



1. **Organization Name: DPS Sustainability Office**

2. **Project Title: Piloting Composting at Denver Public Schools**

3. **Name of Project Coordinator: Laurel Mattrey**

4. **Project Coordinator e-mail address and phone number: laurel_mattrey@dpsk12.org, 720-423-4171**

5. **Name of person(s) completing this report: Laurel Mattrey**

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II. WORK PLAN

Please use the format provided in the table below for your goals and objectives as listed in your Scope of Work. Indicate the date each deliverable was completed or briefly describe why the deliverable was not completed.

Deliverable	Completion Date	Comments (if deliverable <u>was not completed</u>, please explain why or what progress has been made)
Monitor compost hauler service schedules and compost generation at each school, and make adjustments to service schedules as necessary.	9/2/2011	9/2/2011 – worked with existing compost haulers to confirm schedules and adjust as needed
Establish trained composting teams at each school.	9/2/2011	9/2/2011 – All schools with existing composting programs re-trained compost monitors for the school year
Facilitate meetings between green leaders, cafeteria staff, and maintenance staff.	9/1/2011	9/2/2011 – meetings held on an ongoing basis; some were self-generated by individual school leaders
Establish baseline levels of service for each school.	8/12/2011	9/1/2011 – Baseline levels were established in line with the start-up of composting service at each school in the Fall of 2011
Establish service contracts between district and haulers.	8/12/2011	10/1/2011 – This was the active date of our contract with Alpine Waste. It took a while to get DPS to decide on the type of contract to use with Alpine and to get the signed documents completed. We were not operating under any contract for composting with the City and County of Denver.
Establish baseline waste generation rates for each school.	8/31/2011	Done in coordination with baseline service levels and in communication with Alpine, Waste Farmers and Denver Recycles

Facilitate presentations by compost haulers.	9/16/2011	Automatically generated by Alpine and City and County of Denver
Develop age appropriate signage and handouts.	9/16/2011	Generated by City and County of Denver and Waste Farmers. Funds were used LATE in the grant timeline to create extra signage for a handful of schools.
Develop a simple measurement and documentation tool to be used at each school.	5/15/2012	Completed by Intern
Consolidate district-wide data into a single database.	6/1/2012	Completed by Intern

III. PROJECT SUMMARY

1. Executive Summary

Provide a brief summary of the entire project including goals, challenges, successes, results, and environmental/economic benefits.

The Denver Public Schools Sustainability Office, with support from RREO funds, was able to fully fund composting services in 15 schools across the district. This was a pilot year for composting at DPS and, using RREO funds, we were able to establish district protocol for initiating composting, provide schools with additional composting resources, develop a diversion measurement database and support composting education programs across the district. A challenge came when, 1 month into the school year, one of our main composting partners, Waste Farmers, announced that they were leaving the compost hauling business and transferring all of their accounts to Alpine Waste. Unfortunately, DPS was not able to finalize a contract with Alpine Waste until the end of 2012 (3 months later). Fortunately, however, because of the existence of a larger contract between the City and County of Denver and DPS for solid waste and recycling services, we were given composting services by the city free of cost throughout the entire school year. Using RREO funds, we were able to track monthly compost weight estimates and compare those to recycling and landfill waste at our composting schools. We determined that with the addition of composting at these 15 schools, we increased the overall diversion rate by 22% (measuring just recycling alone, these 15 schools were only diverting 3% from landfills). Additionally, the children at all 15 schools were exposed to impactful information about the importance of waste reduction and composting.

2. **Project Description & Overview of Work Completed**

State your project goals and describe the steps taken to meet those goals. Explain why the project was important for recycling in your community and for Colorado in general.

Goal 1: To provide the groundwork and logistical structure for the integration of composting in schools across the district. RREO Funds gave us the support we needed to strengthen and build the breadth and depth of our composting programs across the district. We were able to support expanded education in schools (via Denver Recycles and Alpine Waste education staff) and design a measurement system to track the effectiveness of diversion in our composting schools.

