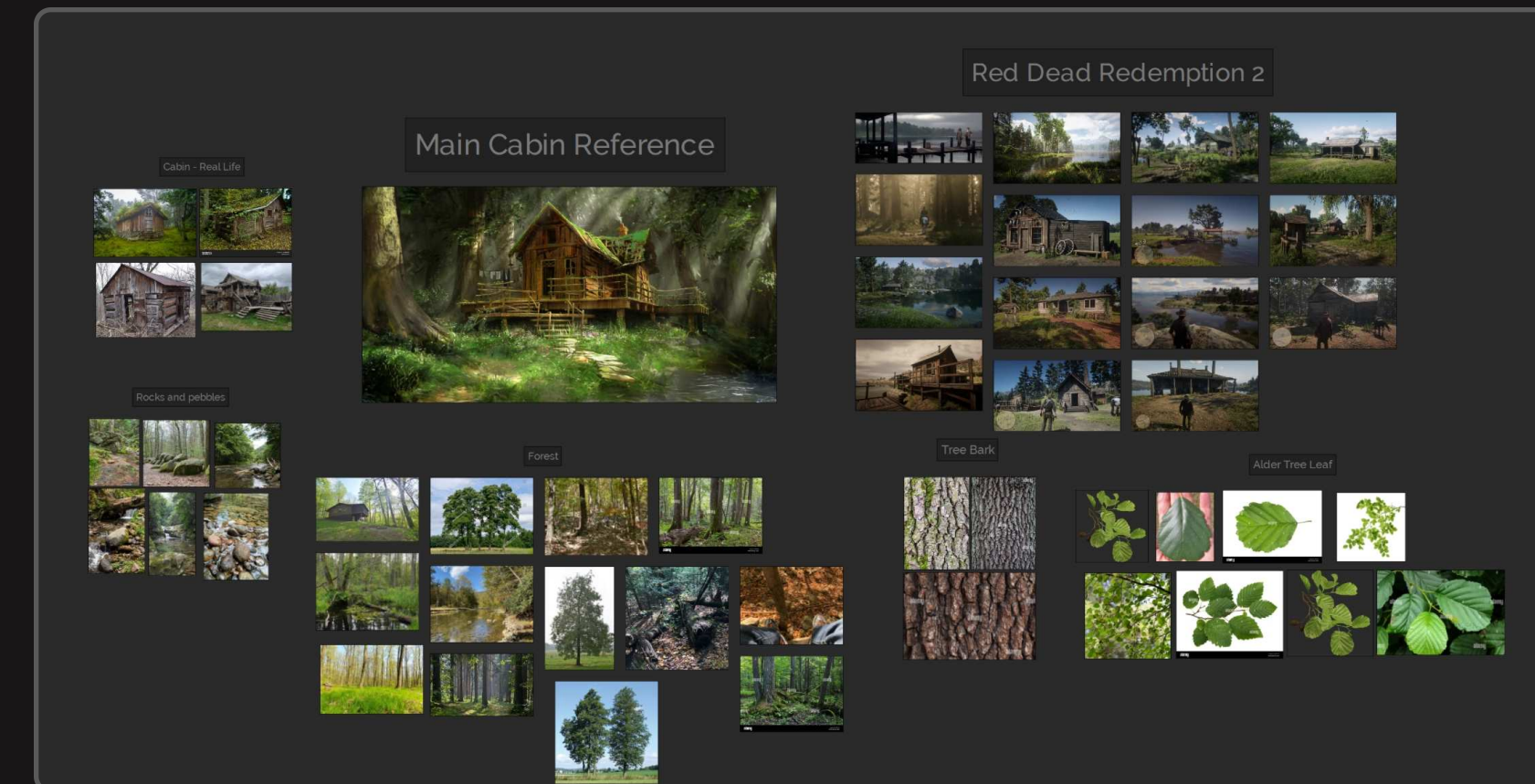
(Figure 8: Gantt chart)

Asset Name	Blockout	HighPoly	Material	Type	# Hours	Completed
Scene Blockout	Complete	n/a	n/a	Blockout	6	✓
Scene Lighting	In Progress	n/a	n/a	UES	3	✓
Scene Landscape	Complete	n/a	n/a	UES	3	✓
Create a Water Material	Complete	n/a	n/a	UES	3	✓
Create a Landscape Materials	Complete	n/a	n/a	Substance Designer	20	✓
Create a Master Landscape Materials for UES	Complete	n/a	n/a	UES	4	✓
Create a RGB dirt Material for EUS	Complete	n/a	n/a	UES	4	✓
Create a Wood Materials for the cabin	Complete	n/a	n/a	Substance Designer	8	✓
Grass and clover Foliage atlas's	Complete	Done	Done	Trimsheet	8	✓
Fern atlas	Not Started	Not started	Not started	Trimsheet	6	□
Dandelion atlas	In Progress	Not started	Not started	Trimsheet	6	□
Fern asset	Not Started	Not started	Not started	Prop	3	□
Dandelion asset	Not Started	Not started	Not started	Prop	3	□
Grass asset	Complete	Done	Done	Prop	3	✓
Tree bark Material	Not Started	n/a	n/a	Substance Designer	8	□
Tree branch atlas	Not Started	n/a	n/a	Trimsheet	4	□
Modular Cabin Assets	In Progress	Not started	In progress	Modular	32	□
Wagon	Not Started	Not started	Not started	Prop	8	□
Barrel	Not Started	Not started	Not started	Prop	4	□
Box	Not Started	Not started	Not started	Prop	4	□

(Figure 8: Notion, Asset Lists)

PUREREF

PureRef was selected as the reference storage program for the project, as it allows for better organization of different stages of the project. The reference board created contained a variety of reference covers, props, materials, and concepts to aid in the development of the scene.



(Figure 9: PureRef Ref Board)

MODULAR COLOR PLAN

To better understand the cabin's modularity and create a better Gantt chart, a modular color plan was developed.

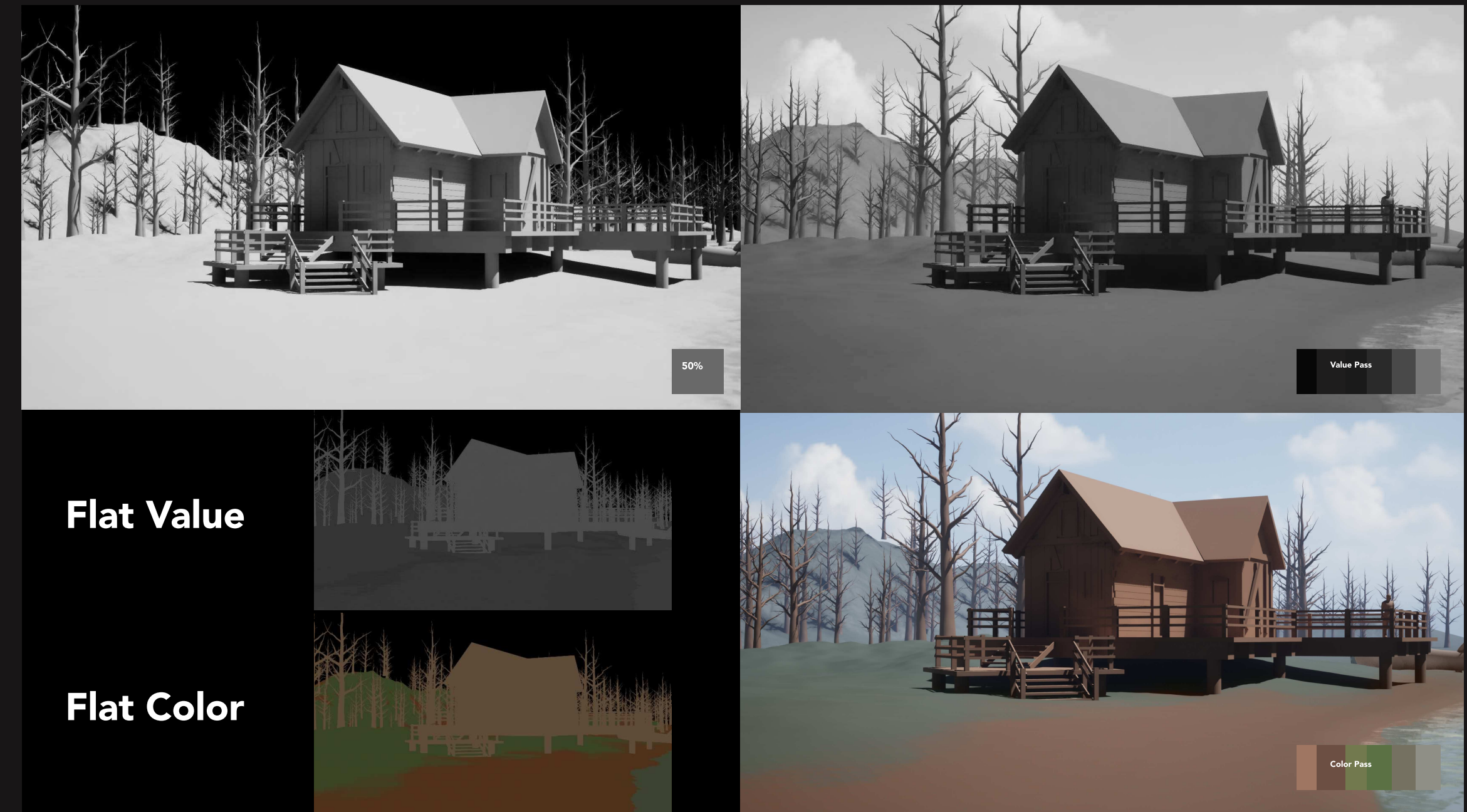


(Figure 10: Modular Color Plan)

