Librerias

In [4]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn import preprocessing
from sklearn.neighbors import KNeighborsClassifier
```

Cargo Datos

In [20]:
```
df = df = pd.read_csv('./water_potability.csv')
df=df.dropna()
df.sample(10)
```

Out[20]:

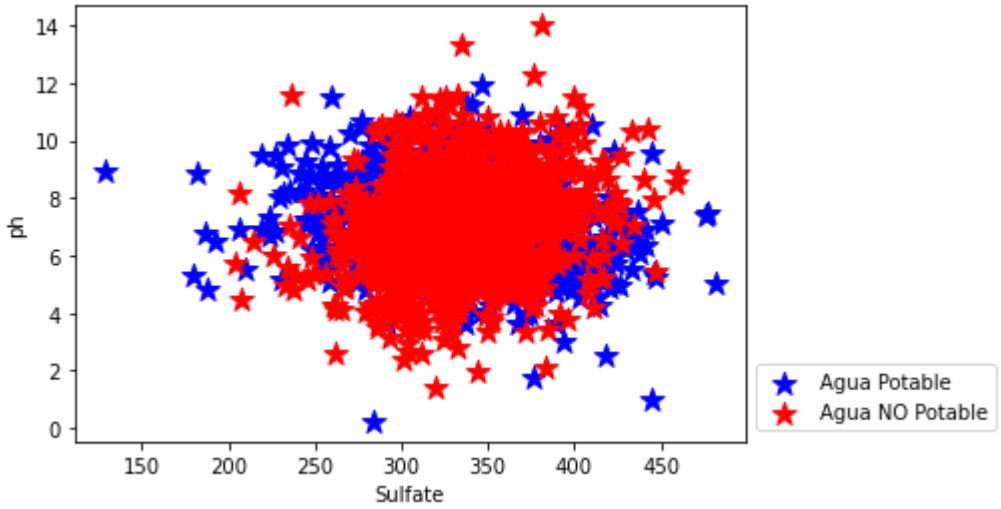
	ph	Hardness	Solids	Chloramines	Sulfate	Conductivity	Organic_carbon	T
1241	5.574117	193.158076	17546.403256	9.219973	366.197418	538.532518	13.951332	
2925	11.563169	174.942862	19359.428816	6.495619	332.446490	366.312672	17.529526	
2328	6.071839	217.826531	17162.753927	3.521125	319.037346	612.094926	16.542239	
2986	3.832917	218.723840	23535.028901	6.475402	352.505898	421.183478	19.273561	
3212	5.913755	175.326062	12044.624691	8.368785	347.880372	380.967166	12.530827	
2561	6.069364	200.916263	9323.218290	9.387522	325.466983	450.441352	12.423380	
240	9.380658	265.061216	15156.789834	4.271545	333.334469	503.170615	11.286410	
3114	6.971577	185.906938	27959.987873	7.214510	349.743879	414.067354	19.882917	
3128	4.959853	215.854869	9887.830755	6.954231	379.504731	527.479694	14.326638	
1318	6.724639	223.175415	41552.019664	7.744700	271.157120	463.885216	13.165035	

Divido entre agua potable o no potable

In [21]:
```
potable = df[df['Potability']==1]
No_potable= df[df['Potability']==0]
```

Grafico Potable vs No Potable

In [22]:
```
plt.scatter(potable["Sulfate"],potable["ph"],marker="*",s=150,color="blue",label="Agua
plt.scatter(No_potable["Sulfate"],No_potable["ph"],marker="*",s=150,color="red",label=
plt.ylabel("ph")
plt.xlabel("Sulfate")
plt.legend(bbox_to_anchor=(1,0.2))
plt.show()
```



Preparo los datos

In [24]:
```
df = pd.get_dummies(data=df, drop_first=True)
```

In [115…
```
parametros = df.drop(columns='Potability')
clase = df.Potability
```

Creacion del Modelo KNN

In [116…
```
model = KNeighborsClassifier(n_neighbors=10)
```

In [117…
```
model.fit(parametros,clase)
```

Out[117]:
```
KNeighborsClassifier(n_neighbors=10)
```

Prediccion Test

In [118…
```
a = parametros.sample()
```

In [119…
```
a
```

Out[119]:

	ph	Hardness	Solids	Chloramines	Sulfate	Conductivity	Organic_carbon	Trih
990	5.477283	165.436093	29046.083515	5.523011	370.893085	488.774595	17.265186	

Prediccion

In [120…
```
y_pred = model.predict(a)
print("Es Potable",(y_pred))
```

```
Es Potable [0]
```

Probabilidad de que sea Potable

In [121…
```
print("Probabilidad de ser potable: ",(model.predict_proba(a)))
```

```
Probabilidad de ser potable:  [[0.9 0.1]]
```

Comparacion del Modelo con los hechos

In [122…
```
df['pred']= y_pred[0]
df.sample(10)[['Potability','pred']]
```

Out[122]:

	Potability	pred
94	0	0
348	1	0
470	0	0
1791	0	0
854	0	0
1835	0	0
793	1	0
2343	1	0
1380	0	0
1474	0	0

In [ ]:
```

```