Goal 2: To develop legitimate metrics around waste reduction and tonnage diverted from landfills as a basis for developing a larger-scale program across the district. Unfortunately, the City and County of Denver, Waste Farmers and Alpine Waste do not have very sophisticated methods for measuring diversion and compost weights, so a lot of our metrics were developed using bin counts and estimated weight per bin per week. We used VERY conservative measures/weights to measure diversion and still believe that we significantly increased our overall diversion rates in our 15 school sample. Based on the strength of last year's composting program and increased interest, the City and County of Denver is expanding its ability to provide affordable composting services to DPS schools and many of the schools that were previously contracted with Alpine are switching to city composting services.

Goal 3: To develop awareness across the district of the concept of composting and its positive environmental and economic benefits. In collaboration with Denver Recycles, Waste Farmers, Alpine Waste and Green Up Our Schools, we have been supporting the sharing of the positive impacts of composting with various schools and administrators across the district. We believe that we have obtained enough forward movement in developing a composting program at Denver Public Schools that more and more schools will be initiating composting in the next couple years.

3. **Summary of Findings & Results**

Based on the work completed, what were the results? Include both the technical data and the response from members of the community.

By the end of our grant term, a total of 15 DPS schools had active composting programs in cafeterias and restrooms (paper towels). School composting programs facilitated composting of all organic materials from cafeterias (including student leftovers and kitchen waste) and paper towels and napkins. All of these schools had participated in an education program with either the City and County of Denver, Waste Farmers or Alpine Waste.

Because of larger contract negotiations for solid waste and recycling services with DPS, we were fortunate to NOT HAVE TO PAY for compost services from the City and County of Denver, enabling us to use RREO funds to further support composting in schools with additional supplies and fund a part-time intern for a month to support data collection. We were also able to purchase supporting materials, such as scales, signage, small classroom bins, trash pickers and aprons, to support safe and effective compost monitoring. We estimated that a total of 231,100 pounds of waste was diverted from landfills from this small list of schools participating. Our diversion rates at those schools increased from approximately 3% (with ONLY Recycling measured) to an average of 25% during the course of this grant period. Additionally, we are coming in to the 2012/2013 school year with ALL of last year's participating composting schools committed to continuing to compost. We are ADDING 4 additional schools as well.

4. Summary of Unanticipated Outcomes or Roadblocks

Explain any unanticipated outcomes or roadblocks and how they impacted the project. How did you overcome any roadblocks?

One roadblock that we encountered during the course of the pilot composting program was the shifting attitudes of facility managers and cafeteria staff as they worked with their schools and students. We were able to address Facility Manager and Cafeteria staff complaints on an ongoing basis, working with their Area Supervisors and Facility Management staff (the Sustainability Office is housed within Facilities Management). Additionally, we were challenged by Waste Farmers decision to discontinue their composting hauling services ONE MONTH into the school year and hand all of our school sites over to the Alpine. Unfortunately, NO CONTRACTS were negotiated in advance and we had to determine the correct contracting and MOU moving forward. Ultimately, after about 3 months, the Facilities Management office signed a year-long contract with Alpine Waste for the handful of schools using their services. All billing for those schools was processed in Facilities Management.

Additionally, although we had originally planned on creating a database with metrics for solid waste and recycling numbers for the entire district, we were only able to create metrics and measurements for our participating composting schools. Unfortunately, the availability and collection of data took our intern longer than we anticipated. We do now have paper copies of solid waste and recycling data for the entire district, but it still needs to be input into our larger Utility Management system. Our intern spent time meeting with schools, meeting with administrative staff in Facilities and with our composting partners and developing an accurate database displaying diversion rates with and without composting. We believe we have developed an excellent template to track diversion and will use this spreadsheet in the coming year to continue our tracking. The inputting of ALL of our solid waste and recycling data, unfortunately, will be time consuming.