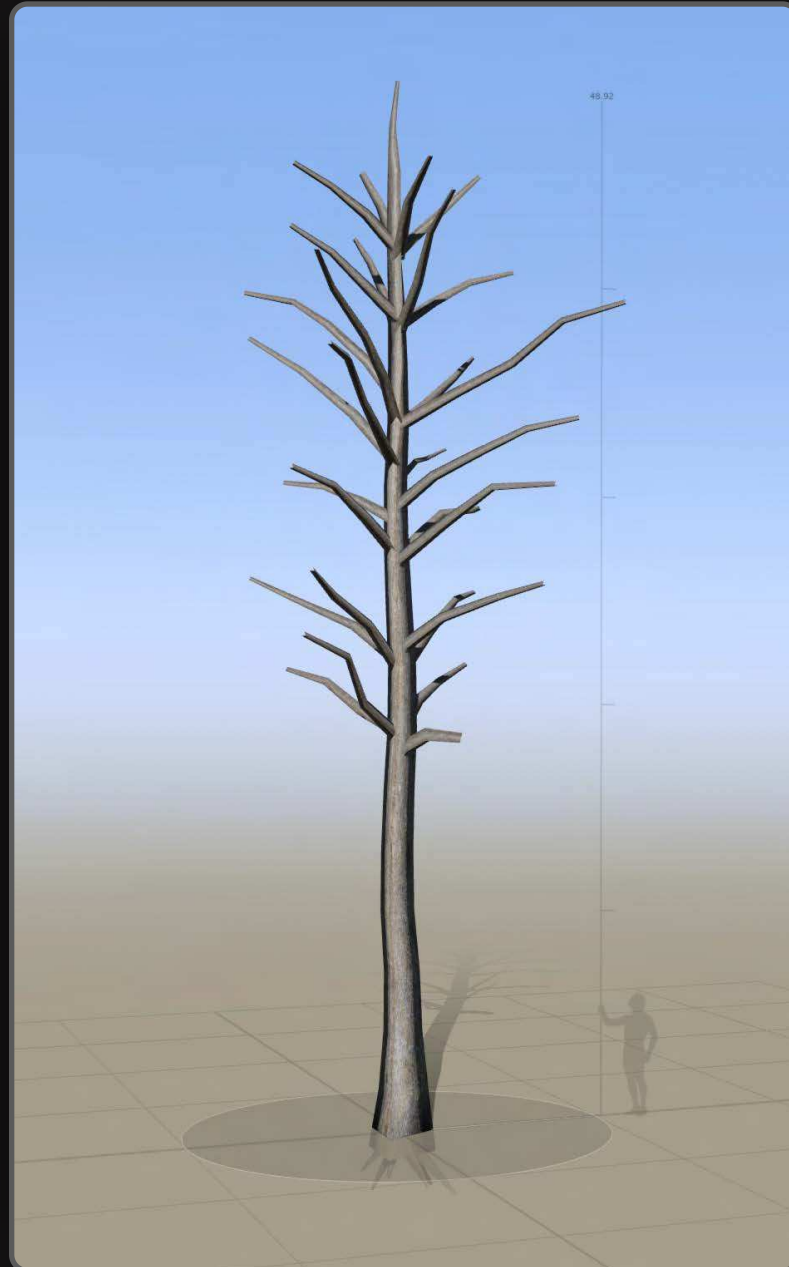
BLOCKOUT AND COMPOSITION

INITIAL LAYOUT OF THE SCENE:

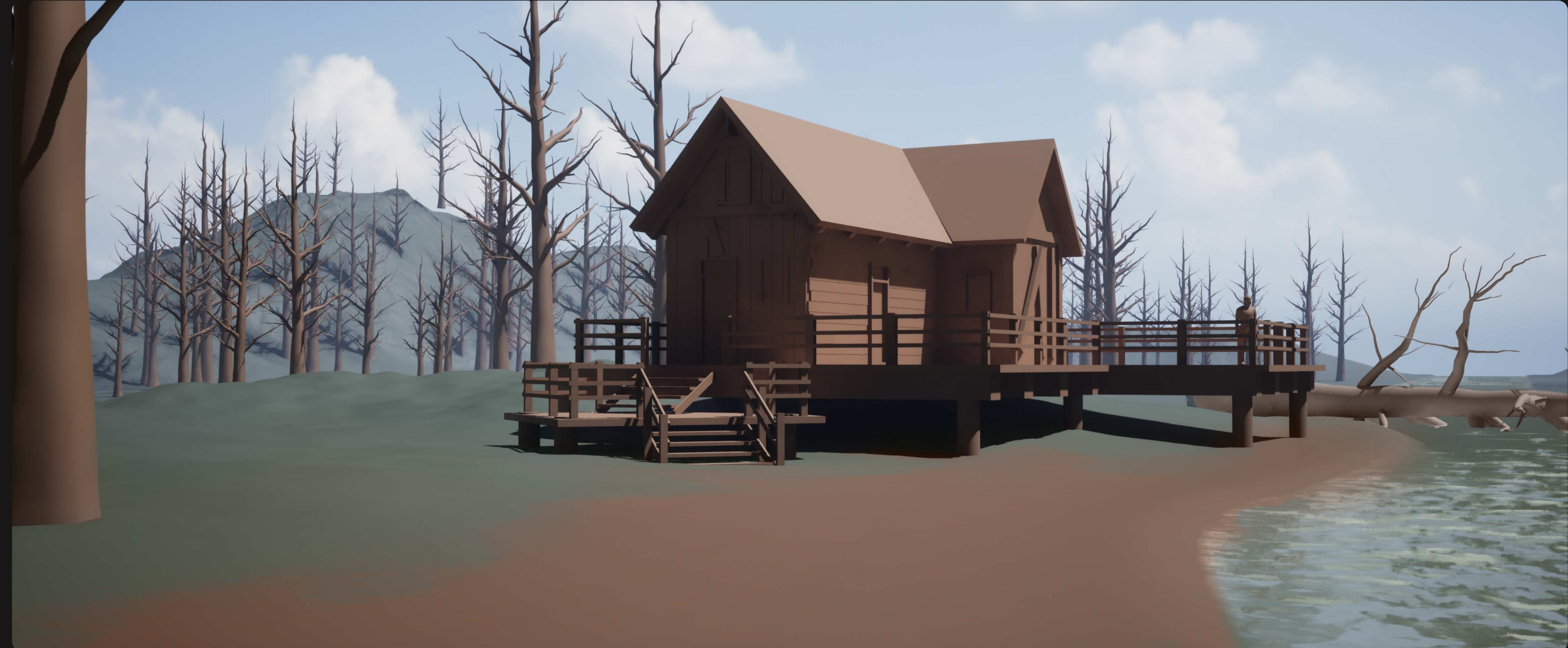
To create a solid scene, I focused on establishing a strong foundation early on using the hybrid blockout technique. This involved defining the forms, base colors, composition, and lighting. By setting up these foundational elements beforehand, I ensured the overall scene would be visually cohesive and aligned with the concept before moving on to the final texturing phase. The hybrid blockout technique was particularly valuable because it allowed me to set focal points and visualize the intended atmosphere effectively.



(Figure 11: Hybrid Blockout)



(Figure 12: My tree first iteration in SpeedTree)



(Figure 13: Blockout with the trees)

BLOCKOUT PREPARATION

To create a good Hybrid Blockout, it was necessary to start making the first tree earlier than expected in SpeedTree. This was mandatory because the shape of the tree could affect the balance of the entire scene. The Hybrid Blockout was needed to establish a strong base for focusing on elements such as color, values, and lighting.

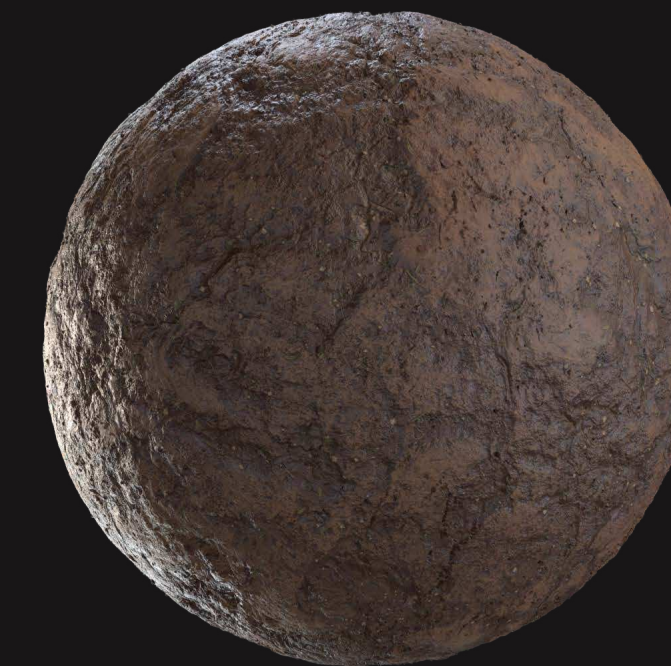
MATERIAL WORKFLOW OVERVIEW

The materials for this project were made using 3 workflows:

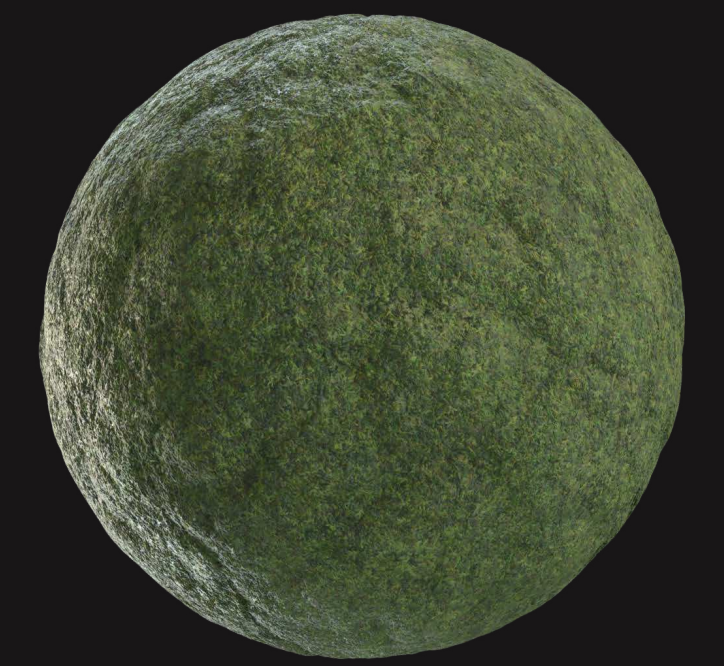
1. A combination of ZBrush and Substance Designer.
2. A combination of ZBrush and Substance Painter.
3. A fully Substance Designer based process.



