



RIFT TD TUTORIAL

POINT DEPOSITION

INTRODUCTION

In this tutorial you will develop a deposition model with point discharge from a single location upstream of an embankment.

A copy of the **Rift TD** Users Manual may be useful when working through this tutorial. It is installed during **Rift TD** installation, but can also be downloaded from our [download page](#).

TUTORIAL COMPONENTS

This tutorial comprises:

- This instruction set.
- The **Rift TD** data files:
 - Base Model.rft: The base model used to develop the deposition surface.
 - Final Model.rft: The final deposition model.
 - Final Model.res: The result file generated during the deposition model run.

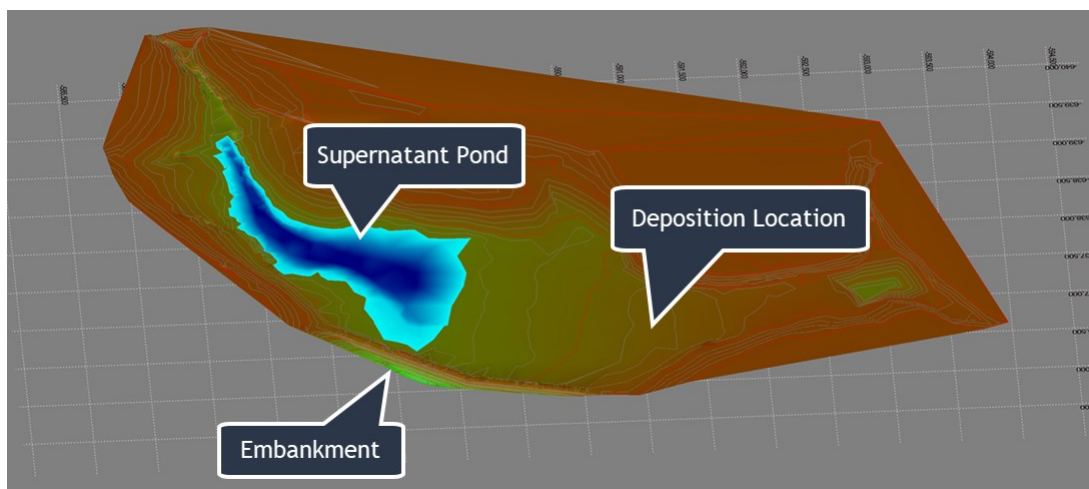
BASE TOPOGRAPHY

This tutorial provides the **Rift TD data file, Base Model.rft**, as a starting point:

- **Click File > Open.**
- **Select Base Model.rft.**
- **Click Open.**

The model comprises:

- A downstream embankment.
- A supernatant pond.



In this tutorial we will deposit from a single deposition point upstream of the pond.

MODEL DEFINITION

To develop the deposition model you need define:

- Raise Elevations.
- A Vector Slope.
- Beach Profiles.
- Material parameters.
- A Supernatant Pond.

RAISE ELEVATIONS

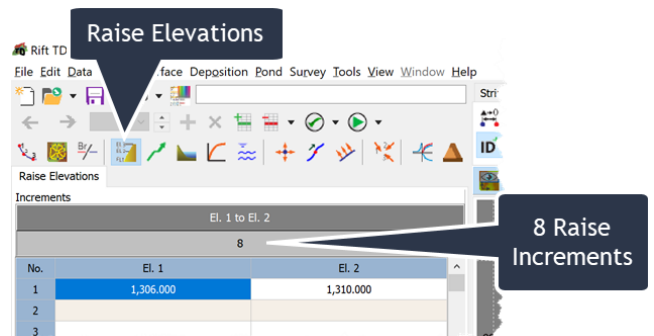
Raise Elevations define the elevations that deposition points will be **raised to** and the **raise increment**.

In this tutorial you will raise the deposition point from it's initial elevation of

- 1306 m; to an elevation of
- 1310 m; in
- 8 raises i.e. 0.5m raise increments.

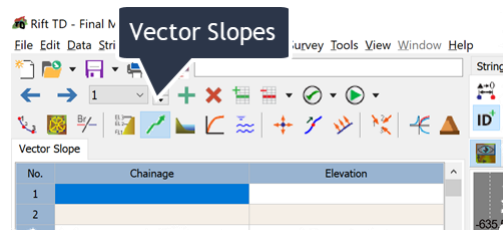
To **set** the **Raise Elevations**.

