



## Painting detail with Mudbox

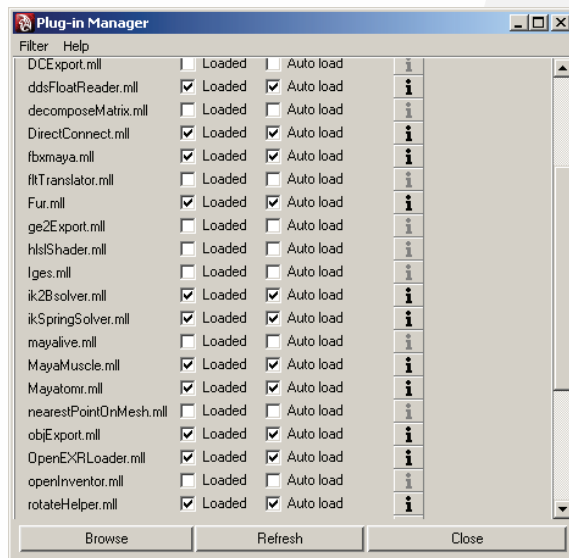
Autodesk Mudbox is a digital sculpting application. Mudbox will be used to sculpt a detailed model using Mudbox's paint sculpting tools. The detail created on the model will be interpreted as a **Normal Map** applied to the low resolution Ricky model in Maya. A **Normal Map** is a texture map in which the colors are interpreted to create the illusion of geometry. Similar to a **Bump Map**, the **Normal Map** goes much further than the **Bump Map**, displaying what appears to be geometry even across the profile of the edge of the character. In this lesson you will learn the following:

- How to import a model into Mudbox.
- How to use the Mudbox tools to add detail to the model.
- How to use export a Normal Map and apply it to the original model.

### 1. Prepare the model

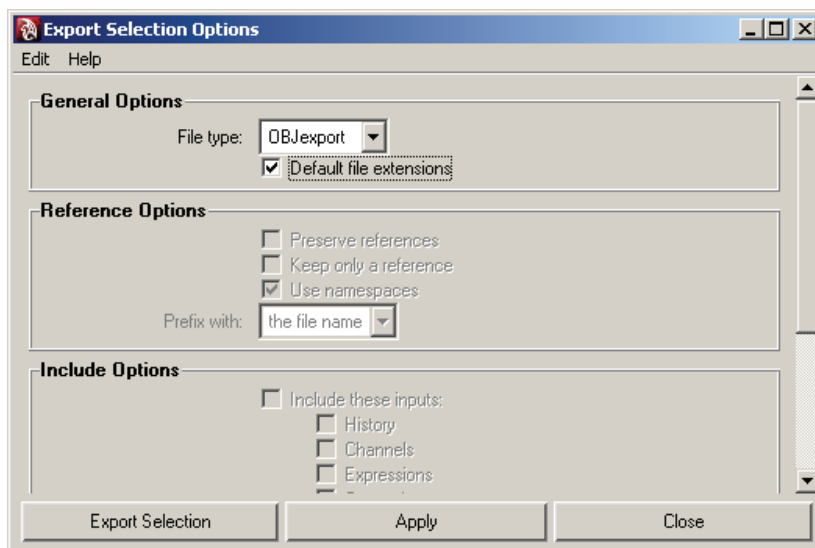
Mudbox requires your model be imported in an .obj format.

- Reassign the *Lambert1 shader* to the Ricky model.
- Select the *Ricky* model. Delete the history.
- Go to **Windows** → **Settings and Preferences** → **Plug-In Manager**.
- Click Loaded by **objExport.mll** and close the *Plug-in Manager*.



## Plug-in Manager

- With Ricky still selected, go to **File** → **Export Selection...** and select the option box.
- Set File type to **OBJexport**. Click **Export Selection**.



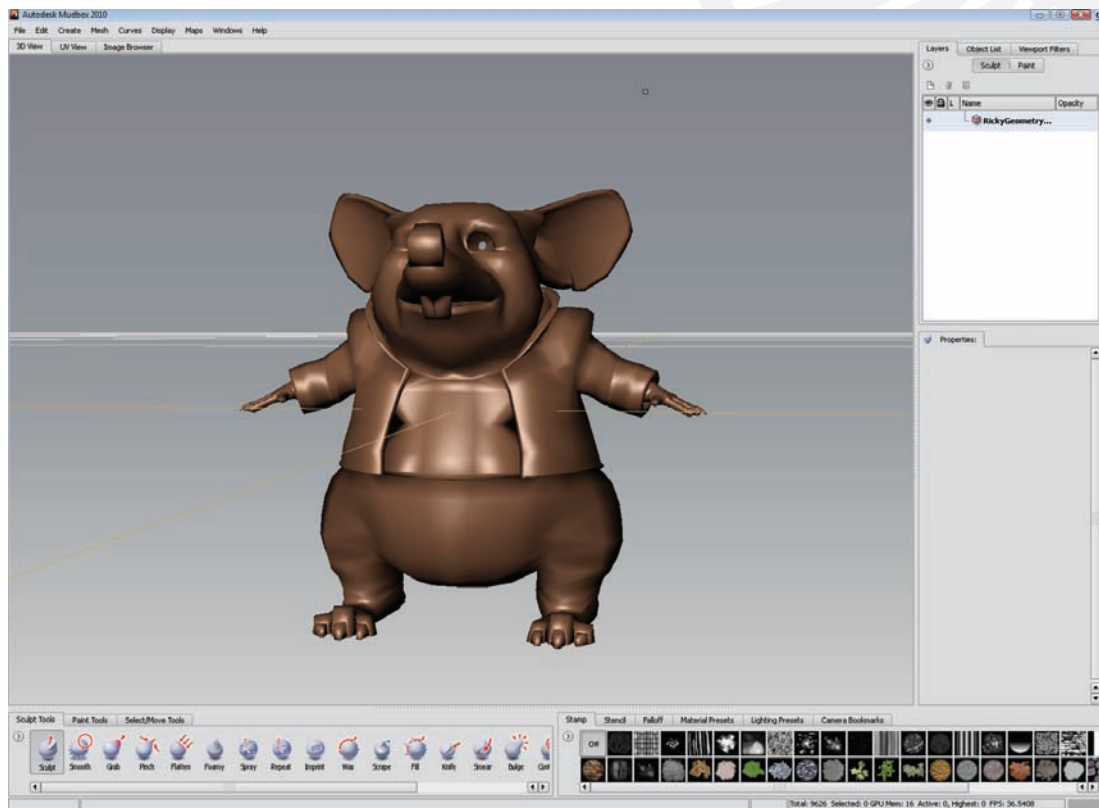
## Export selection

- Another option window opens. Name the file *RickyForMudbox*. The exported file is placed in the *data* directory of the Ricky Model project.

## 2. Open the .obj file in Mudbox

Open the exported file in Mudbox.

- Launch Mudbox.
- Click the Open button on the welcome screen.
- Find the *RickyForMudbox* file and select it.