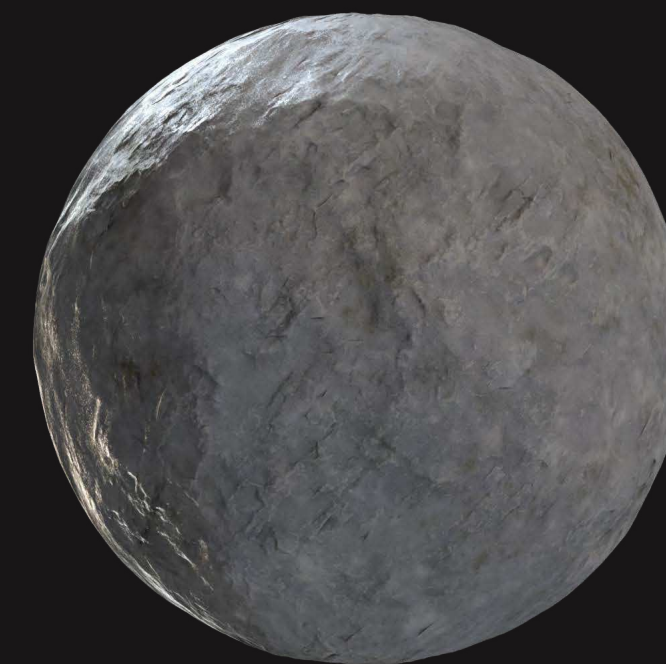
Mud



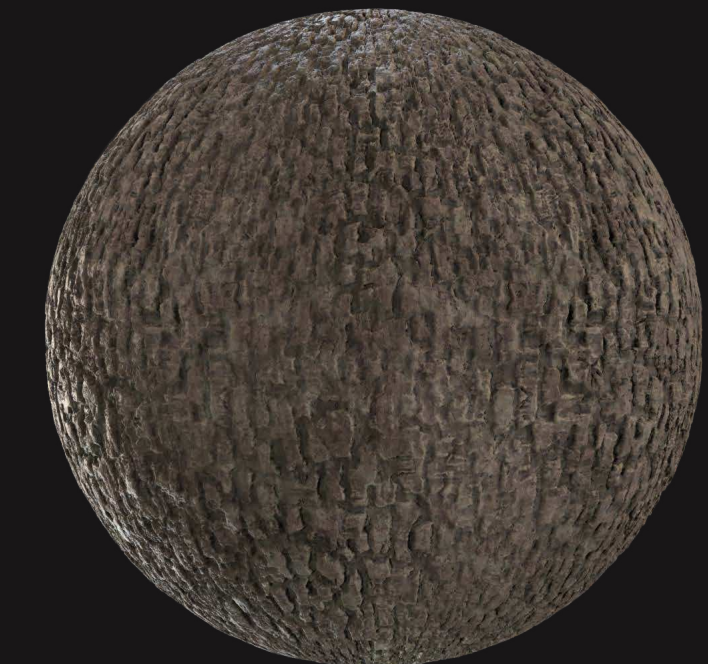
Wet Mud



Moss



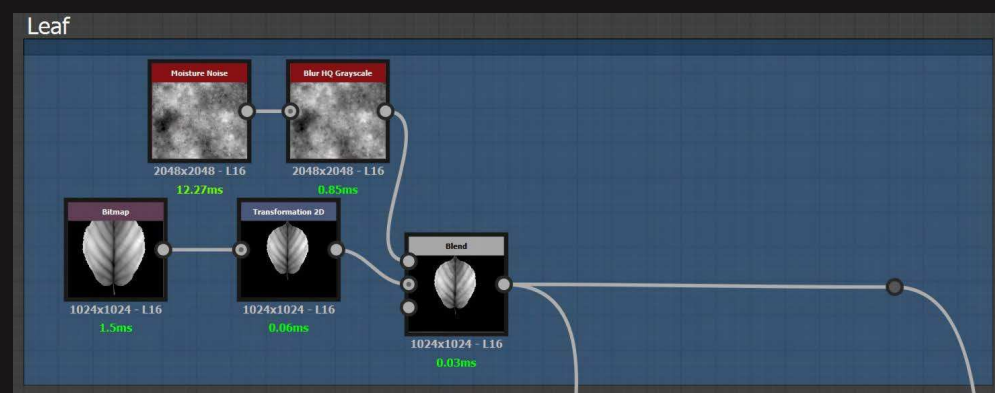
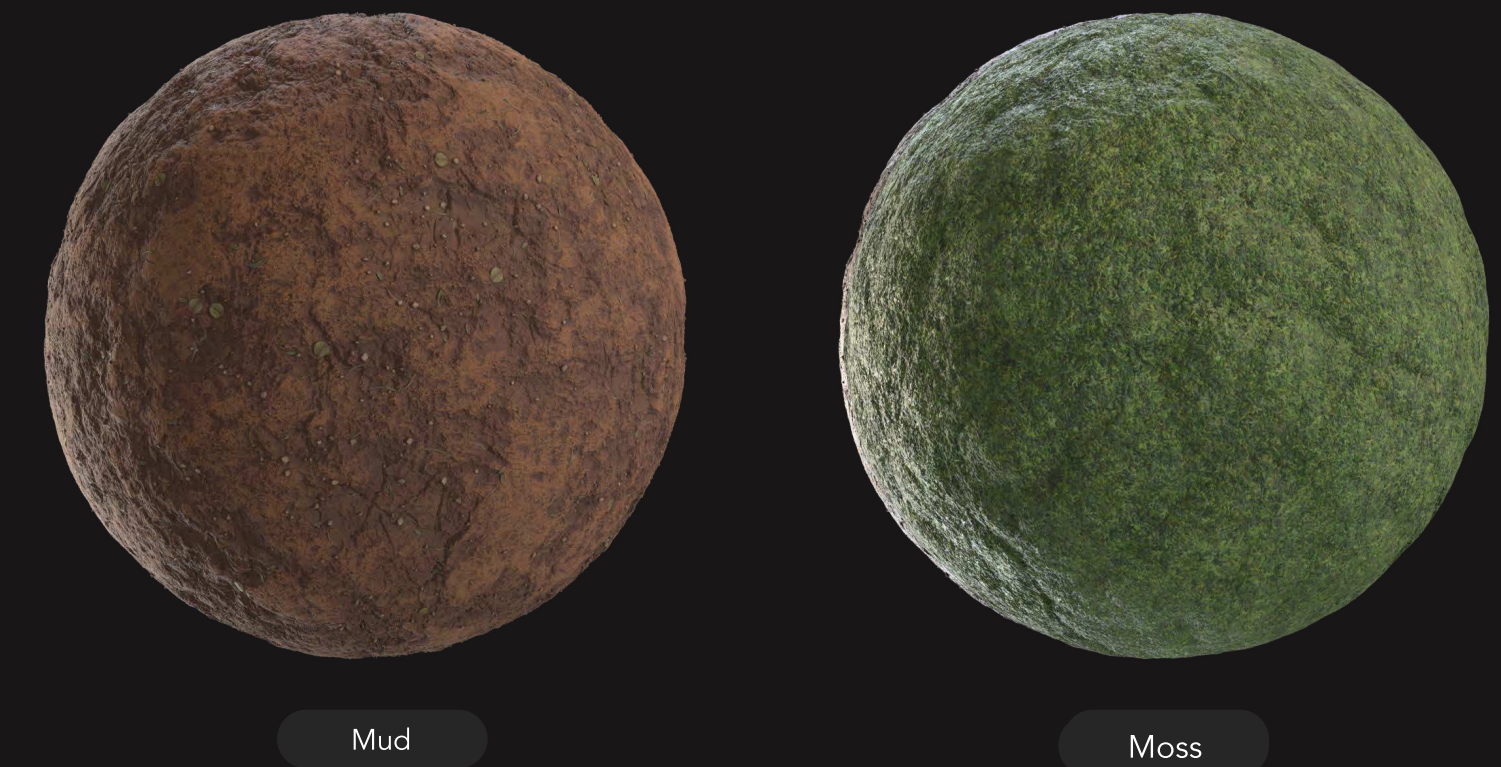
Rock



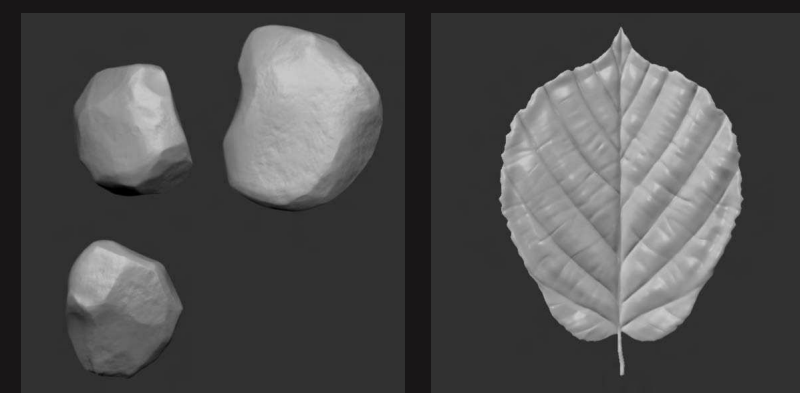
Tree Bark

ZBRUSH AND SUBSTANCE DESIGNER WORKFLOW:

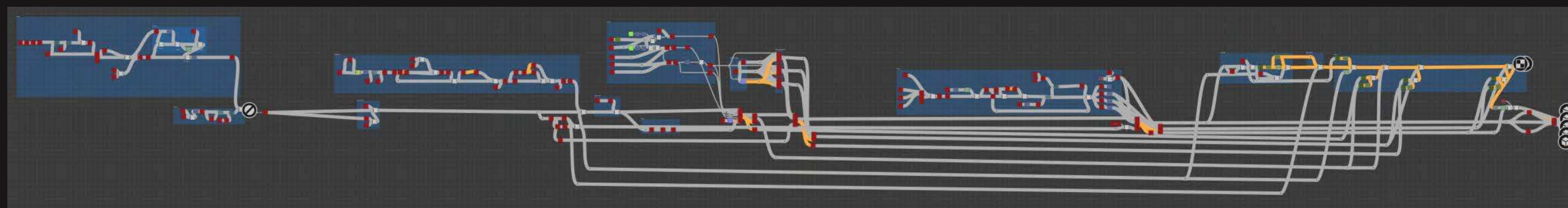
Following a tutorial by Javier Perez (2021), the foundation for the mud materials was created. The tutorial offered insights into generating the base mud material without excessive noise by layering details gradually to achieve more control over the final appearance. Additionally, personal adaptations were made to the mud material by modeling pebbles and leaves in ZBrush. This addition aimed to create a more organic feel, enhance realism, and prevent the material from feeling overly procedural.