5. Communication of Project Findings

How will you communicate the results of your project to your community and to Colorado in general?

We will be presenting the diversion estimates and information to our schools and to decision makers in Facilities Management. We are amazed by the MAJOR increase in diversion with the addition of composting. We will continue to work with the City and County of Denver to figure out the best way forward in encouraging the expansion of their composting program to more schools. We will also share our diversion information with Green Up Our Schools, a Boulder-based nonprofit that facilitates waste management education across DPS.

6. Future Impact of the Project

How will this project impact future waste diversion in your area and in Colorado? Are there any downstream effects of this project? Is there potential for transferring technology or process knowledge to others?

We will be continuing to push for better tracking of composting and increases in diversion rates across the district. We will use last year's pilot program to develop school by school tracking materials. We hope that the impressive increase in diversion rates will prompt decision makers at DPS to reconsider larger support of composting.

7. Financial Summary

Using the Grant Budget Table, indicate how funds were spent during the project, including a breakdown of actual in-kind/matching funds. **Be sure the Grant Budget Table is complete.**

Denver Public Schools Grant Budget Table

Description	Grant Funds Spent	Matching/In Kind Amount (if any)	Total Amount
Personnel Salaries	\$5712.81	\$1404.27	\$7117.08
Fringe Benefits	\$1892.70	\$630.90	\$2523.60

Tuition/Fees	\$0.00	\$0.00	\$0.00
Travel Costs	\$0.00	\$0.00	\$0.00
Materials/Supplies/Equipment(under \$5000)	\$3,478.08	\$3125.00	\$6873.08
Equipment Purchases (over \$5000)	\$0.00	\$0.00	\$0.00
Contractors/Subcontractors	9,345.18	\$6720.00	\$16065.18
Consultants	\$0.00	\$0.00	\$0.00
Training/Education	\$0.00	\$0.00	\$0.00
Marketing/Advertising	\$0.00	\$0.00	\$0.00
Other Direct Costs	\$0.00	\$0.00	\$0.00
Indirect Costs	\$0.00	\$0.00	\$0.00
Total Project Cost:	\$20,428.77	\$11,880.17	\$32,308.94

Total award amount: \$27,750.00

8. Conclusion

Include any final thoughts on the project and on the RREO grant program.

Funding from the Recycling Resources Economic Opportunity was critical in creating the foundation for composting and its expansion at Denver Public Schools. ALL of the schools that participated in school-wide composting will continue into the 2012/2013 school year AND we will add 4 more schools! We are very thankful for this opportunity to support such an important learning opportunity for kids across DPS.

9. Appendix

- a. Grant Metrics Table
 - i. **Be sure the Grant Metrics Table is complete.** See Excel spreadsheet.
- b. Community Leader Contact Information
 - i. Include the name, title, phone number & e-mail address of at least three community leaders who are familiar with your project. They may be contacted by the committee for input on the project.
- c. Manuals, Brochures, Print Advertisements, Pictures, Educational Materials, etc.
 - i. It is preferred that these items be attached to the report electronically. If this is not possible, you may send hard copies to the mailing address listed above.
- d. Composting and Diversion Rates Worksheet –***Attached as digital copy to Final Report Email

Grant Metrics Table

***Attached as digital copy to FINAL REPORT EMAIL

Community Leader Contact Information

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School-wide Kick-Off Assembly

(Sample)

The Edison Elementary Kick-Off Assembly is a great example to follow because it incorporates the following elements:

- Audience participation
- Clear explanation of what can & cannot be recycled
- Generation of excitement for green issues & waste reduction projects

The Kick-Off Assembly was structured along the following lines:

1. Step 1: Schedule an Assembly

Edison added a "Going Green" presentation to the existing assembly that happens at the beginning of every year.

