

Steve :

1A

Hi. My name is Steve Chavis,
I'm an Operator III at the Napa
Sanitation District.

Our work is very important for our
community and the environment.

Steve (con't):

1B

Here we operate several treatment processes to remove pollutants from the water.

Stephanie:

2A

My name is Stephanie Turnipseed and I'm the Pollution prevention and Outreach Coordinator. I have been with Napa San for about 1.5 years. In my position I give tours, conduct classroom presentations, plan events

Stephanie(con't):

2B

for the community, work with businesses on pollution prevention issues, issue press releases, and take care of our website and Facebook pages.

Elsa:

3A

My name is Elsa Seal. I'm an administrative assistant at Napa San and I work in the front office. I've been here for 12 years and main responsibilities are greeting visitors, answering phones, processing

Elsa (Con't):

3B

permits, paying invoices and offering clerical support to all departments at the District.

Jeff:

4

My name is Jeff Tucker. I'm the Director of Administrative Services and Chief Financial Officer here at NapaSan. At NapaSan I oversee budgets, accounting, IT, safety and fleet management.

Rodrigo:

5A

Hello my name is Rodrigo Montanez. I've been working for Napa Sanitation District as a Laboratory Analyst for the past 12 years.

Some of my responsibilities here in the District are to perform a wide variety of chemical, physical and bacteriological analyses. I also do data interpretation of

Rodrigo (Con't):

5B

surface, ground, wastewater and recycled water to assist in making changes to plant operations. In addition, my responsibilities include conducting field sampling and field investigations.

Stephanie:

6A

We are definitely not professional actors, and that will likely be clear after you watch this video. But, what we want you to take away from this video is not our Oscar-worthy performances, but the amount of

Stephanie (Con't):

6B

math that goes into every process at a wastewater treatment plant. Math is needed for every operation here at Napa San. So, you could say that math helps us to protect public health, the environment, and the

Stephanie (Con't):

6C

Napa River, which is what we all enjoy most about working here. We hope you enjoy this video as much as we enjoyed making it.

Steve:

7

So this is called secondary treatment.

The wastewater has already gone through primary treatment where we removed debris from the wastewater such as rags, paper, diapers, wipes,

Steve (con't):

8

sand and also heavier stuff like sludge. This water now has dissolved material in it we have to get out. We get the dissolved material out in this process called Activated Sludge.

Stephanie:

9

Activated Sludge is the point in the treatment process where we get the microorganisms, or microbes active.

We get them activated to help clean the water.

Steve:

10

Yes we use the Activated Sludge process where we grow microorganisms to eat the pollutants as a food source.

Steve (con't)

11

Just like people, the microbes stay alive because we keep them happy .

They need to be wet and fed and they need oxygen to breathe.

**Scene 3 Switch to shot of the aeration tank surface
(same as scene 1).**

Stephanie: (Voice only)

12

Look at all those tiny bubbles!

Hmm, they must be heavy eaters.

Scene 4 : Three microbe actors standing in front of a bubble

13

backdrop. Microbes slowly wake up....

Elsa: What is this place?

Steph: It's so warm....and bubbly!

Jeff: (*Looking into BOD box*) And look at all this food!

Everyone eats like crazy, stops for breath, repeat.

Scene 5: Same as scene 2

Steve:

14

Aeration is one of the largest energy consumers in a treatment plant.

Too much air is wasteful.

Too little air causes process upsets.

Stephanie:

15

So the microbes like just enough air.

Sounds like the story of Goldilocks.

Scene 6: Scene Screenshot of Goldilocks character;

Goldilocks:

16

Ohh that's too much,
hmmph that's too little,
mmm that's juuust right.

Scene 7: In Meeting Room at White Board

Stephanie and Steve:

17

I guess so.

Stephanie:

18

So how do you know how much air you need for the microbiology when you're feeding them?

Steve:

19

This is actually a very important calculation we use both for process control and energy efficiency. Here let me illustrate this. *(Steve begins to point out on the white board)* We know how many pounds of

Steve (con't):

20

microorganisms we have in the system and we know how much food or BOD they can eat based on the Food to Microorganism ratio.

Steve (con't):

21

We have little control over the amount of food that comes in but we can control the number of organisms and the amount of air we add.

Stephanie:

22

Okay, I'm following this, so if we know how much food is being added and we know how much oxygen is used by the microorganisms

Stephanie (Con't):

23

we should be able to use math to figure out how much air is needed.

Steve:

24

Yes. Let's go do math.