(Figure 14: ZBrush leaf integration in Substance Designer)



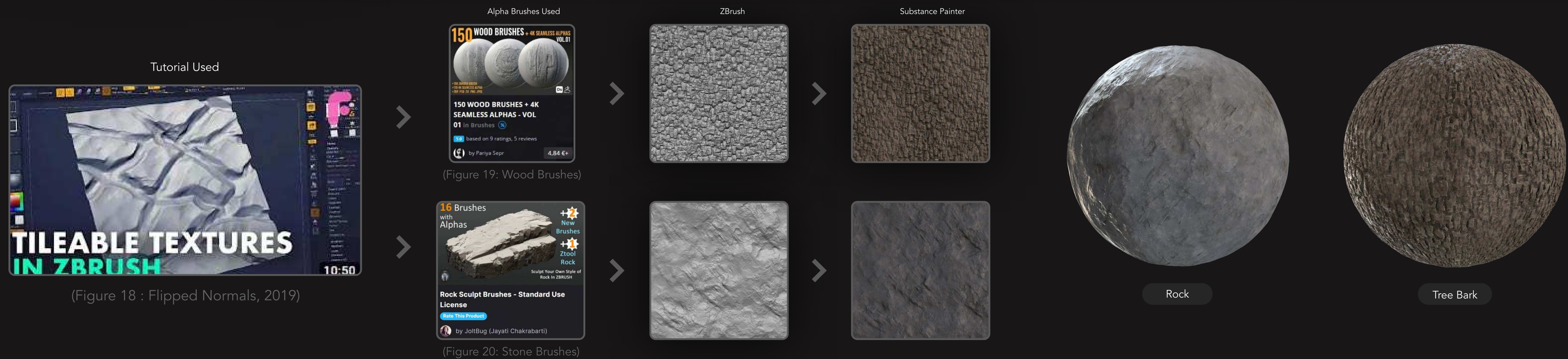
(Figure 15: ZBrush, pebbles and leaves)



(Figure 16: Mud Graph)



(FIGURE 17: JAVIER PEREZ, 2021)

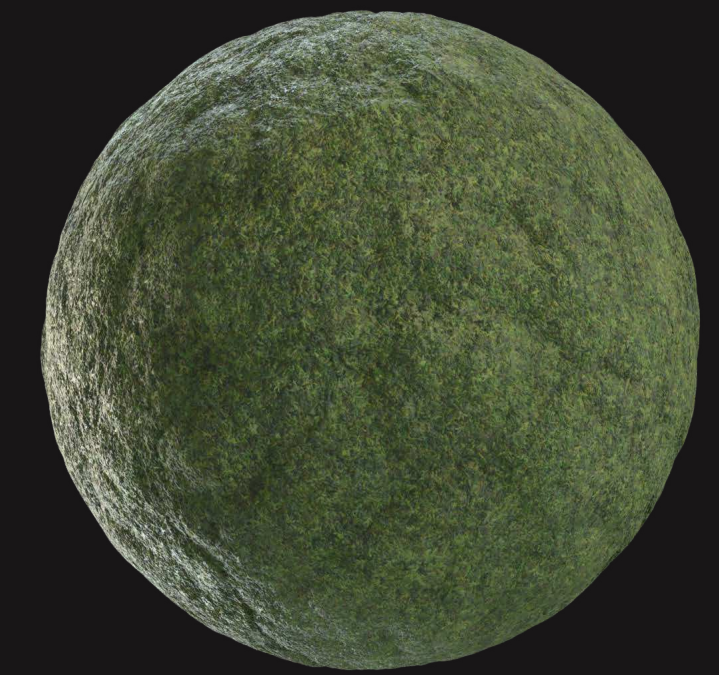


ZBRUSH AND SUBSTANCE PAINTER WORKFLOW:

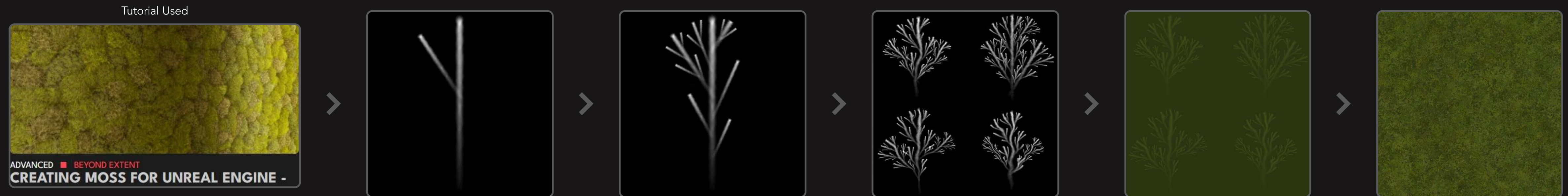
The textures for rock and tree bark were developed using a ZBrush workflow. A tutorial from Flipped Normals (2019) provided guidance on creating tileable textures in ZBrush, while two alpha packs sourced from Artstation were utilized to base details. Afterwards, the 2 textures were baked and colored in Substance Painter.

FULL SUBSTANCE DESIGNER WORKFLOW:

The moss texture was created solely using Substance Designer. Utilizing a tutorial from Beyond Extent (2020) as guidance, moss strands were generated by converting a square shape node into a line. This line was then duplicated multiple times and manually arranged to simulate the appearance of a tree branch. After this, four moss cards were created using these strands to form the foundation of the moss.



Moss



(Figure 21: Beyond Extent,
Creating Moss for Unreal Engine 2020)

VEGETATION ATLAS WORKFLOW

In crafting the foliage for the scene, an industry approach inspired by God of War Ragnarok was adopted. This method involves primarily sculpting vegetation in ZBrush. By studying explanations and breakdowns from Kevin Quinn, the Lead Environment Artist, insights were gained on organizing the atlas and achieving the desired appearance for the vegetation.



Tree Leaves Atlas



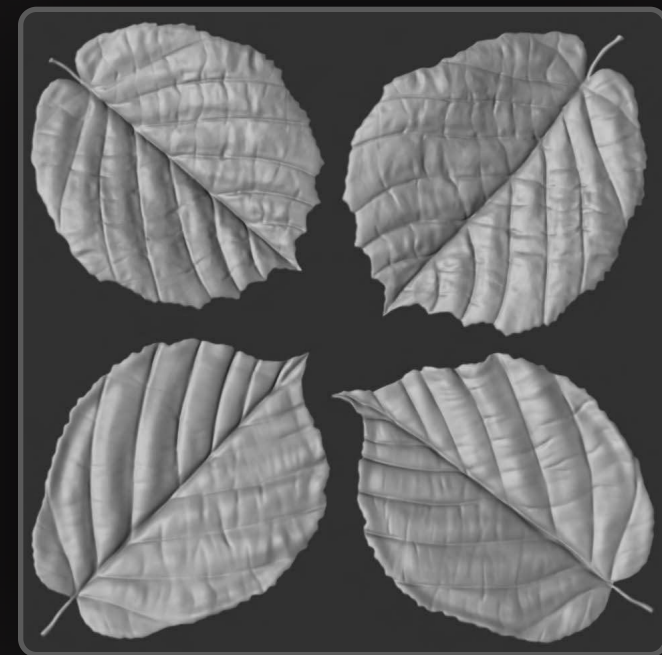
Tree Branch Atlas



Grass and Clover Atlas



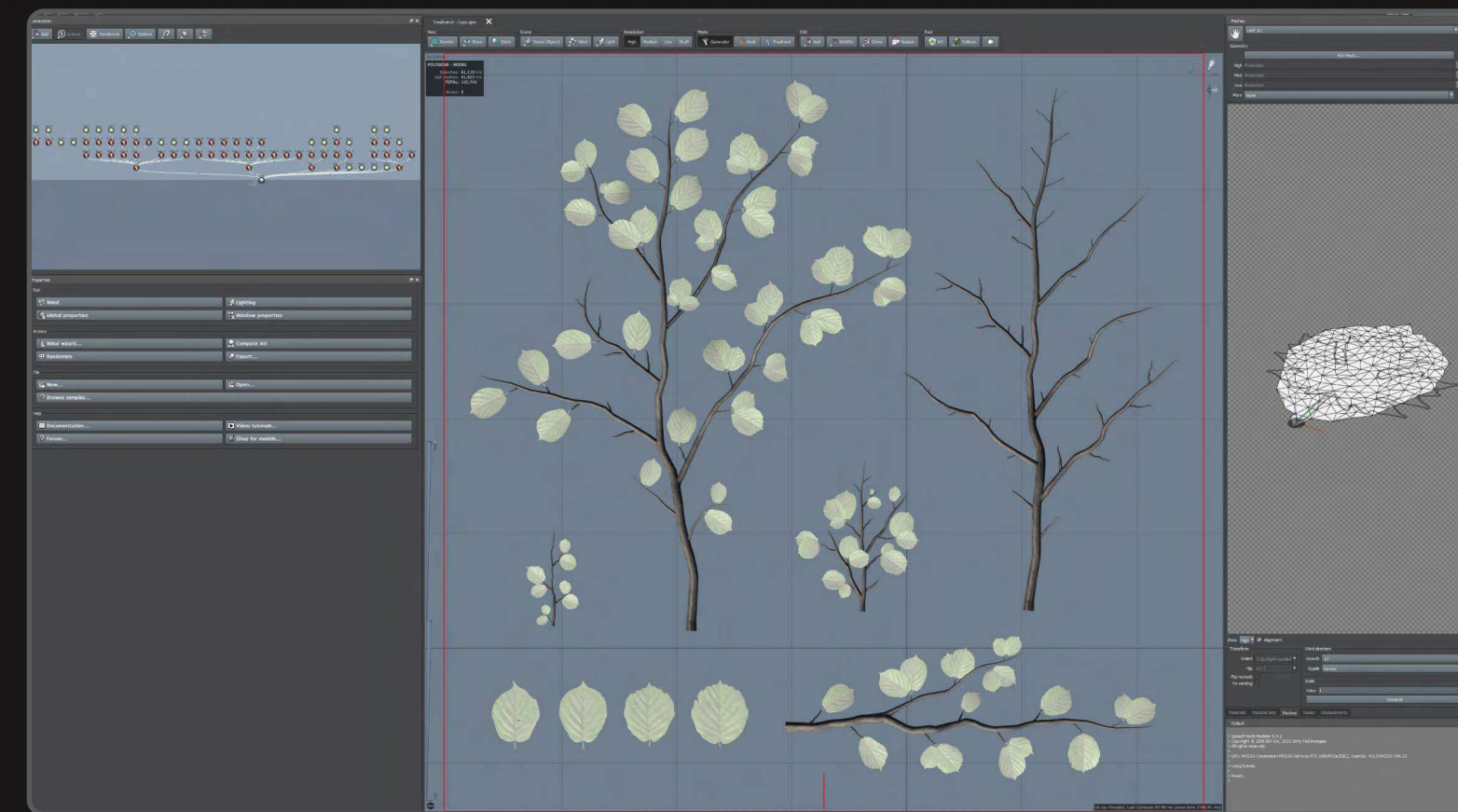
(Figure 22 : Foliage Atlas References)