2. Step 2: Set the Stage

Three simple props:

- Trash can
- Recycling bin
- Poster (made by the Green Team)



3. Step 3: Introduce the Characters

Two characters took the stage. *(In Edison's case, both were teachers, although the roles could easily be filled by students.)*

4. Step 4: What can be recycled?

The lead character (in this case, the school mascot, "Character Ed") held up various items that students throw away on a daily basis. This included the following items:

- Paper
- Cardboard box
- Plastic bag
- Yogurt cup
- Soda can
- Water bottle
- Laminated paper
- Milk carton
- Candy wrapper
- Chip bag

The second character (“Mr. You-Can-Do-Better”) was asked to choose whether each item belonged in the trash or the recycling bin.

Students were asked if he was right or wrong:

- Right – thumbs up
- Wrong – thumbs down

The lead character would then reveal the correct answer, and the students learned what can and cannot be recycled.

- *A good follow-up to this activity is to take the same materials and glue them onto poster boards as a visual reminder of what can and cannot be recycled.*



5. Step 5: Waste Reduction Projects

The next step is to share the school’s plan as developed on the Green Up Our Schools application. Introduce concepts such as using both sides of the page or packing a Zero Waste lunch to the students.



6. Step 6: Distribute Recycling Bins

If each classroom doesn’t have a recycling bin, the Kick-Off Assembly is a great time to distribute them.

Edison handed out their new recycling bins to each classroom as they each filed out of the auditorium.



Kick-Off Assembly Script

(Sample)

Props needed:

- 3 recycling bins
- 3 trash cans
- Green Superstar costume (green clothing, green cape, green mask, etc.)
- Evil Trash Master costume (black clothing, paper bag mask, etc.)
- Recyclable Materials:
 - Soda can
 - Water bottle
 - Cardboard box
 - Classroom paper
 - Newspaper
 - Yogurt cup
 - Milk cartons (**new!**)
- Non-Recyclable Materials:
 - Laminated paper
 - Paper towels
 - Chip bag
 - Candy wrapper
 - Plastic bag
 - Food (sandwich, apple core, etc.)

Script Outline:

- Introduce student green team
- Talk about waste reduction projects
- Review what can & cannot be recycled
 - Introduce "Green Superstar" character
 - Introduce "Evil Trash Master" character
 - Green character holds up items commonly thrown away
 - Trash character chooses recycling or trash can
 - Students tell him (thumbs up/thumbs down) whether he was right
 - Green character reveals the correct answer
- Introduce the sorting race: 3 student volunteers, 3 bags of trash – who can sort them correctly the fastest? (minus 1 point for incorrectly sorted items)

Script Text:

“Welcome to the Green School Kick-Off! My name is _____, and up here with me is the Green Team. We are excited to let you know that we are part of a program called Green Up Our Schools – that means we were selected above other schools to help us with our environmental programs. This year, we’re going to be doing [Waste Reduction Project #1] and [Waste Reduction Project #2], which means you should look out for _____ as a way to help us out.”

“Now we’d like to go over what can and cannot be recycled at school this year.”

[Green Superstar takes the stage.] “Hi everybody! I’m the Green Superstar – the mascot for recycling and waste reduction at _____ Elementary. Now, recently I’ve seen a villain lurking around school who’s been causing trouble. He’s been putting paper in the trash can and food in the recycling bin – there he is!”



[Evil Trash Master is spotted running through the crowd. He freezes and looks back at the Green Superstar.]

“Come up here, Evil Trash master! We need to teach you how to recycle!”

[There is a small chase as the Green Superstar goes after the Evil Trash Master. The Green Superstar catches the Evil Trash Master and brings him on stage. Evil Trash Master comes up on stage.]

“Here’s what we’re going to do: I’m going to hold up something we throw away every day here at school. You’re going to decide whether it should be put in the trash can or the recycling bin. Can you do that?” *[Evil Trash Master nods.]* “Alright guys, you need to help him out! If you agree with his choice, give a thumbs up like this! If you think he’s wrong, give a thumbs down. Hold your thumb up in the air every time, and we’ll reveal the answer. We’re going to put a stop to this trash disaster from the Evil Trash Master!”