## Ricky in Mudbox.

### 3. Increase resolution

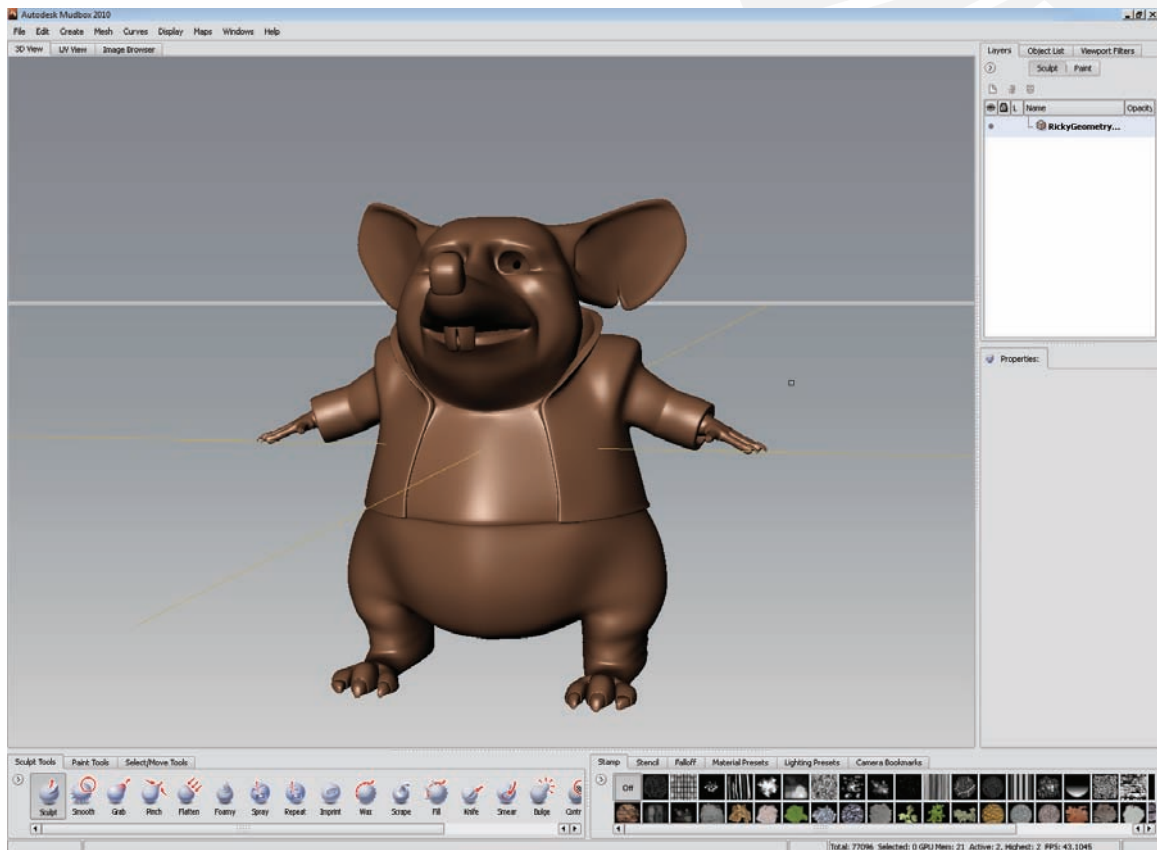
The model sculpted in Mudbox will be much higher resolution than the low resolution polygon model created in Maya. The detail added in Mudbox will be exported as an image file and applied to Ricky as a Normal map - creating the appearance of detail that does not exist in the actual polygon model.

- Press **Shift** and **D** to increase detail. Press **Shift** and **D** three more times to increase the detail even more. The **Page Up** and **Page Down** keys move up and down through the higher and lower level detail versions of the model.

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**NOTE:**

Moving around the Mudbox interface is just like moving in Maya; use the Alt and mouse buttons in the same fashion.

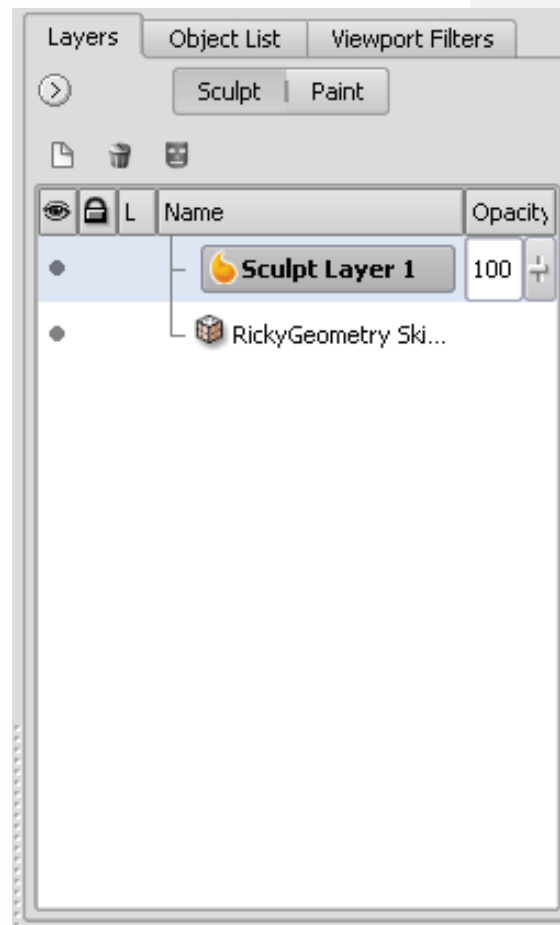


## Subdivided Ricky

### 4. Sculpt layers

Use sculpt layers to organize and blend the detail added to the sculpture.

- Select the Sculpt option in the Layers palette.
- Click the New Layer icon to create a new Sculpt Layer.

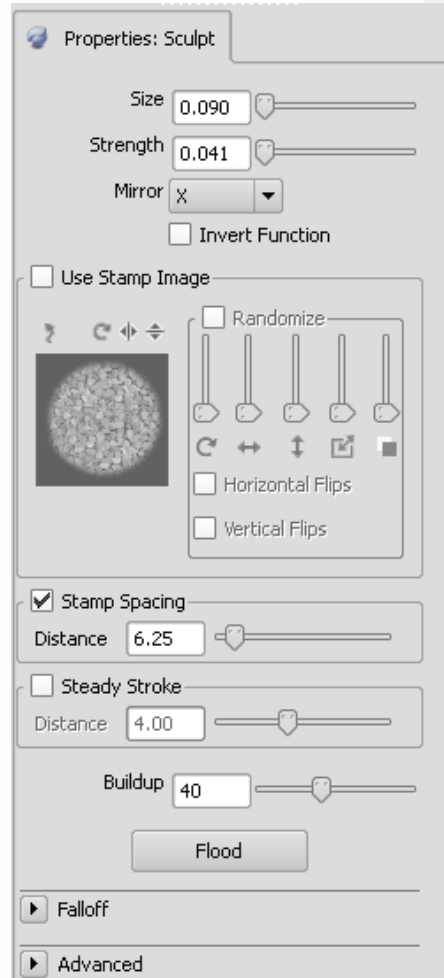


## Sculpt layers

### 5. Sculpt

The wrinkles on the jacket will be sculpted.

- Select the **Sculpt** brush.
- In the Sculpt Tool Properties window, turn on **Mirror X** to sculpt symmetrically.