ZBrush



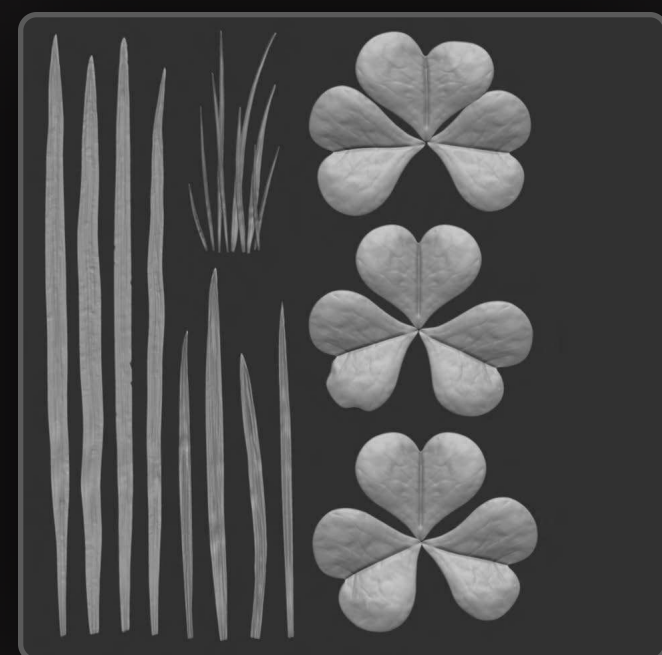
Substance Painter



SpeedTree



Tree Branch Atlas



ZBrush



Substance Painter

FOLIAGE ATLAS :

The approach for creating both the Grass and Clover Atlas and the Tree Branch Atlas followed a similar process. Both atlases were sculpted in ZBrush and textured in Substance Painter. The only distinction or additional step was that the Tree Branch Atlas was assembled in SpeedTree, as this is where the branches were created.



Tree Bark

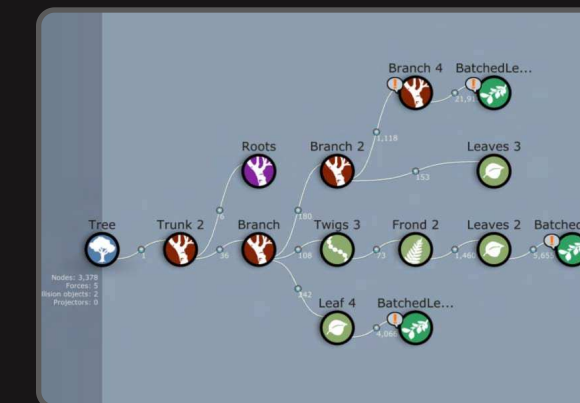
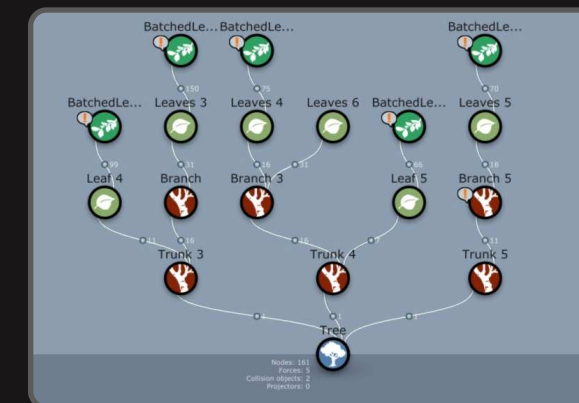


Leaves & Branches Atlas

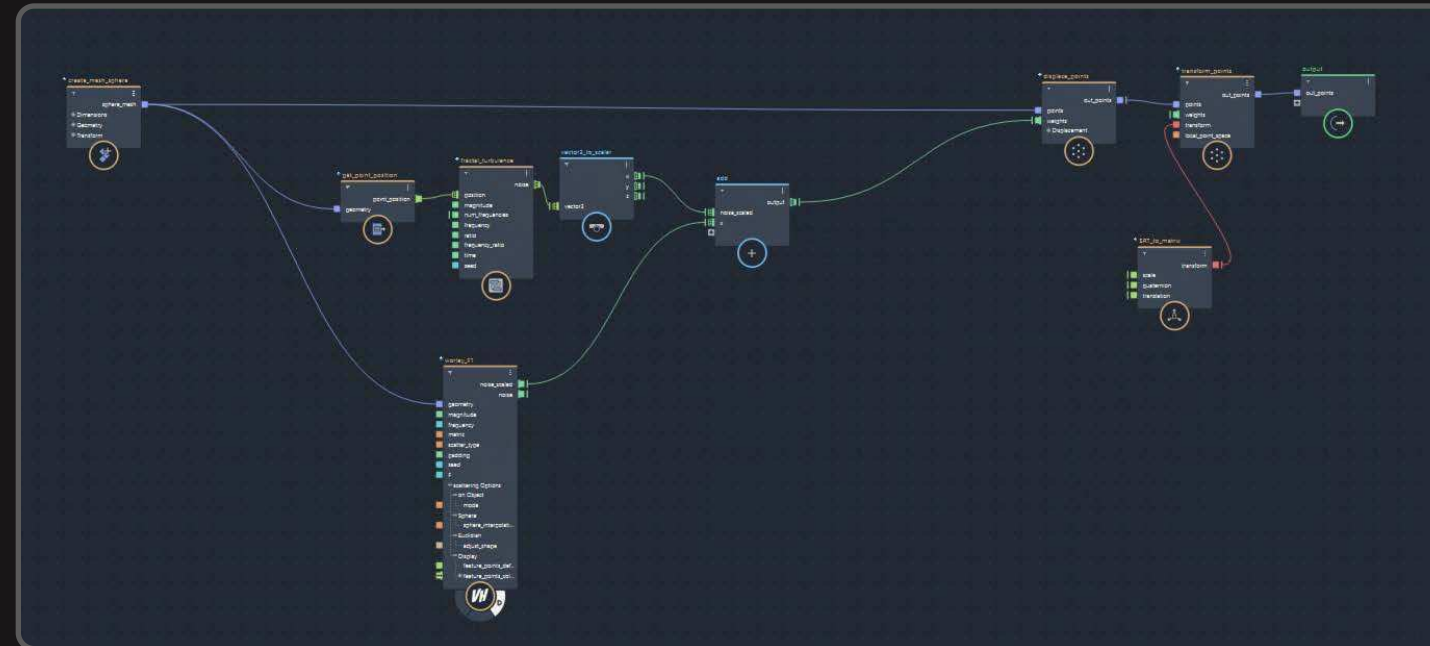


ALDER TREE PRODUCTION WORKFLOW :

Upon finishing the creation of the branch atlas and tree bark, the next step was to apply the knowledge gained from the previous attempt with SpeedTree from Figure 14 to make the 3 trees.



SpeedTree - Graphs



Bifrost - Graph



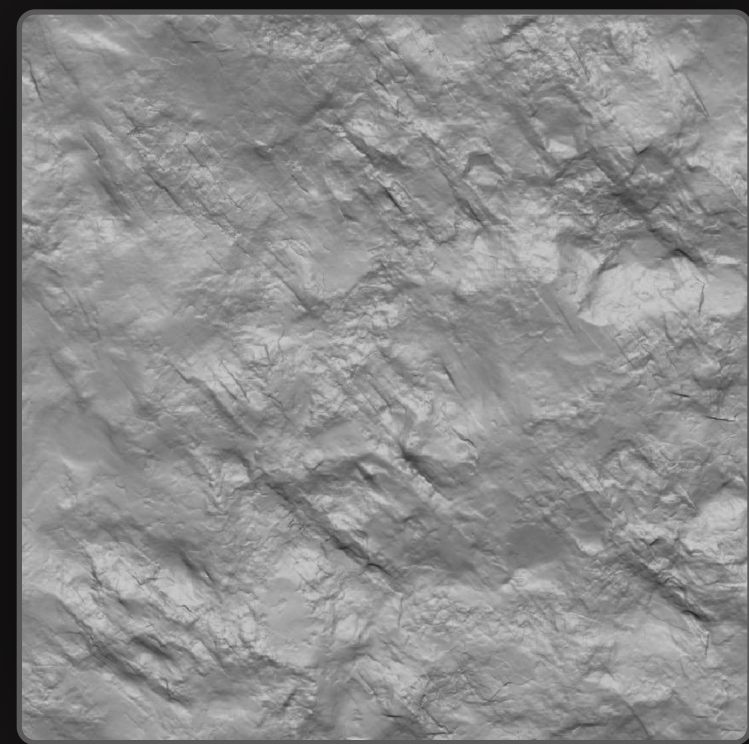
Bifrost - Result



ZBrush

ROCK PRODUCTION WORKFLOW :