[Hold up each item one at a time. Wait for students to vote. Make sure the Evil Trash Master makes some wrong choices sometimes. For example:] “Okay, here’s a banana peel. Evil Trash Master, where do you think this goes?”

[Evil Trash Master, takes the banana peel and slowly moves it back and forth between the trash and the recycling while he thinks. Then he stops over the recycling bin, still holding the banana peel, and says he’s made his decision.] “Okay, audience, what do you think? Do you agree?”

[Hopefully everyone will hold up a thumbs down sign.] “Good job, guys – the Evil Trash Master guessed wrong! We’ve foiled him again! Banana peels are not recyclable, just like every other type of food. Make sure you put them in the trash can.”

[Evil Trash Master tosses the banana peel into the trash can and throws a temper tantrum.]

[Do the same thing with the rest of the items.]

“Okay, next I need three volunteers from the audience! You guys are going to get a bag of discarded items, and you have to correctly sort them into the recycling bin or the trash can. It’s a race! Whoever finishes first, wins! But here’s the tricky part – if you put something in the wrong bin, it’s minus one point. If you finish first but you got more items wrong than the person who finished next, they win instead of you!”

[Three volunteers come up on stage and have a race to sort three bags of trash into the recycling or the trash bins. Make sure the items in each bag are clean! Have a prize for the fastest student, such as a Green Up Our Schools wristband.] “Thanks for listening, guys! Don’t forget to keep an eye out for the Evil Trash Master – and don’t make the same mistakes he does!”



Compost Monitor Training!



Grades 2-6

Lesson Summary

Students learn and review how to be Compost Monitors for their school's *Food to Flowers!* composting program.

Overview

In this lesson, students will:

- Recognize that a lot of what we throw away can be recycled and composted instead.
- Learn what can and cannot be recycled in San Francisco.
- Learn about the decomposition cycle and about compost.
- Review what we put in the green compost bin.
- Practice being compost monitors in their classrooms.

Time

1 hour

Background

Every day, people in the City of San Francisco make four million pounds of garbage that gets sent to a landfill sixty miles away. We can keep much of this waste out of landfills by recycling and composting. Recycling paper, bottles, and cans helps conserve natural resources and wildlife habitat. Composting helps build precious topsoil and reduce the use of chemical fertilizers by providing nutrient rich compost that is used on local farms and orchards.

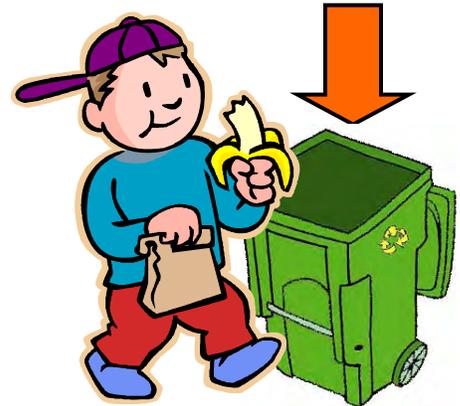
When we recycle and compost, little is leftover that needs to be thrown into the trash and sent to the landfill. The City of San Francisco and Recology, the local waste hauler, have teamed together to create an innovative garbage collection program called *The Fantastic 3 (FAN 3)* which uses three different colored bins: green for compostables, blue for recyclables and black for trash. By using all three bins, San Francisco residents can keep thousands of tons of waste out of the landfill while helping save energy and natural resources.

The following presentation will help you to prepare your students to be compost monitors in your school's lunchroom.