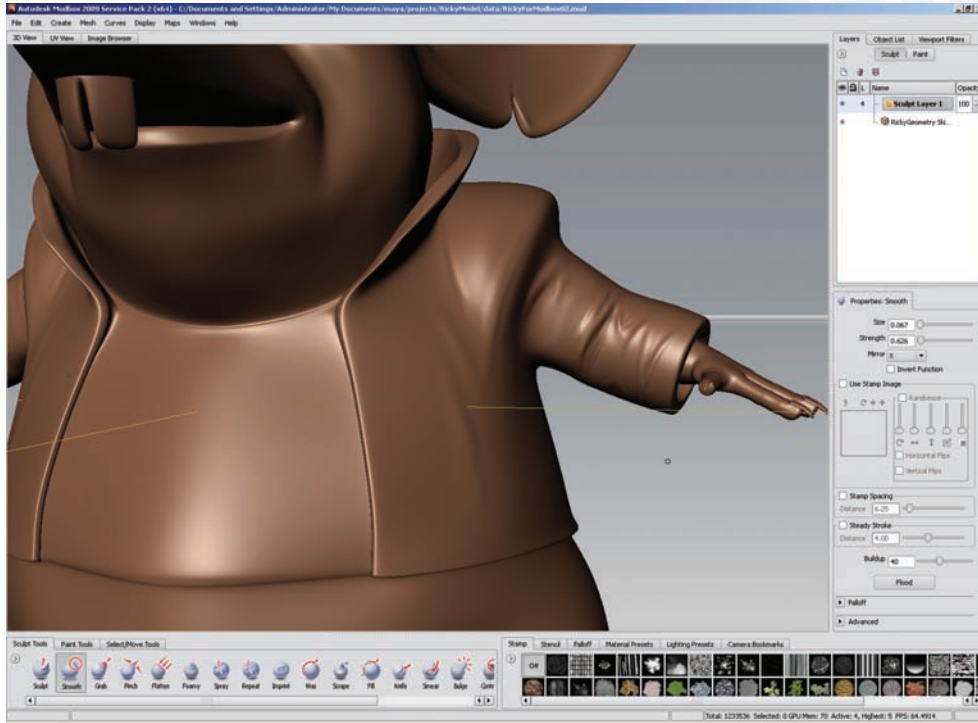


## Sculpt Tool Properties

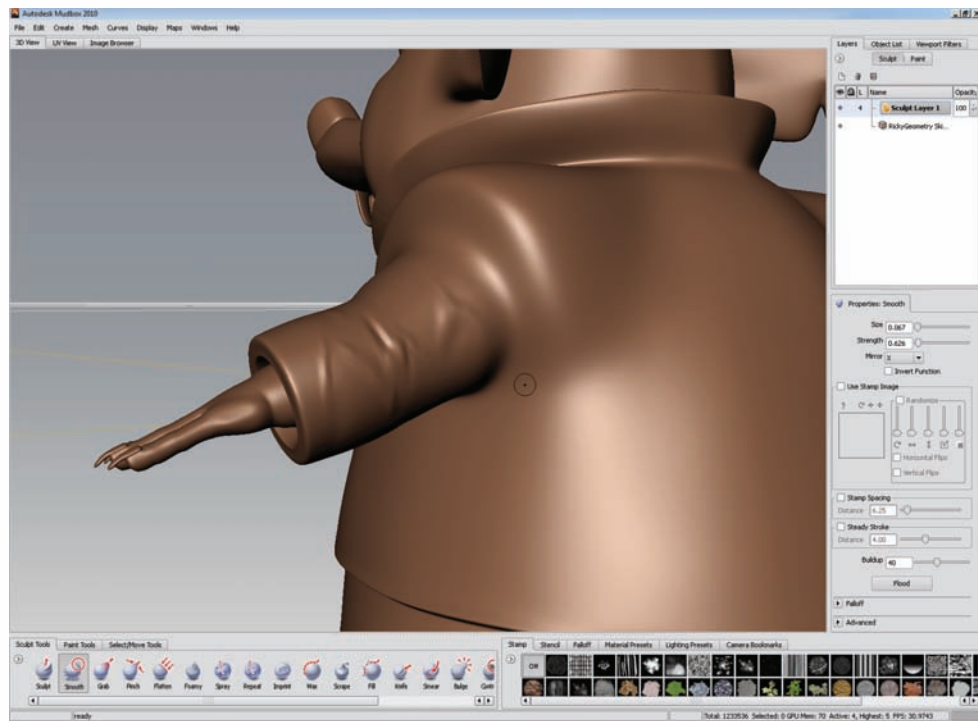
- Painting with the **Sculpt** brush creates geometry. Press **Control** as you paint and the tool will push in to the model.
- Press the B button and **LMB** drag to resize the brush. Press the **M** key and **LMB** to control the strength of the brush.
- The **Pinch** brush squeezes shapes together and can be useful when painting folds and wrinkles to bring them closer together.
- The **Smooth** brush is a useful tool, used to smooth out the geometry.

## LEVEL 2 Details in Mudbox Applied

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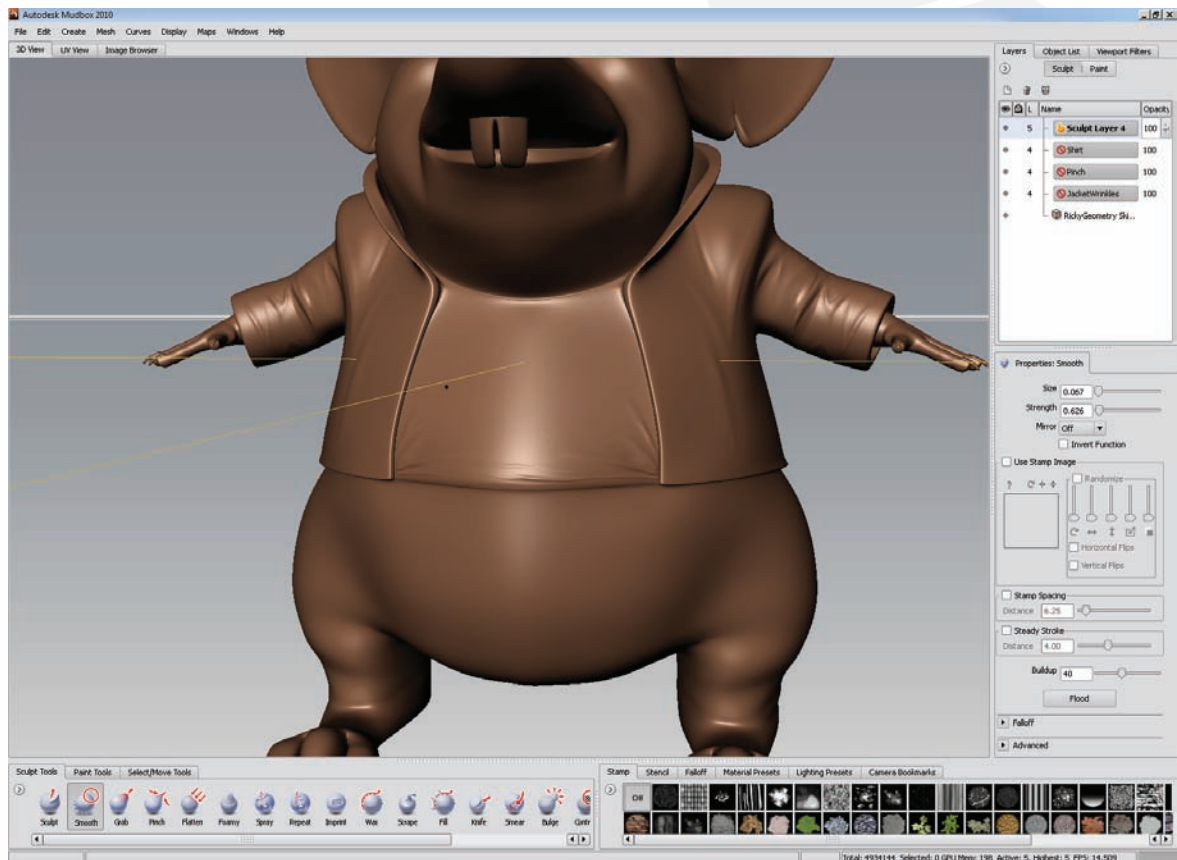


*Wrinkles on Ricky's jacket*



*Back of sleeve*

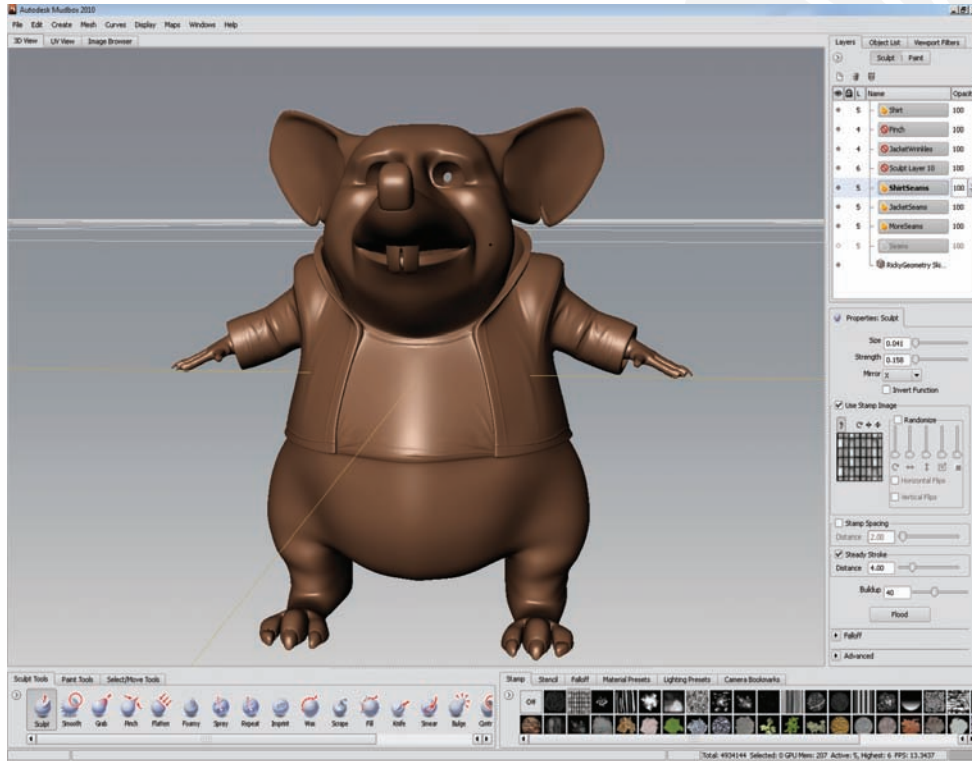
- Pres Shift D to increase the Subdivisions again.
- Create a new sculpt layer for the shirt.
- Sculpt the wrinkles in the shirt.
- Turn of the Mirror function to build in asymmetry.