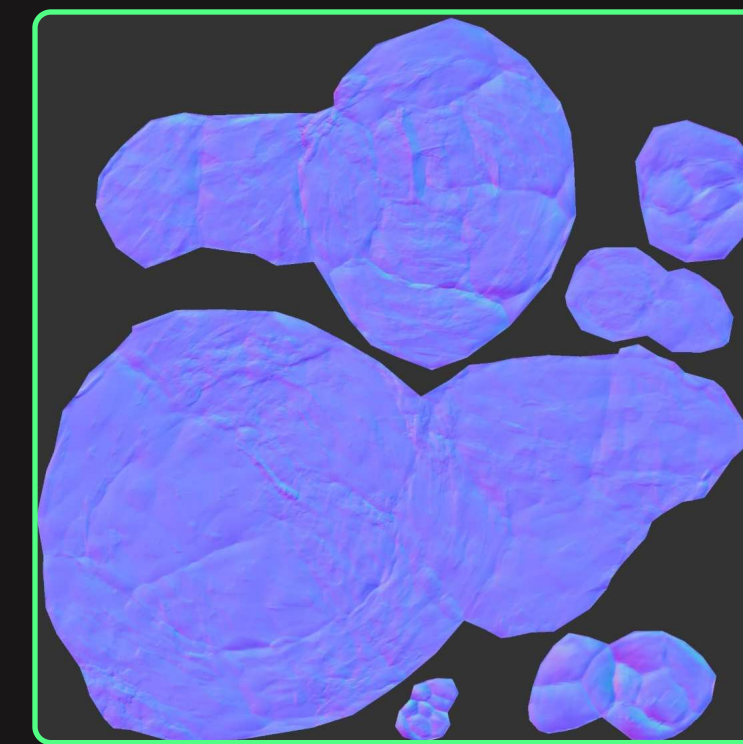
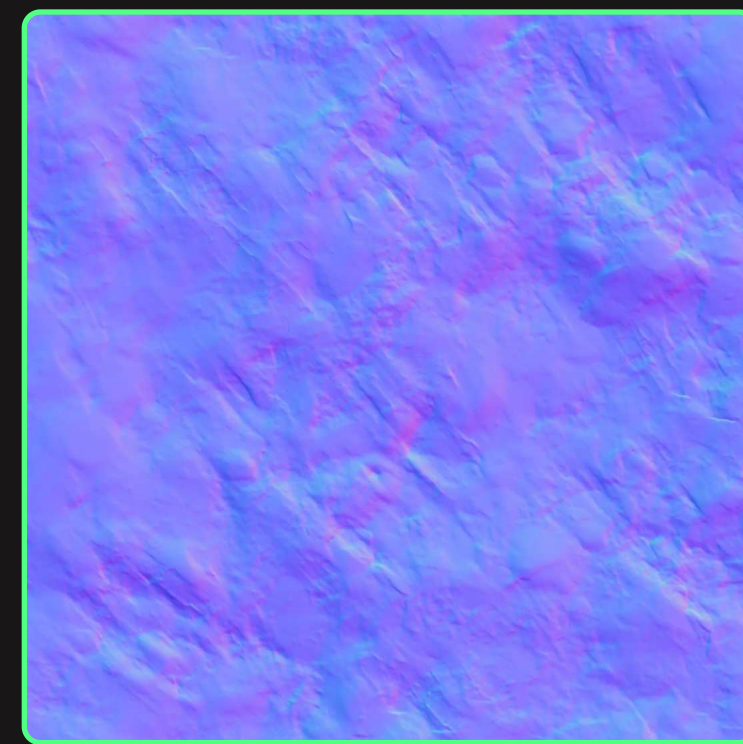
The rocks were generated using a procedural workflow that quickly produced five basic rock shapes. This procedural approach employed Bifrost, which is a node-based system similar to the blueprints in UE5. After that, the rocks were sculpted in ZBrush to give them a more organic



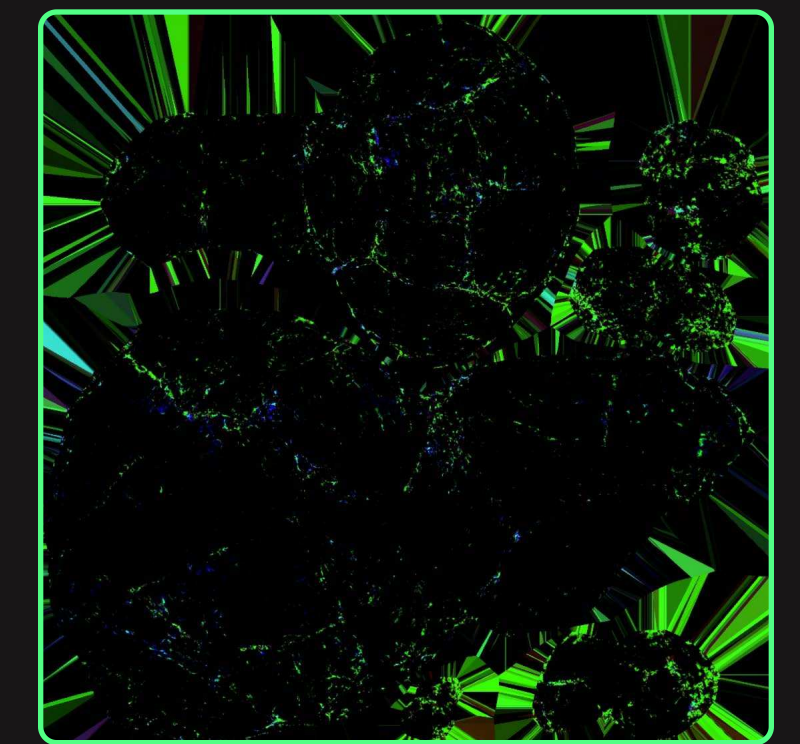
ZBrush



Substance Painter



Baked Normal



Baked RGB Mask



ROCK TEXTURING WORKFLOW :

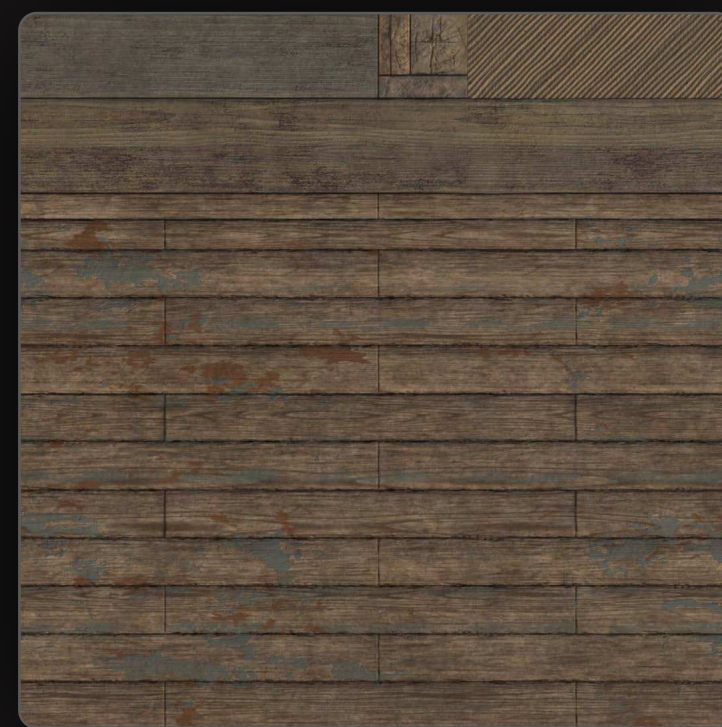
The texturing of the rocks primarily relies on a custom rock shader tailored for this project. This shader combines the tileable rock material created in ZBrush with the baked rock normal and blending them together. Additionally, it incorporates an RGB Mask to introduce supplementary details such as dirt, cavity, and moss. This approach ensures that scaling of the rocks does not compromise texture quality, as the shader employs a function to automatically adjust texel density.