- **Activate Raise Elevations:**
 - **Click Edit > Raise Elevations;** or
 - **Click the Raise Elevation Tool-button.**
- **Enter 8 Raise Increments** on the **Raise Increment Grid**.
- On the **Data Grid**:
 - **Enter** an **initial elevation, El. 1**, of **1306 m**.
 - **Enter** a **final elevation, El. 2**, of **1310 m**.



VECTOR SLOPE

Vector Slopes define how **Deposition Vectors** move horizontally as they are raised vertically.



In this tutorial the **Deposition Node (Vector)** will be raised vertically and you do not need to define a **Vector Slope**.

BEACH PROFILE

Beach Profiles define a **longitudinal section** along a **beach**.

A typical model has two beach profiles:

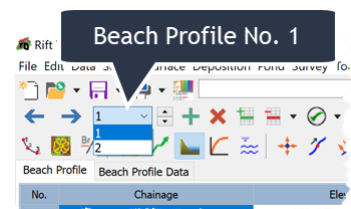
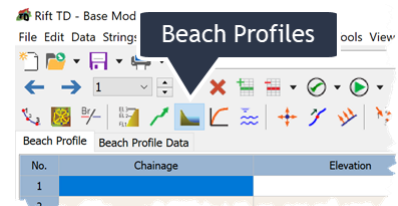
- **Sub-aerial profile**: The beach profile above the supernatant pond.
- **Sub-aqueous profile**: The beach profile below the supernatant pond.

You will **define** both profiles as **linear profiles** with a:

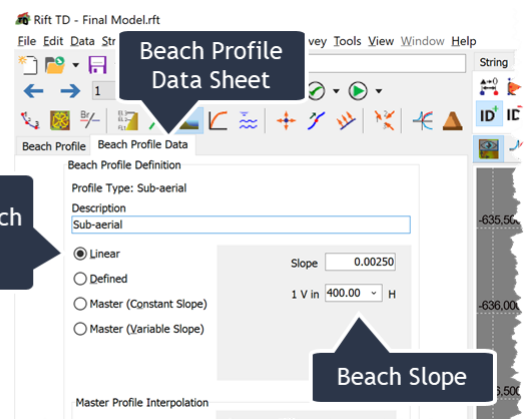
- Sub-aerial slope of 1V:400H.
- Sub-aqueous slope of 1V:50H.

To **define** the **Beach Profiles**:

- Either:
 - **Click Edit > Beach Profiles**; or
 - **Click** the **Beach Profiles Tool-button**.
- If not active, use the **Navigation toolbar** to **activate Beach Profile No. 1**.
- **Click** on the **Beach Profile Data Tab**.
 - **Enter** a **description** of "Sub-Aerial".
 - **Set** the **profile type** to **linear**.
 - **Enter** a **beach slope** of **1V in 400H**.
- **Use** the **Navigation Toolbar** to **activate Beach Profile No. 2**:
 - **Enter** a **description** of "Sub-Aqueous".
 - **Set** the **profile type** to **linear**.
 - **Enter** a **beach slope** of **1V in 50H**.



Linear Beach Profile



MATERIAL

Materials define:

- The **Deposition Rate** over time [mass per day].
- The **Complex Beach Profile** comprising a:
 - Sub-aerial profile,
 - Sub-aqueous profile, and if necessary, a
 - Cyclone profile.
- **Material densities**.

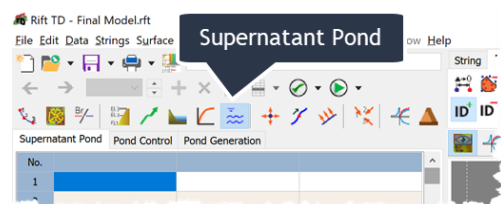
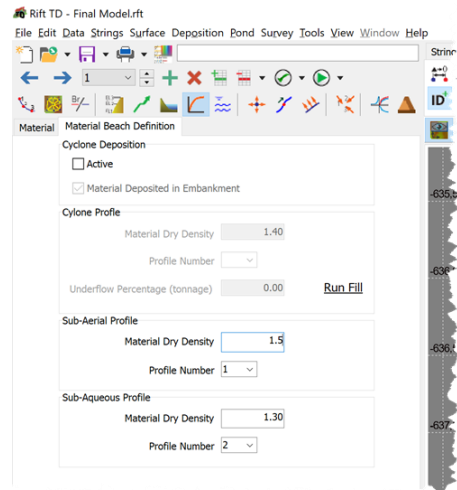
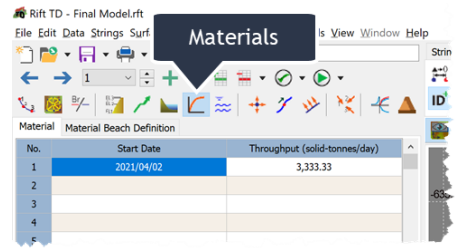
Cyclone Profiles are used to model **beach cyclone deposition** and are not used in this model.