Vocabulary

- Recycling
- Decomposition
- Organisms
- Enzymes
- Compost



Materials

- *The Dirt on Composting* fact sheet and comprehension questions
- Bag of “garbage” containing:
 - **recyclables** – old homework written on both sides, newspaper, cardboard, plastic bottle and jug, soup can, aluminum can, glass jar, plastic yogurt tub and lid;
 - **trash** – aseptic juice boxes, Styrofoam cup, plastic wrapping, straw, plastic utensil, chip bag;
 - **compostables** – apple core, old bread, dirty paper napkin, dirty cardboard lunch tray or paper food container, milk carton
- Classroom recycling bin
- *FBI* visual
- *Nature Recycles* visual
- Compost monitor apron
- Game cards (attached)
- Game items: spork with wrap, lunch tray, granola bar in plastic wrapper
- Bin graphics (attached)



Preparation

- ❑ Read *The Dirt on Composting* fact sheet.
- ❑ Gather items from the materials list.
- ❑ Prepare bag of “garbage” to be used in Part 1 of this lesson by doing the following:
 - Make sure all recyclables, trash, and compostables are clean enough to touch with bare hands
 - Pick a plastic bag that is **not see-through** and small enough to just hold all the items so that it is easy to reach all of them.
 - Organize items so that you can get to them easily during the game.
- ❑ Have your classroom recycling or blue bin visible.
- ❑ Organize all visual materials so that they are readily available during the presentation including cutting out the attached game cards and bin graphics. If not colored yet, color one bin blue, one green and one black to mimic San Francisco’s FAN3.
- ❑ Gather sample items for compost monitor practice including as many items that are used at your school during lunch. Some examples are a paper lunch tray, milk carton, spork w/plastic wrap, plastic food container, granola bar in plastic wrapper or chips in a plastic bag, juice box, aluminum can, foam plate, plastic tub and lid, and a plastic bottle. **(It is easy to reuse some items from the bag of “garbage” in step #3.)**

Pre-Activity Questions

- ❑ Tell students what you love about nature (*name something you love about nature*)
- ❑ Ask students:
 - What do you love about nature? (*Call on a few students raising their hands*)
 - What are some ways we can protect nature? (*Driving less, turning lights off, saving forests by using less paper, recycling, composting*)
- ❑ Today we’re going to refresh our memories about how we can protect nature and make less garbage here at school by being Compost Monitors and doing two simple things: recycling and composting!

Part One: Recycling

- ❑ One way we can all help protect nature is by recycling.
- ❑ Ask students:
 - Do you know what recycling means? (*Turning something old into something new; when we recycle old paper, it becomes new paper*)

- Where do we recycle here at school? (*Have class point to where they recycle in the classroom and remind them that the BLUE bins are for recycling.*)
- Explain to students that you have in your hand what looks like a bag of garbage. (*Hold up the bag of garbage you prepared.*)
- Ask students if they think that everything in the bag is trash or if some of it can be recycled? (*Tell students a lot of the items in the bag can actually be recycled*)
- Instruct students that they are going to play a game to review what can and cannot be recycled. If you hold up something that **can** be recycled, instruct them to wave their hand in the air and yell out, “Recycle it!” If you hold up something that **can’t** be recycled, instruct them to point their thumbs down in the air and yell out, “Trash it!”
- *Hold up different items from the plastic bag of “garbage”*
 - **Remember to explain that San Francisco recycles all paper like newspaper, school paper, cereal boxes and cardboard; all glass bottles and jars; metal cans and foil; and all hard plastic like water and juice bottles, clean yogurt containers, plastic clamshells, plastic cups and even things like broken plastic toys!**
- *Hold up a yogurt tub and plastic water bottle as example of what can be recycled.*
 - Some examples of things that can’t be recycled are Styrofoam, potato chip bags, juice boxes (cartons lined with foil and plastic), plastic bags, plastic wrapping and plastic food trays and utensils that are dirty with food. (We don’t want to splatter food into the blue bin by recycling dirty food trays.)
- Great! You all remember what can and cannot be recycled.
 - We can recycle items in our blue bin here in the classroom and in the blue bin in the lunchroom.
 - As compost monitors, it’s our job to help the other students learn what to put in the blue recycling bin. It’s clear to me that you all are experts on what can be recycled. Let’s move on to composting!