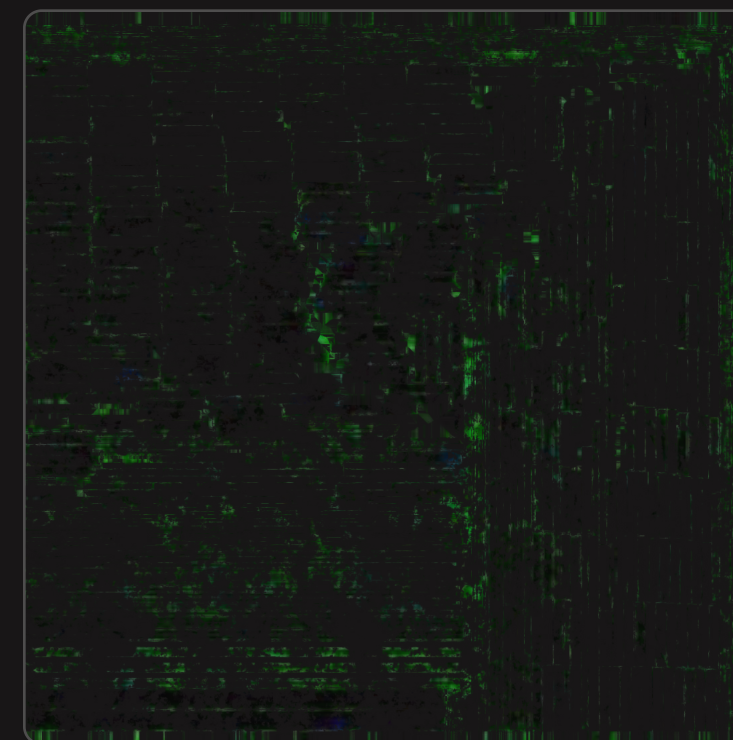
UE5



ZBrush



Wooden Trimsheet



RGB Mask



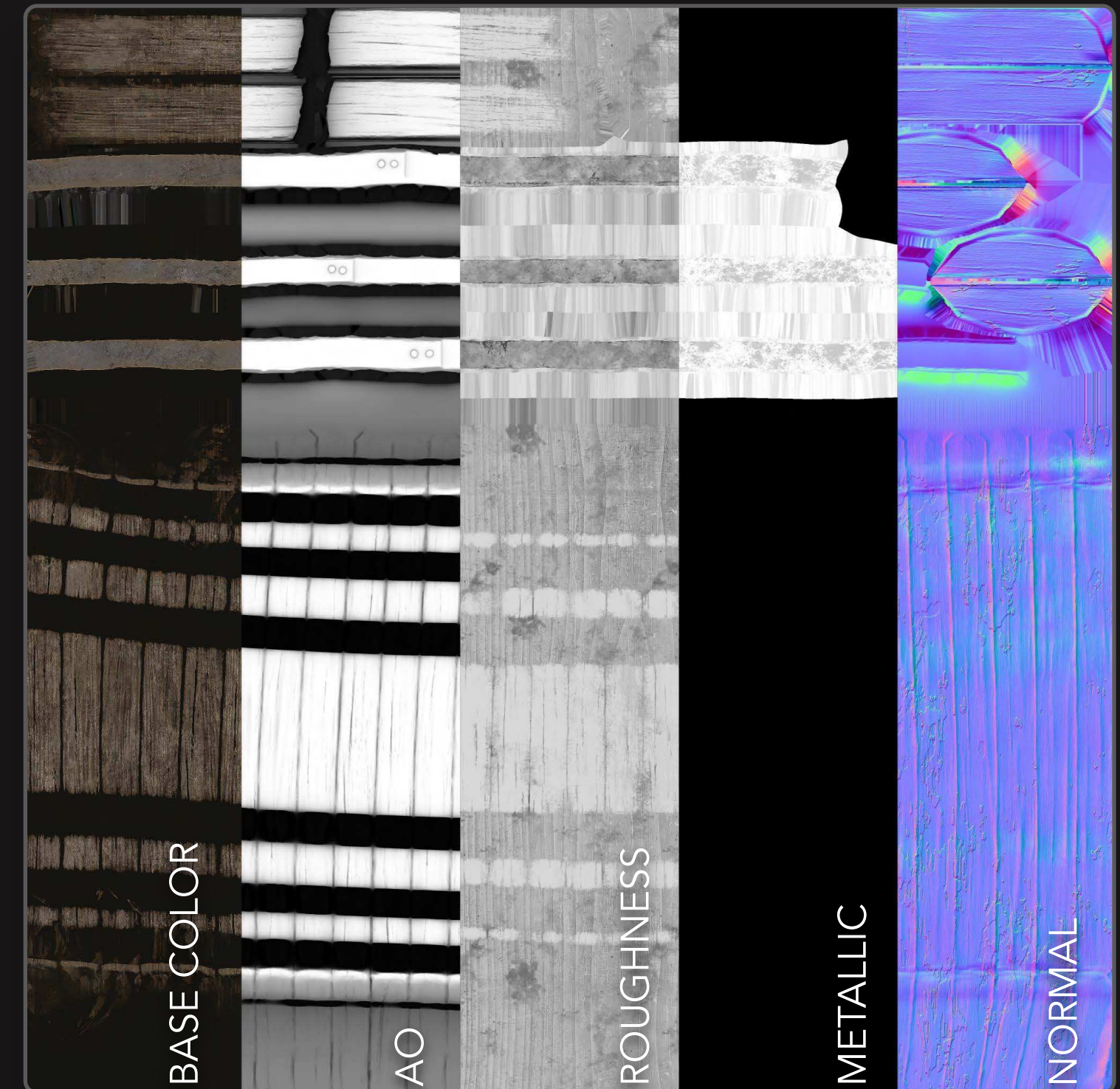
WOODEN TRIMSHEET WORKFLOW :

For texturing the cabin a trimsheet workflow was chosen since is a quick way to add details to the model without additional modelling and extra geometry according to an article from Beyond Extent by Burns (2023). In addition, I combined the trimsheet with an RGB Mask just like the one for the rock to get some dirt variations.

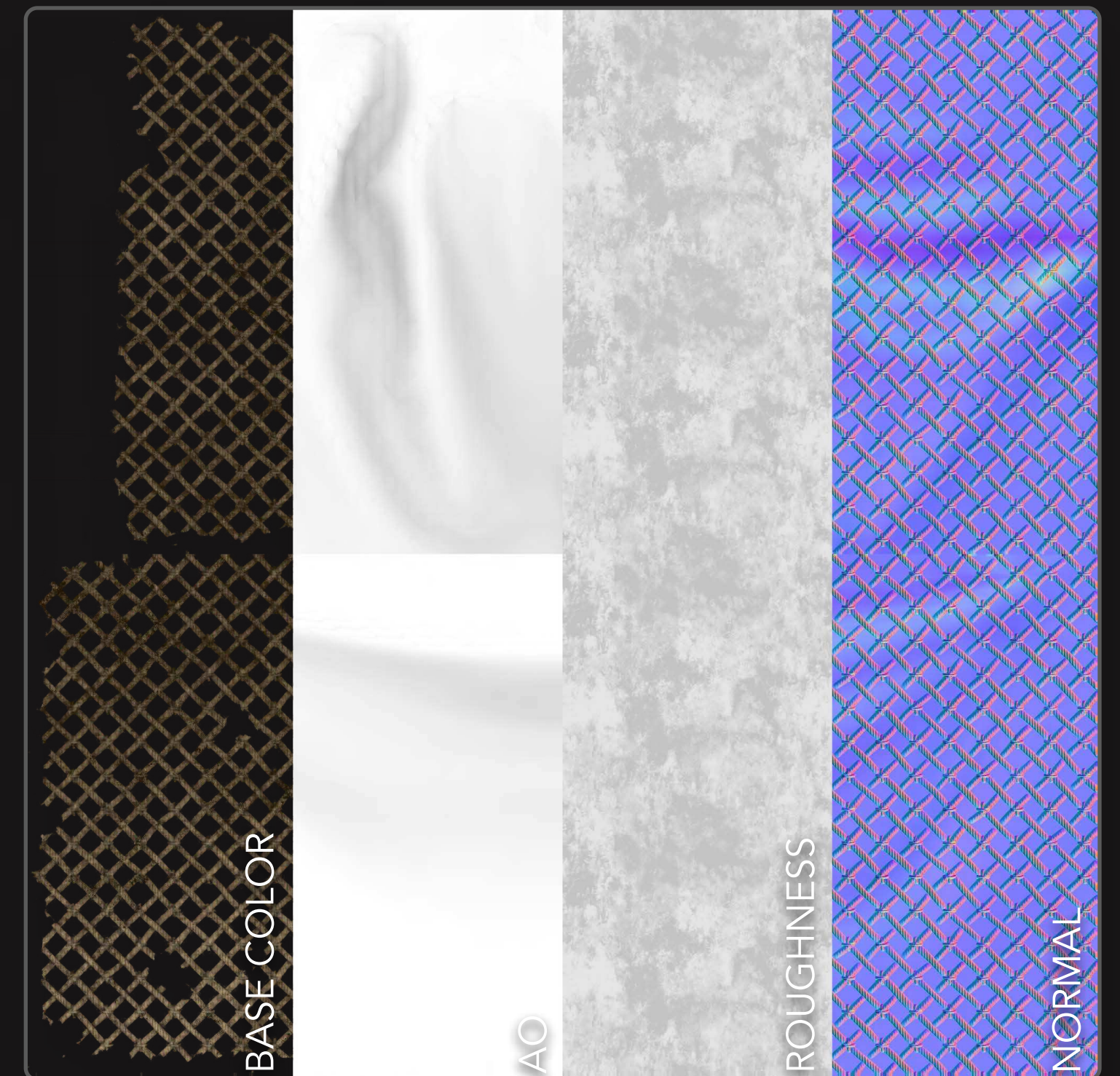
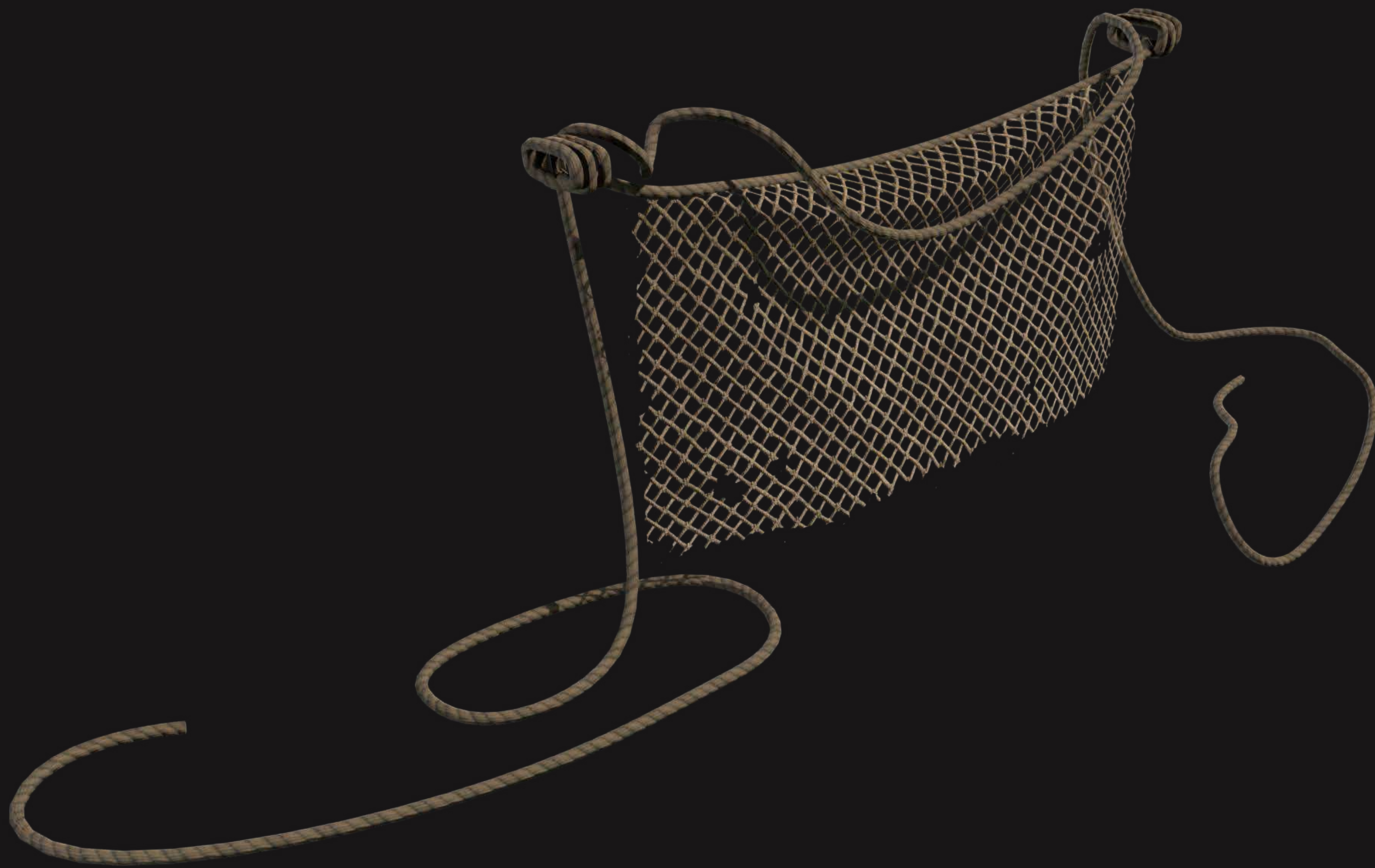