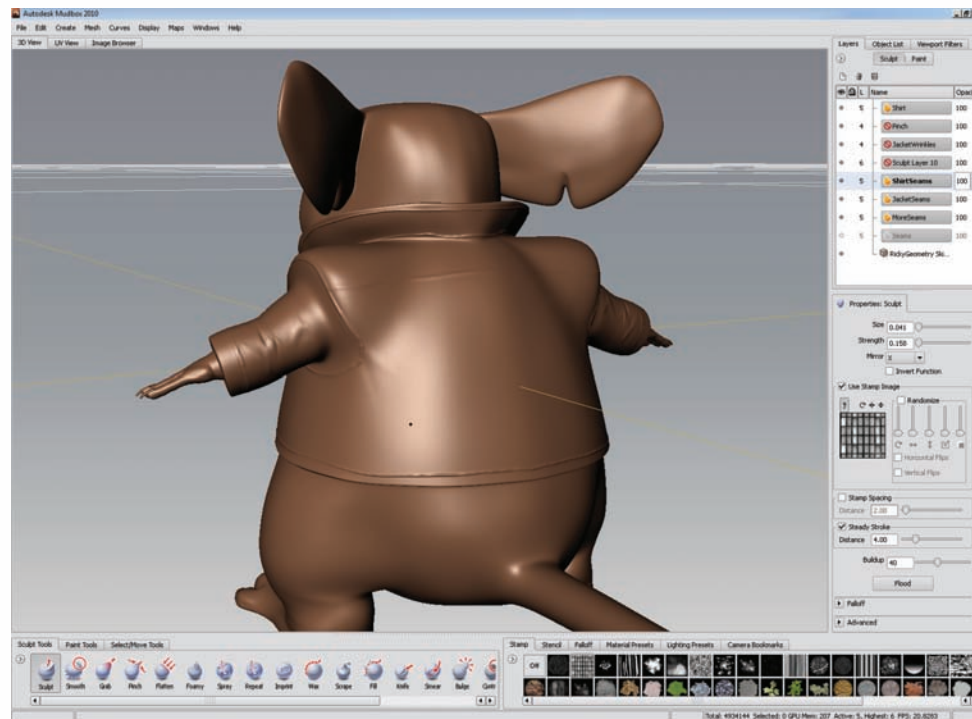
## Shirt wrinkles

- Sculpt seams for the jacket and shirt. Turn on **Steady Stroke** in the *Brush properties* to draw more even lines.