In this tutorial you will define:

- A throughput of 3,333 tonnes per day.
- Use the two previously defined beach profiles to define the complex beach profile.
- Sub-aerial and sub-aqueous densities of 1.5 and 1.3 tonnes/m³ respectively.

To **define** the **Material**:

- **Activate Materials:**
 - Click **Edit > Materials**; or
 - Click the **Material Tool-button**.
- On the **Data Grid** enter:
 - A **start date** of **2 March 2021**.
 - A **throughput** of **3,333 tonnes per day**.
- Click the **Material Beach Definition Tab**.
 - **Ensure** that **Cyclone Deposition** is **NOT Active**.
 - **Set** a **sub-aerial density** of **1.5 tonnes/m³**.
 - **Use** the **Sub-aerial Profile Drop Down Box** to **set** the **Sub-aerial Beach Profile** to **Beach Profile No. 1**.
 - **Enter** a **sub-aqueous density** of **1.3 tons/m³**.
 - **Use** the **Sub-aqueous Profile Drop Down Box** to **set** the **Sub-aqueous Beach Profile** to **Beach Profile No 2**.

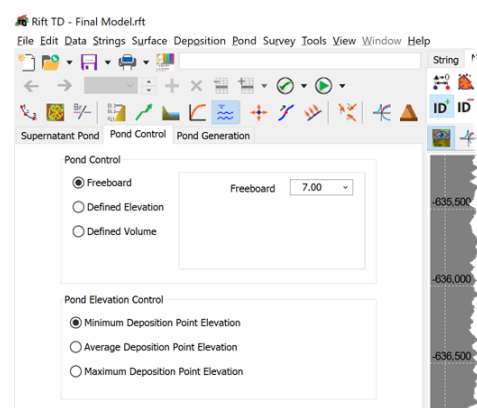


SUPERNATANT POND

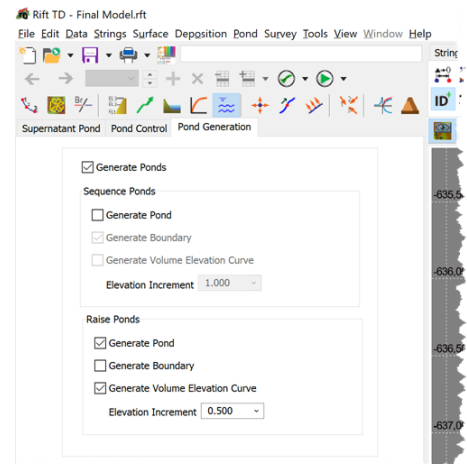
The **Supernatant Pond** defines the **interface between the sub-aerial and sub-aqueous beaches**. In this tutorial you will **define** a **set freeboard of 7 m below the deposition elevation**.

To **define** the **Supernatant Pond**:

- **Activate** the **Supernatant Pond**:
 - Click **Edit > Supernatant Pond**; or
 - Click the **Supernatant Pond Tool-button**.
- **Select** the **Pond Control Tab-sheet**.
 - **Set** the **Pond Control** to **Freeboard**.
 - **Enter** a **freeboard** value of **7m**.
 - **Set** the **Pond Elevation Control** to **Minimum Deposition Point Elevation**.