PROPS WORKFLOW :

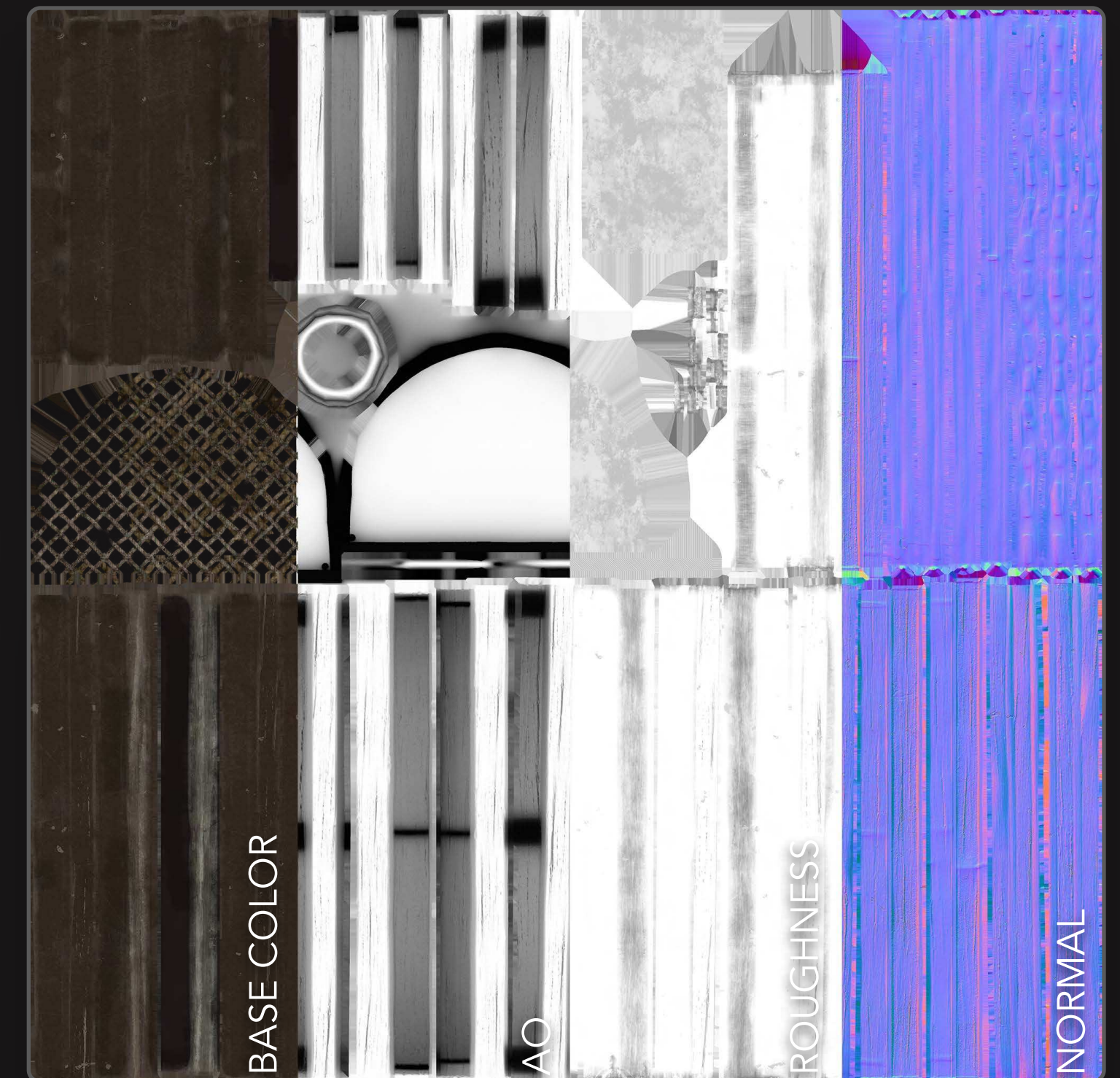
All props are using high to low poly workflow except for the rope which has a tiling texture.



(Figure 23 : Barrel Tex)



(Figure 23 : Fishnet Tex)



(Figure 24 : Crab Trap Tex)

Overall, the project has been successful in meeting the initial brief by creating a realistic forest environment that aligns with the chosen concept art. Various workflows were explored in a logical progression, resulting in a visually pleasing and professionally presented final product. However, there were some challenges and uncertainties, particularly regarding pipeline completion. For example, this was the first time experimenting with a fully organic environment, which led to numerous failed attempts and a steep learning curve. While valuable for learning, it highlighted the need for more research and preparation for a project of this nature and scale.

The planning phase was comprehensive, with references gathered from various sources, including real-life images and video games. An in-depth asset plan was also developed using Notion. However, more attention should have been given to pipeline planning earlier in the process. For instance, the pipeline for the advanced landscape shader required several iterations before an efficient method was discovered. Integrating multiple features such as automatic vegetation, slope mask, parallax occlusion mapping, and virtual textures also proved to be time-consuming, exceeding the initial estimations outlined in Notion.

While the overall landscaping of the scene is satisfactory, some areas lack coherence. For example, the sides of the map appear empty, making the cabin feel out of place since it is the only thing in the area. Additionally, the vegetation feels somewhat monotone, suggesting a need for additional foliage variation to enhance visual interest and realism.

Flipped Normals (2019) Making tileable textures in zbrush - top zbrush trick, YouTube. Available at: <https://www.youtube.com/watch?v=Pdh0peG4oys&t=365s> at: https://www.youtube.com/watch?v=QbF5tb_p4rl&t=4055s (Accessed: 11 May 2023). [Accessed 1 Mar. 2024].

Goodson, K. (2019). 3D Environment Design of Those Who Mourn. [online] 80.lv. Available at: <https://80.lv/articles/001agt-004adk-3d-environment-design-symbols-breakdown/> [Accessed 1 Mar. 2024].

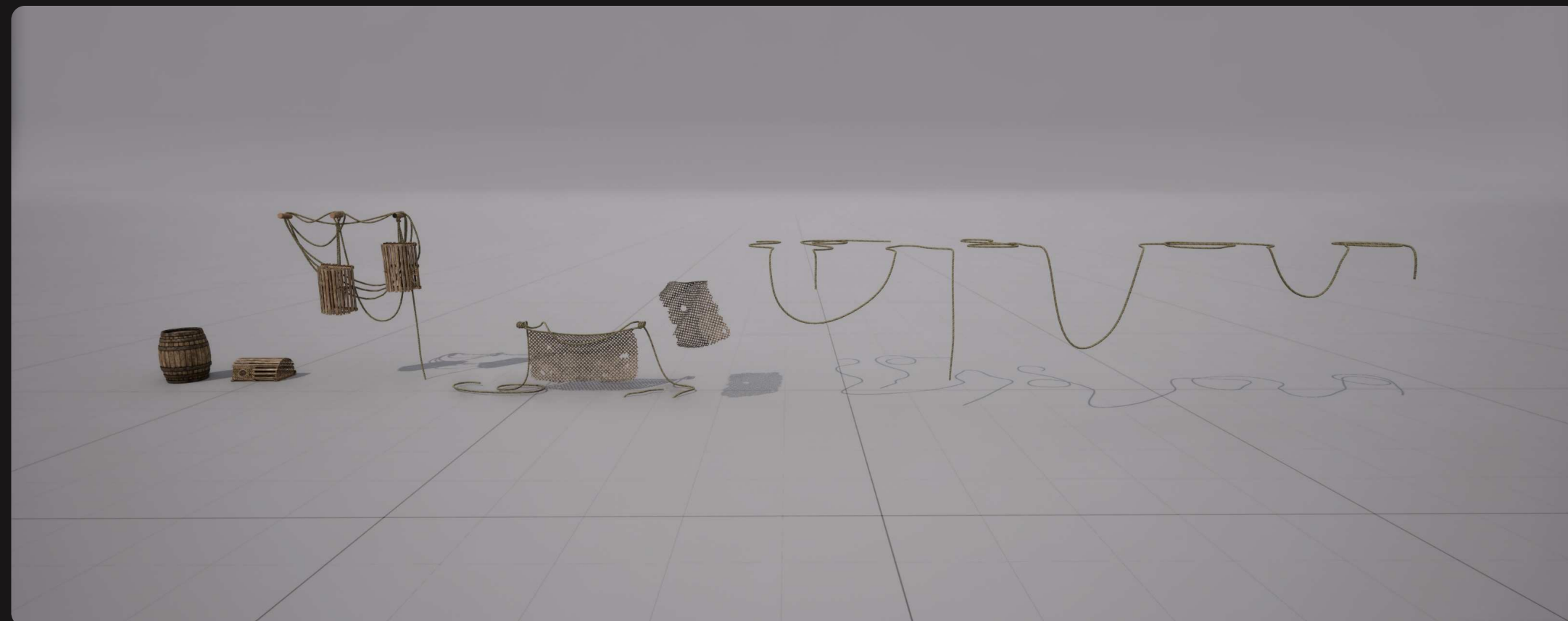
Perez, J. (2021) Create a Realistic 3D Muddy Dirt Road w/ Javier Perez, youtube. Available at: (Accessed: 11 May 2023). 6 - Ronnegard, J. (2020) ZBrush/SP - 18 rock brushes + 3 ztool rocks vol.1 - artstation, Available at: <https://www.artstation.com/marketplace/p/3y/zbrush-sp-18->



Full Asset Zoo



Cabin Assets



Props



Rocks and Foliage Assets