**Boulder dimensions and getting water depth**

To complete your script for calculating boulder dimensions and getting water depth, you need to implement the calculate\_dimensions and get\_water\_depth functions. Here's how you might implement these functions in your QGIS script:

**Calculate\_dimensions Function**

For calculating the dimensions of boulders based on the polygons drawn around them, you would typically calculate the bounding box of the polygon and then determine the length and width based on the longest and shortest sides of the bounding box. Height could be more complex, as it involves the difference in elevation between the highest point of the boulder and the surrounding seabed.

**Here's an example of how you might calculate length and width:**

def calculate\_dimensions(feature):

# Calculate the bounding box of the polygon

bounding\_box = feature.geometry().boundingBox()

# The length is the longer side of the rectangle, width is the shorter

length = bounding\_box.width()

width = bounding\_box.height()

# Assuming you calculate height differently, possibly as an attribute of the feature

# For now, we'll just return a placeholder value

height = 0 # Replace with actual logic to calculate height

return length, width, height

get\_water\_depth Function

To get the water depth from a raster layer at a specific point, you can use the QgsRaster.identify method, which retrieves the value of the raster at the given coordinates.

**Here's an example of how you might get the water depth:**

from qgis.core import QgsRaster, QgsPointXY

def get\_water\_depth(point, raster\_layer):

# Convert QgsPointXY to QgsPoint if necessary

if isinstance(point, QgsPointXY):

point = point.toQgsPoint()

# Identify the raster value at the specified point

result = raster\_layer.dataProvider().identify(point, QgsRaster.IdentifyFormatValue)

# Extract the water depth value

if result.isValid():

depth = result.results()[1] # The band number 1 is assumed to be the depth

else:

depth = None # or some nodata value that you use in your context

return depth

This function assumes that the band number 1 of the raster contains the depth data. Make sure to adjust the band number if your data is structured differently.

Before using these functions, you need to ensure that the coordinate reference systems (CRS) of the raster and vector layers match, or you may need to transform the coordinates when querying the raster layer.

These code snippets should give you a starting point. You might need to adjust the logic based on the specifics of your data and the methods you use to calculate height. If you have the height as an attribute of the boulder feature or if you need to calculate it using another method (such as comparing the boulder's top elevation with the surrounding seabed), you'll need to incorporate that into the calculate\_dimensions function accordingly.