## LEVEL 2 Details in Mudbox Applied



Seams Fig. 1

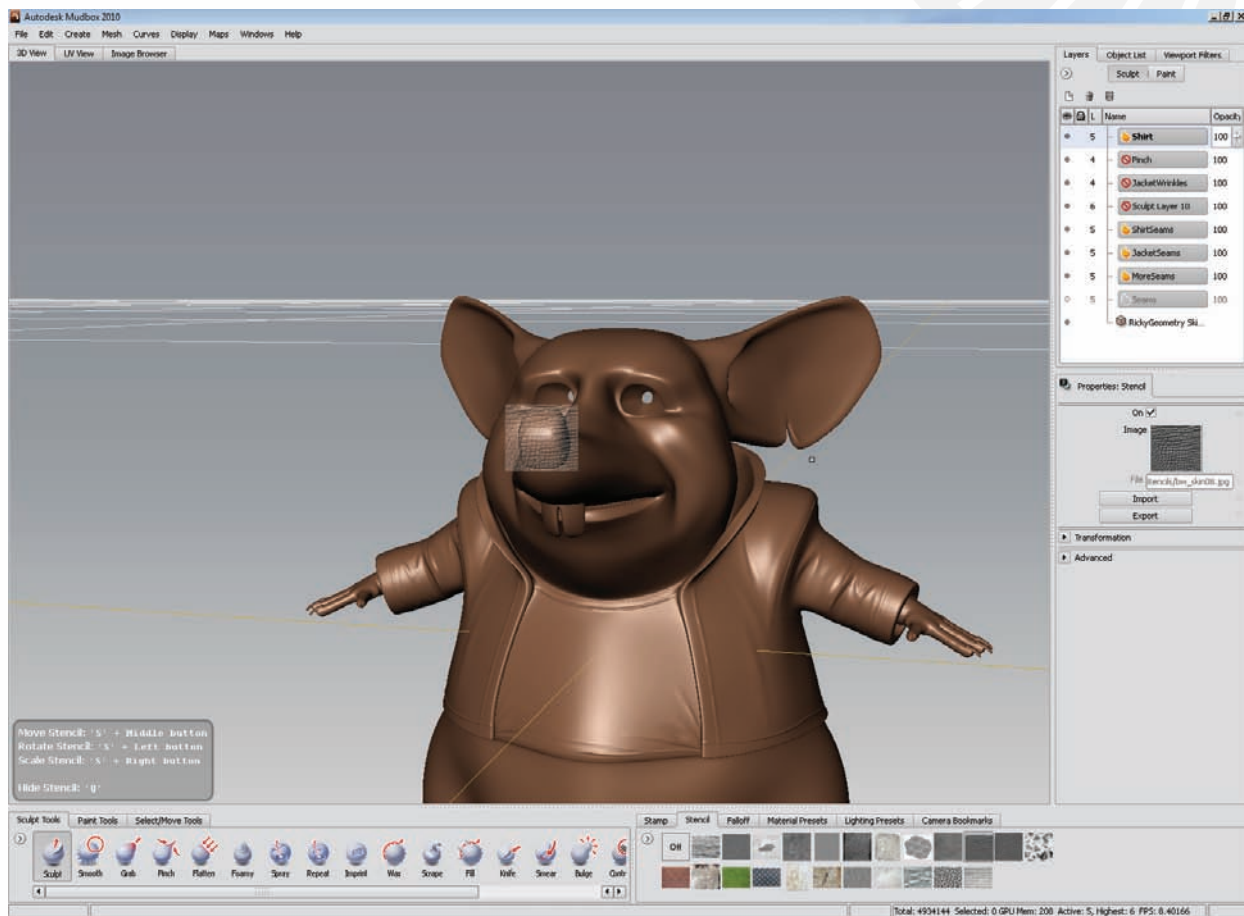


Seams Fig. 2

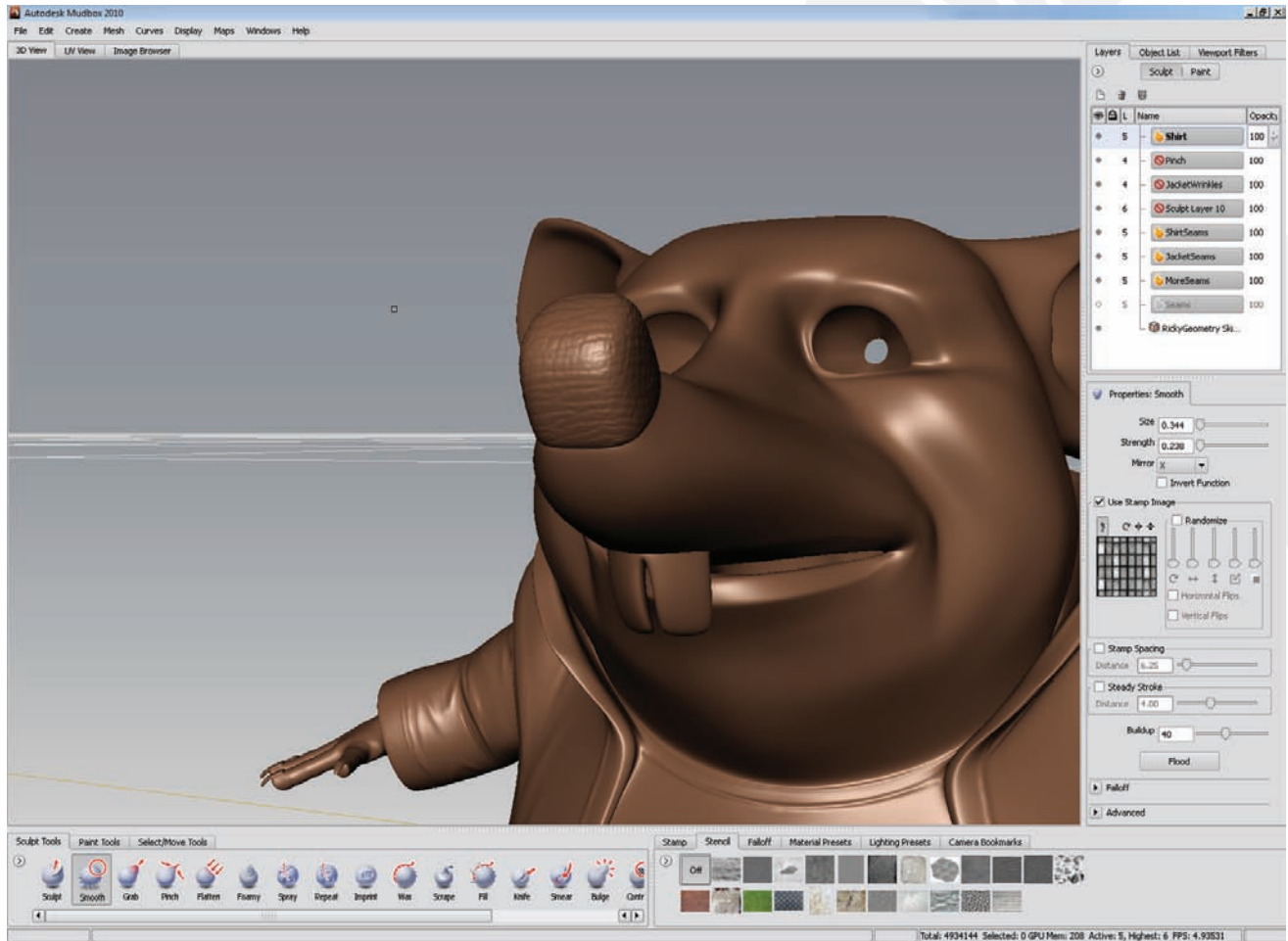
## 6. Add surface texture

The nose and jacket will have a surface texture added to them using the stencil tool.

- Select the Sculpt brush.
- Click on the Stencil tab.
- Select the bw\_skin08.jpg. The Stencil will appear in the view screen. Move the Stencil by pressing **S**, **MMB** drag. Rotate the Stencil by pressing **S**, **LMB** and drag. Scale by pressing **S**, **RMB** and drag.
- Position the stencil over the area of the nose.

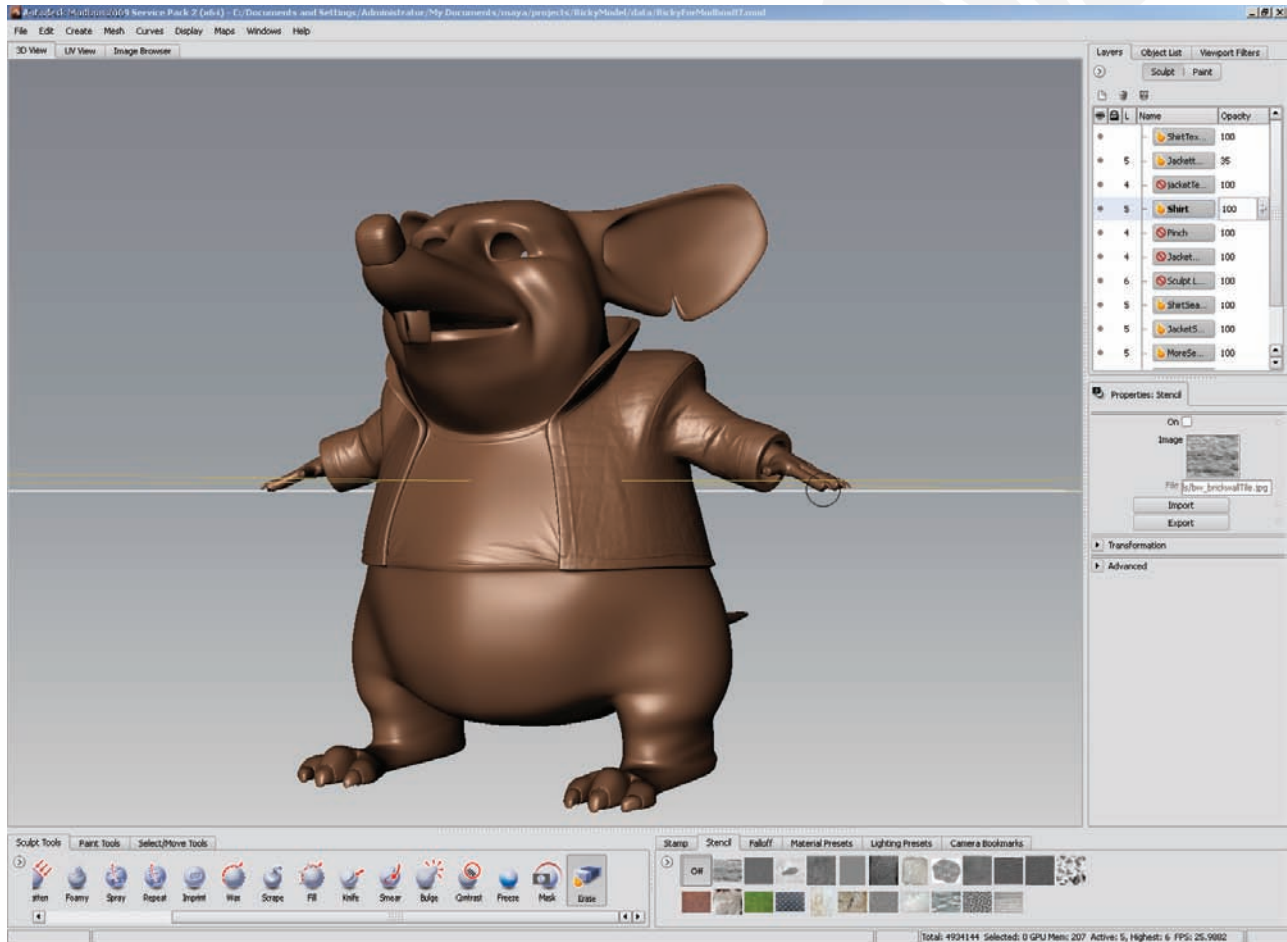


Stencil over nose



Stencil applied

- Paint with the sculpt tool to see the stencil applied.
- Click the **Off** icon in the Stencil menu to turn the *Stencil* off.



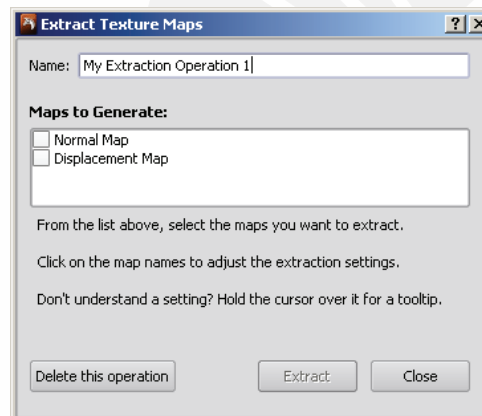
## Jacket Stenciled

- The jacket was stenciled in the same fashion as the nose.

