Water Station:

a)Water station table

1. station\_id:

type :serial

Description :primary key of the table

1. station\_name:

type :varchar(100)

Description : determine the station name

3) station\_location:

type :varchar(100)

Description :determine the station location

4) longitude

type : DECIMAL(9, 6)

5) latitude

type : DECIMAL(9, 6)

b) Pumps table

1) pump\_id:

type :serial

Description :primary key of the table

2)water\_station\_id:

type :INT

Description :foreign key references to the table

Water\_station.

3)status:

type :varchar(100)

Description :determine if the pump is on or off.

4) head:

type: decimal(9,2)

Description :the maximum height that the pump can achieve pumping against gravity. (inbar).

5)Flow :

type: decimal(9,2)

Description:The volume of water the pump can move per hour.(liter/hour)

6)PowerFactor :

type: decimal(9,2)

Description: A measure of energy efficiency for the pump (typically around 0.8).

6)power\_consumption :

type: decimal(9,2)

Description: The amount of power consumed by the pump (Watts).

7)working\_hours\_per\_day :

type: INT

Description: Number of hours the pump operates daily.

8)last\_maintenance\_date :

type: DATE

Description:the last date when the pump was maintained.

**c)pump\_operations table**

1) operation\_id:

type :serial

Description :primary key of the table .

2)pump\_id:

type :INT

Description :foreign key references to the table pumps .

3)datetime:

type :TIMESTAMP

Description :The exact date and time of the operation record.

3)operational\_pumps\_count:

type :varchar(50)

Description :The number of pumps in different statuses (on,standby,maintenance)

**d) water\_flow**

1) flow\_id:

type :serial

Description :primary key of the table .

2)station\_id:

type :INT

Description :foreign key references to the table water\_station.

3)datetime:

type :TIMESTAMP

Description :The exact date and time of the flow record.

3)total\_input\_flow:

type :DECIMAL(10, 2)

Description :Total water flow into the station (Liters/Hour).

4)total\_output\_flow:

type :DECIMAL(10, 2)

Description :Total water flow out of the station to the city network (Liters/Hour).

5)total\_output\_pressure:

type :DECIMAL(5, 2)

Description :Total pressure of the water output to the network (bar).

**e) tank\_levels (This table records the water levels in the station’s storage tanks) .**

1) tank\_level\_id:

type :serial

Description :primary key of the table .

2)station\_id:

type :INT

Description :foreign key references to the table water\_station.

3)datetime:

type :TIMESTAMP

Description :The exact date and time of the tank level reading.

4)tank\_level:

type :DECIMAL(10, 2)

Description :The water level in the tanks (percentage full).

**f) customer\_complaints table**

1) complaint\_id:

type :serial

Description :primary key of the table .

2)station\_id:

type :INT

Description :foreign key references to the table water\_station.

3)datetime:

type :TIMESTAMP

Description :The date and time the complaints were made .

4)complaint\_count:

type :INT

Description :The number of complaints received on that date.

4)complaint\_type:

type :VARCHAR(50)

Description :The type of complaints (water shortage , water outage) .

**g) city\_network\_maintenance table**

1) maintenance\_id:

type :serial

Description :primary key of the table .

2)station\_id:

type :INT

Description :foreign key references to the table water\_station.

3)datetime:

type :TIMESTAMP

Description :The date and time of the maintenance activity.

4) maintenance\_time\_hours:

type :DECIMAL(5, 2)

Description :Duration of the maintenance activity (hours).

4) maintenance\_cost:

type :DECIMAL(10, 2)

Description :Cost of the maintenance activity.

**g) leakages table( records leakage incidents within the city network.)**

1) leakage\_id:

type :serial

Description :primary key of the table .

2)station\_id:

type :INT

Description :foreign key references to the table water\_station.

3)datetime:

type :TIMESTAMP

Description :The date and time of the leakage was reported.

4) leakage\_location:

type :VARCHAR(255)

Description :the location where the leakage occurred.

5) wasted\_water\_litres:

type :DECIMAL(10, 2)

Description : Volume of water wasted due to the leakage (Liters).