Random City, Alaska

By Samantha N., Tyler R., and Tatum S.

Fourth Grade

R. F. Patterson Elementary

Random City is a very insane place to live. This city was built in 2005. The population is an outstanding 473,810. It's located in Northern Alaska. One fourth of the city is covered in a lake. Random City also produces way too much trash. So we came along and showed them our invention, the Trash Train and the Super Sorter Trash Can!

Every person in Random City produces about one ton of trash every year. So adding up, the entire population produces about 1 billion pounds of trash each year. The Trash Train goes to houses and takes the trash from people. Each pound of trash people make costs them 25 cents. This influences them to stop generating so much trash. When you put your trash in the Trash Train, the train weighs your trash. You have to put the right amount of money in the slot. Once you put the right amount of money in the slot the doors shut and the train leaves. The train goes through that cycle at every house in the neighborhood. The Trash Train is about 3 ½ feet tall and 7 feet long. It has 3 cars. Two of the cars are storage boxes and the first car is the weighing car. There is a suction tube that takes the trash from the weighing car to the storage cars. Once the storages cars are full, the Trash Train goes to the Super Sorter Trash Can to drop off the trash, then it goes around again until it's full again. Inside the Super Sorter Trash Can scanners look at the trash and then the mechanical sorting arms put the trash on the right conveyor belt. The conveyor belt puts the trash in the right bag and the bags are sent to a recycling plant, a farm, or a homeless center. Things that can't be recycled, composted or

reused are sent to the incinerator which burns those things for green energy, reducing the amount of greenhouse gases. The green energy is used to power the hydroelectric turbines, located in the lake, that charge the Trash Trains, the mechanical sorter arms and the conveyor belt. The green energy for turbines is sent through wires that connect to the blades which turn and charge the trains. The leftover green energy is used to power the rest of the city.

The money collected at the Trash Trains is used to pay the people who build the trains, run the power plant and the hydroelectric turbines.

The cost of our system is that, in the beginning, the hydroelectric turbines use non-renewable resources as a power source. The benefit of it all is that Random City doesn't have any more greenhouse gases and that they don't produce much trash.

We chose the hydroelectric engineer to help because he/she can open and close the gates, make sure nothing is blocking the water flow, monitor the amount of electricity each turbine generates, and conduct routine inspections. The electrical engineer can design the Trash Train's remote control front and the radio collar used to track the train.

Random City reduces pollution, reuses and recycles trash for eco-bricks, and uses the rotting food as fertilizer. People live here because it is a safe environment. Random City has clean air, not much trash, and no greenhouse gases. The Super Sorter Trash Can will sort your trash and the Trash Train will take that stinky trash out of your house.

574 words

Resources

"Careers in Science." *Science Buddies*. Science Buddies. Web. 28 Oct. 2014. <http://www.sciencebuddies.org/science-engineering-careers#engineering>.

"Follow the Waste Stream." *Community Education Resources*. Waste Management. Web. 10 Nov. 2015. <http://www.wm.com/about/community/pdfs/follow_the_waste_stream.pdf>.

"Reduce, Recycle, Reuse, and Rot." *SF Environment*. City and County of San Francisco. Web. 17 Nov. 2015. <http://sfenvironmentkids.org/4Rs/reduce/index.htm>.

574 words

Wet and Wonderful Wichita Falls

Brenna C., Nevyn J., River R.
Fourth Grade
R. F. Patterson Elementary

We chose Wichita Falls because of the drought and we want to help conserve water. Wichita Falls contains 104,000 people. The problem is that the city is having a drought and there is not enough water.

The crop we chose was kale. We chose kale because it is one of the healthiest vegetables and it is a popular vegetable to eat. It is healthy for the citizens of Wichita Falls because it has all the nutrients you need in a vegetable.

Our farming method will successfully grow our crop by using the water from the plants and giving it to the fish. We can grow enough of our crop for the citizens because aquaponics are safe for plants and fish.

It is energy efficient because we use solar power from the sun. We are not using electrical energy for our light source to grow our crops.

The lack of space is one of the risks because we need a lot of space for the fish tanks. One of the risks are the tornados that can take down the farm. Another risk is that there could be too much sunlight and it could kill the fish. A benefit is that you can make the farm inside so it protects the crops and the fish from predators.

The marine architect will help us with our aquaponic tanks because he or she can design vessels to go underwater and collect fish for our tanks. We think the solar energy system engineer would help us by designing a photovoltaic system to use the solar energy. The environmental engineer will help us because he or she can design the fish tanks. The civil

engineer can help us with our building for the fish tanks because they can design buildings that are less likely to be destroyed by tornados.

Our solution will be effective because the water we use is being reused. The plants and fish are cleaning the water because the fish eat the particles the plants produce and the water goes back to the fish. The cycle starts over again. Our overall goal is to help Wichita Falls conserve water and we believe our system will do that.

364 words

Resources

"Careers in Science." *Science Buddies*. Science Buddies. Web. 28 Oct. 2014. <http://www.sciencebuddies.org/science-engineering-careers#engineering>.

"Food Forward Pilot Episode: Urban Farming Across America." *PBS Video*. Public Broadcasting Service, 4 Apr. 2012. Web. 21 Oct. 2014. <http://video.pbs.org/video/2276862085/>.

"Nutrition Facts." *Self Nutrition Data*. Conde Nast, 14 Jan. 2014. Web. 4 Nov. 2014. <http://nutritiondata.self.com/facts/vegetables-and-vegetable-products/2461/2>.

"The Good, the Bad and the Ugly about Vertical Farming." *Ecofriend*. Eshi International PTE LTD. Web. 4 Nov. 2014. <http://www.ecofriend.com/the-good-the-bad-and-the-ugly-about-vertical-farming.html>.

364 words