## 7. Extract the Normal Map

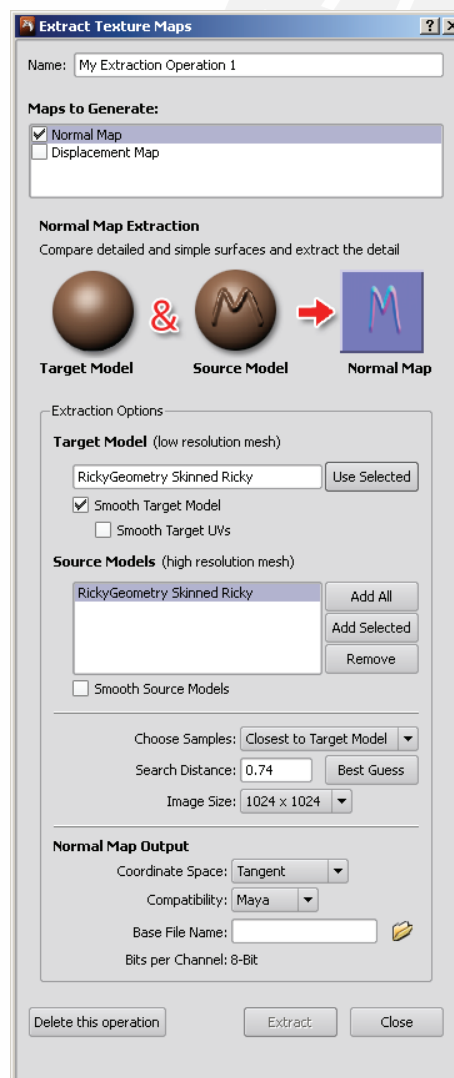
Once the detail has been sculpted, the information must be converted to a Normal map.

- Go to **Maps** → **Extract Texture Maps** → **New Operation**. An option window opens. Select **Normal Map**.



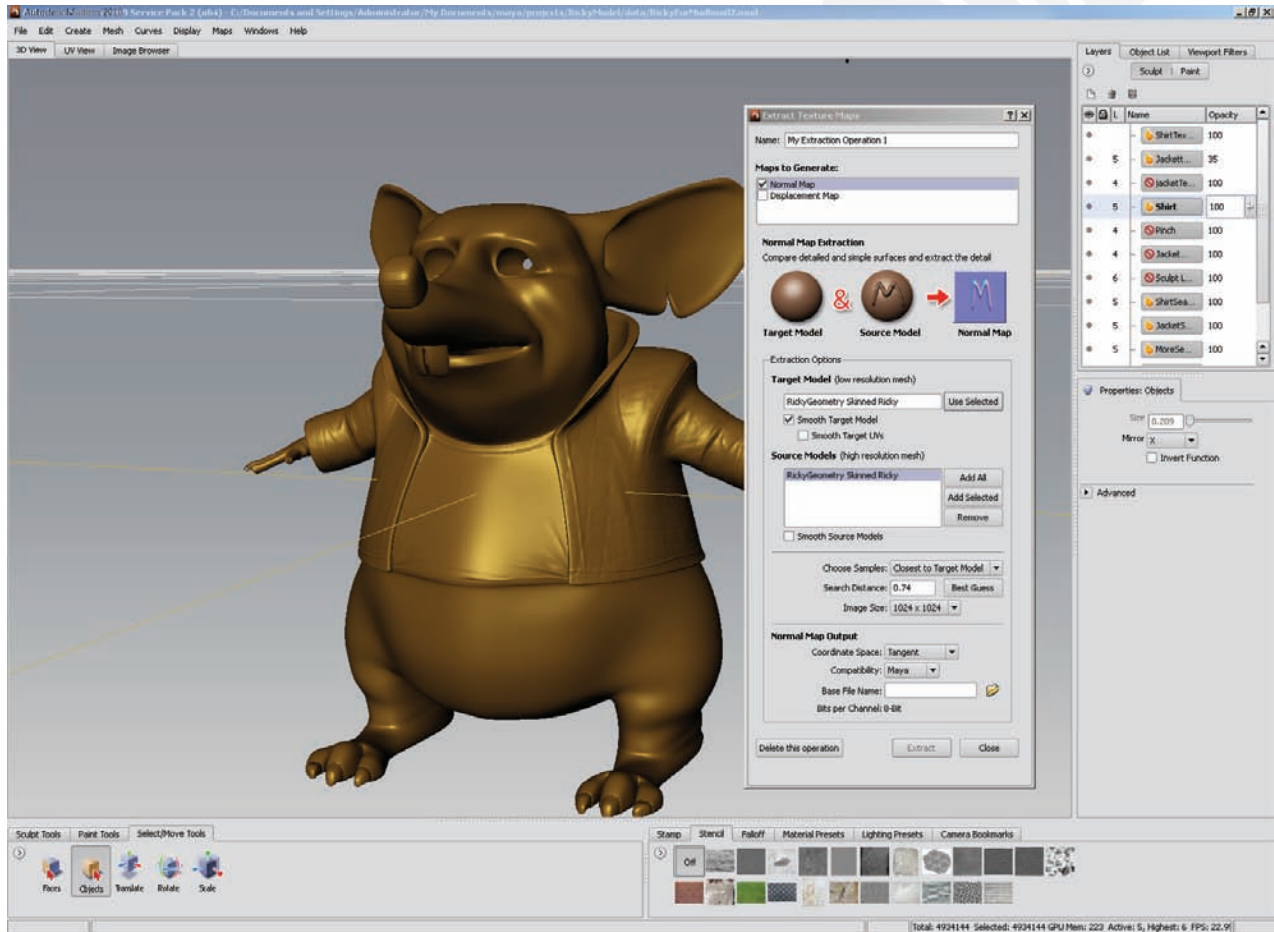
### Extract Options

- Another option window opens.



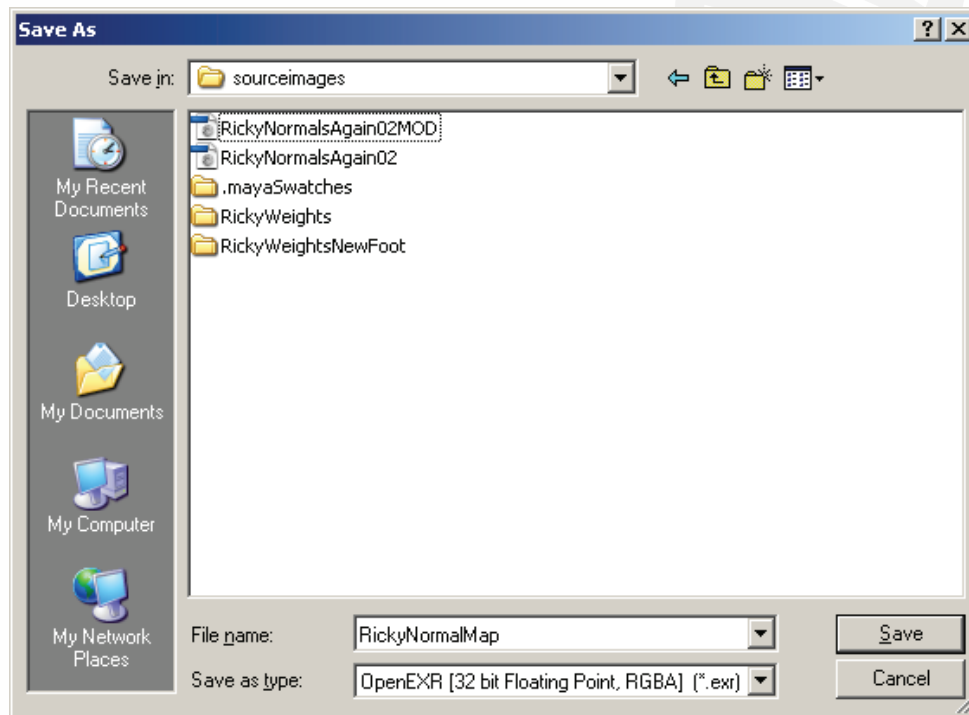
### Extract settings

- For **Target Model**, Click the Use Selected.
- Click the **Page Up** button to the highest level of Subdivision. In the main window, click the **Select/Move Tools** tab. Select by **Object** and click on the model. The model will highlight.



## Model selected

- Under **Source Models**, click the **Add Selected** button.
- By **Search Distance** click the **Best Guess** button and set the **Image Size** to **2048 X 2048**. Set **Coordinate Space** to **Tangent**.
- Click the *folder* icon by **Base File Name**. An option window opens. Direct the file to be written to the **Source Images** directory of the **RickyModel** project. Name the file and select **OpenEXR [32 bit Floating Point, RGBA][\*.exr]**.