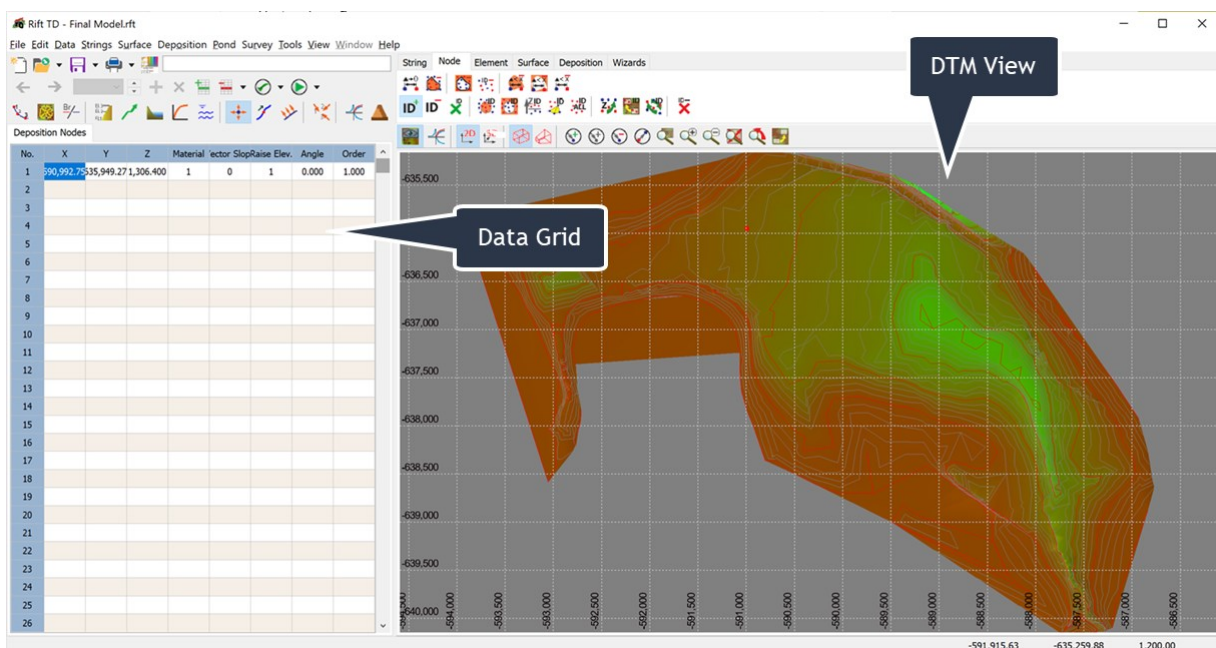
- **Select** the **Pond Generation Tab-sheet**:
- **Check Generate Ponds.**
- **Sequence Ponds:**
 - **Uncheck Generate Ponds.**
- **Raise Ponds:**
 - **Check Generate Raise Ponds.**
 - **UnCheck Generate Boundary.**
 - **Check Generate Volume Elevation Curve.**
 - **Enter** an **elevation increment of 0.5 m.**



DEPOSITION NODE

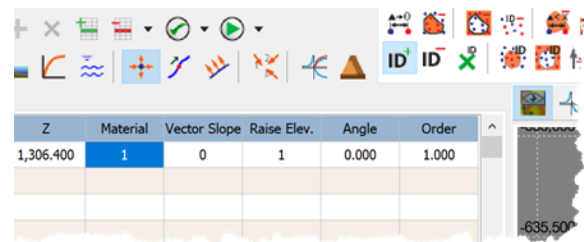
Deposition Nodes have the following parameters:

- **Deposition Node** coordinate.
- Material.
- Raise Elevation.
- Vector slope.
- Angle of movement (the horizontal angle relative to the Cartesian coordinate system in which the deposition point will move as it is raised)



To **define** the **Deposition Node**:

- **Activate Deposition Nodes:**
 - Click **Edit > Deposition Nodes**, or
 - Click **Deposition Node Tool-button**.
- **Define** the **Deposition Node** visually on the **DTM View**:
 - Click **Data > Edit in View > Add**; or
 - Click the **View Add Tool-button**; or
 - **Right click** on the **DTM View** and **click Data > Add**.
- Click on the **DTM View** to **define** the **Deposition Node** location.
- **Deactivate DTM View Add Data:**
 - Press **Escape**; or
 - Click **Data > Edit in View > Add**; or
 - Click the **View Add Tool-button**; or
 - **Right click** on the **DTM View** and **click Data > Add**.
- On the **Data Grid**:
 - **Enter** the **indices** for the previously defined:
 - **Material No. 1.**
 - **Raise Elevation No. 1.**
 - **Enter:**
 - A **Vector Slope Index** of zero i.e. don't define a **Vector Slope** to raise the **Deposition Node** vertically.
 - A **Vector Slope angle** of **zero degrees**. As you have not defined a **Vector Slope** the angle has no effect on deposition.
 - A **Deposition Order of 1**. As only on deposition point is defined this has no effect on deposition.



Z	Material	Vector Slope	Raise Elev.	Angle	Order
1,306.400	1	0	1	0.000	1.000

The **Vector Slope angle** is the **Vector Slope** direction in the Cartesian coordinate system.

MODEL RUN

To run the **deposition model**:

- Either:
 - **Click Run > Run Model**; or
 - **Click the Run Tool-button**.
- if the result file already exists:
 - You are **prompted** for a **Result File Name** . **Click Ok** to retain the existing file.
 - **Select Overwrite File** on the **Set Result File Task Dialog**.

After the model run **Deposition Results** are **shown** on the **Data Grid** and the **Result View**. A **tutorial** on **Deposition Result Output** is available at riftxone.com.