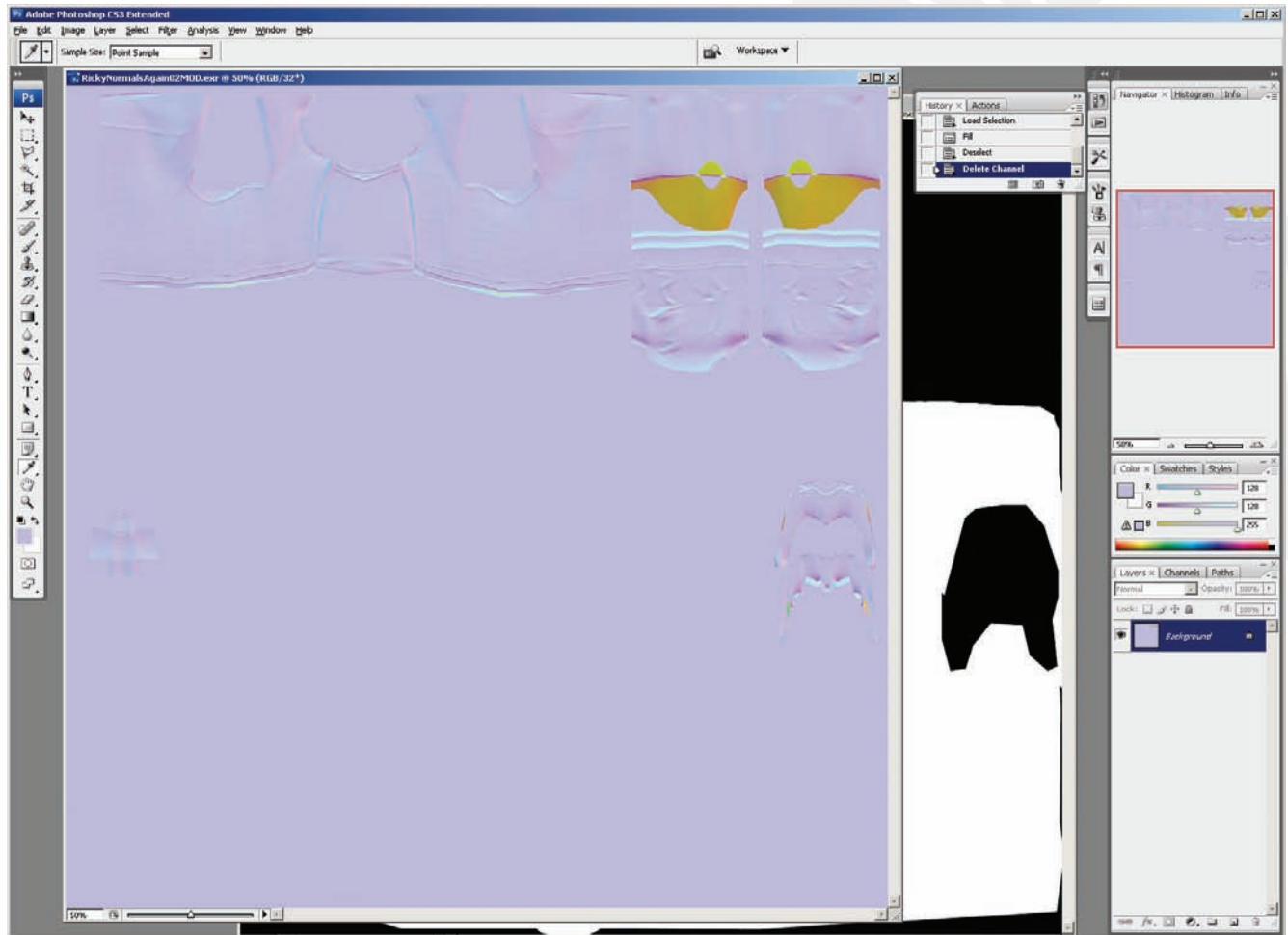
## Base file name

- Click the **Extract** button. The **Normal Map** will write to the Source Images directory of the *RickyModel* project.

## 8. Apply the Normal Map

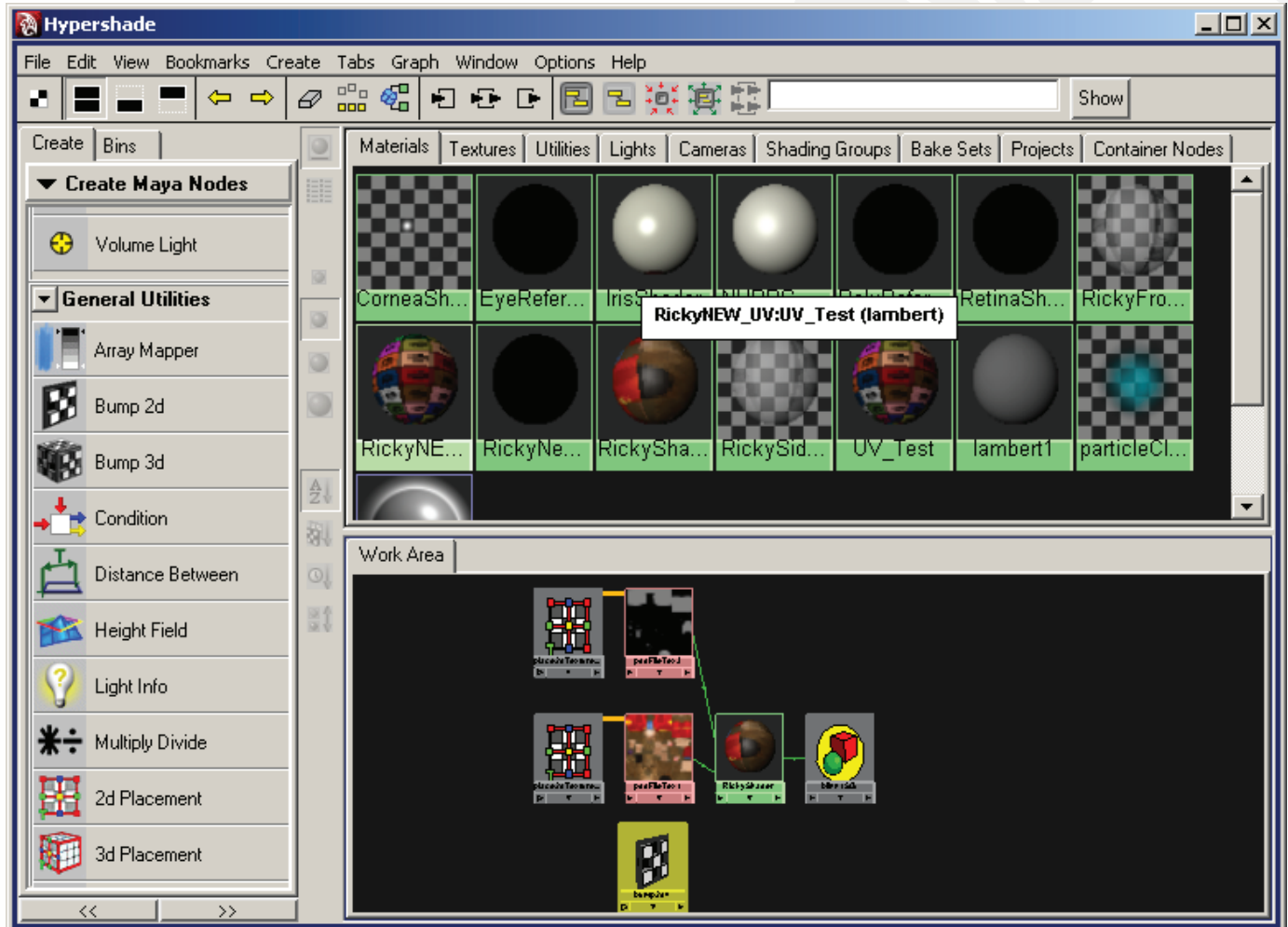
The **Normal Map** will be applied to *Ricky* in Maya using the Bump texture node.

- Open the **Normal Map** and the **UV snapshot** in Photoshop.
- Using the **UV snapshot** as a guide, fill the area of the **Normal Map** where no sculpting was done with the *background color* from the **Normal Map**.
- Save the **Normal Map**.



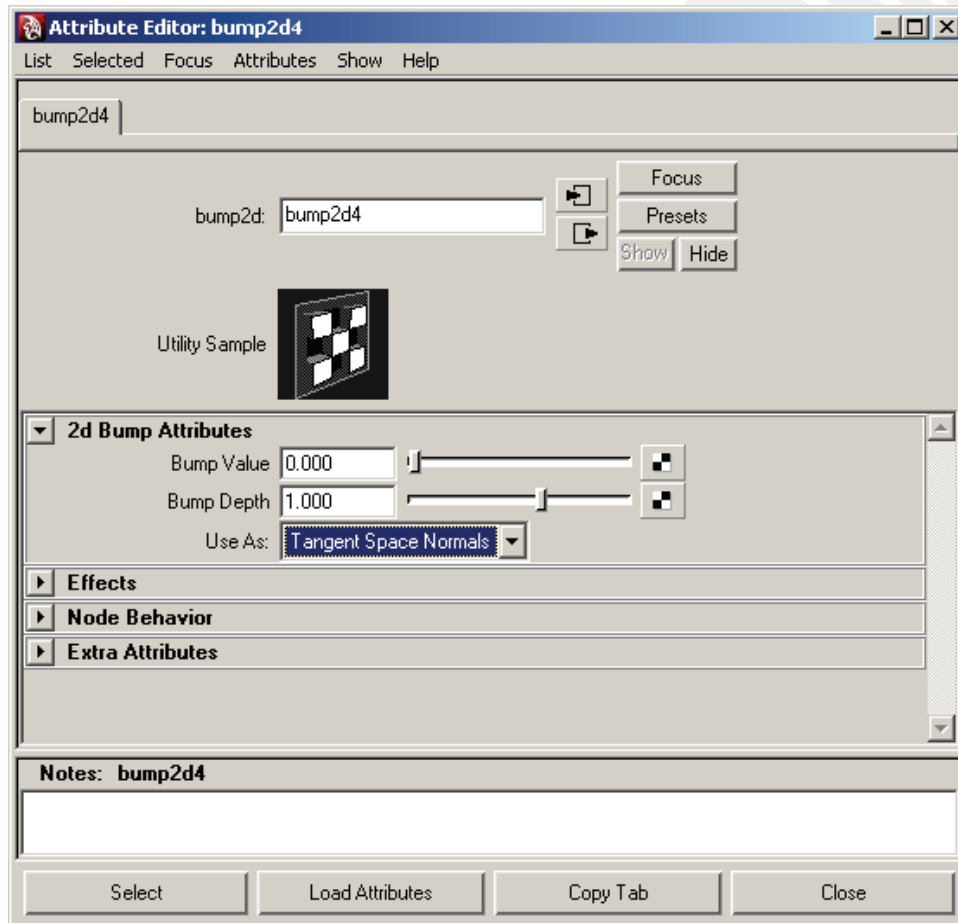
## Normal map modified

- Launch Maya, set the *RickyModel* project and open the *Ricky* file.
- Go to **Window** → **Settings And Preferences** → **Plug-in Manager**. Click **Load** by the **OpenEXRLoader**.
- Go to **Window** → **Rendering Editors** → **Hypershade**.
- Select the *RickyShader* and click the **Input/output Connections** button.
- In the **Create Maya Nodes** window, click on **Bump 2D**.



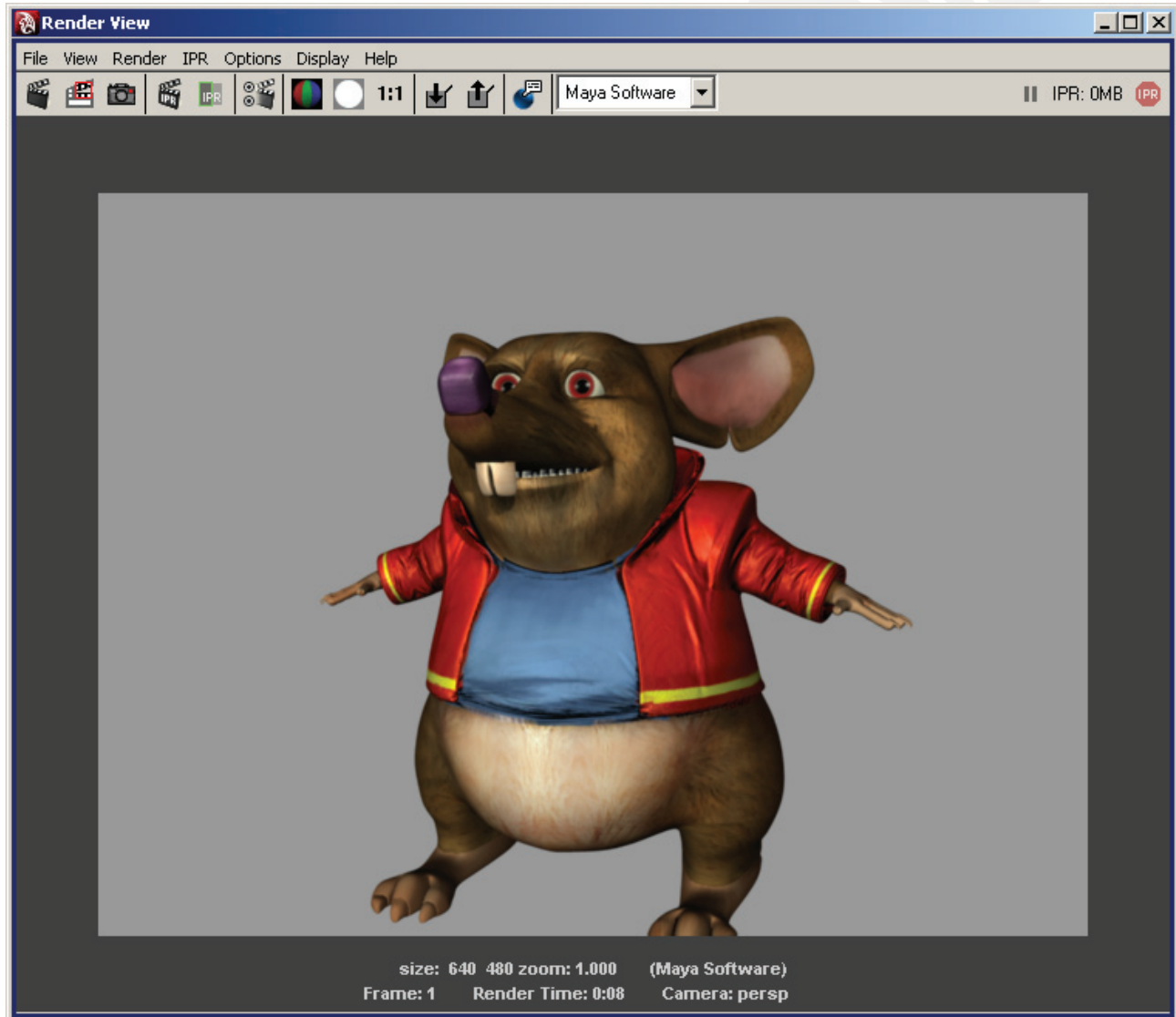
## Create Bump node

- With the Bump node selected, click **Control A** to open the *Attribute Editor*.
- Set **Use As** to **Tangent Space Normals**.



## Bump settings

- Click the *checkerboard* button to the right of **Bump Value**.
- The **Create Render Node** window opens. Select **File** and assign the **Normal Map** to the **File Texture Node**.
- In the Hypershade, **MMB** drag the **Bump 2D** node onto the *RickyShader*. A **Marking Menu** opens. Select **Bump**.
- Create a test render to see the Normal Map applied to the character.



## Normal Map applied

- The **Bump Depth** value may need to be adjusted for the best effect.

In this lesson, we learned how to use Mudbox to prepare a **Normal Map** and how to apply a **Normal Map** to the model in Maya. The sculpting and stencilling brushes were explored in the addition of detail to the model. Extracting a map as a 32 bit .exr file was addressed as well as applying the map to the model in Maya.

Click on the image below to see Ricky animated!