Part Two: Decomposition

- We know we can recycle paper, bottles, cans, and plastic tubs and lids. But what about leftover food like apple cores and banana peels?
- Ask students:
 - What can we do with these things to keep them out of the garbage? (*Compost*)





- That's right! The second way we can protect nature and make less garbage is by composting.
- Composting is when living things in nature help us **decompose** or break down, materials like food scraps and fallen leaves. It's nature's way of recycling.

- **If you teach 2nd grade:** Things like worms and other bugs are what help turn our leftovers into compost. *(Now proceed to Part #3)*

- **If you teach 3rd grade and up:** There are three types of decomposers or living things in nature that break stuff down into compost and they are called the FBI.

- *Show FBI visual*

- **F** stands for fungus. Fungus is a group of **organisms** or living things that include mold and mushrooms. Like our bodies, mushrooms produce powerful chemicals that break down food. These chemicals are called **enzymes**. As mushrooms release enzymes, they are able to dissolve organic material around them like old food or fallen leaves.

- **B** is for bacteria. Bacteria are so small that we cannot see them without the help of a microscope. While some bacteria make us sick, other bacteria are used in medicine to keep us healthy. Bacteria keep our eyelashes clean and give yogurt its sour flavor. Bacteria also help make compost. For instance, one type of bacteria warms the compost pile so that other bacteria can survive. As bacteria break down organic matter, like dirty paper or mowed grass, nutrients are released into the compost.

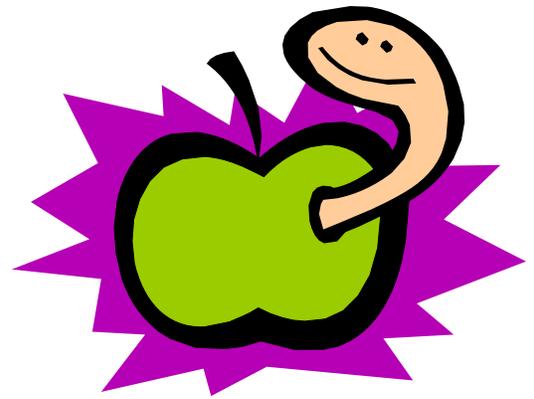
- **I** is for invertebrates. Invertebrates are animals that do not have a backbone. They wiggle, crawl, and slide their way through the compost pile. Invertebrates break down organic matter by chewing and grinding. Slugs, snails, worms, beetles, mites, ants, and sow bugs are some important invertebrates in the compost pile.



Part Three: Compost

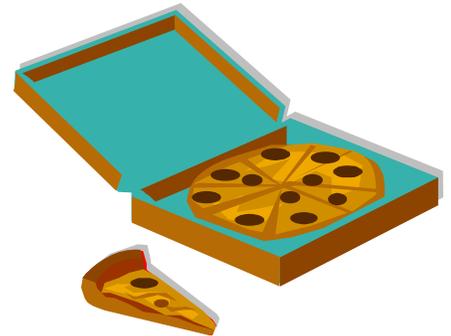
- **If you teach 2nd grade:** Decomposers like worms are constantly breaking things down in nature.
- **If you teach 3rd grade and up:** Decomposers like fungus, bacteria, and invertebrates are constantly breaking things down in nature.
- We can help decomposers break things down by making compost bins or piles for decomposers to live in. *(Refer to Nature Recycles Visual)* For example:

- After we pull carrots out of the ground in a garden, wash them and eat them; we can put the leftover carrot tops into a compost bin.
 - We can put all of our leftover fruits and vegetables into a compost bin. Things like banana peels, apple cores, and celery tops!
 - The decomposers living in the compost bin or pile will break down the food.
 - The final result is compost. Compost is dark brown dirt that's the color of chocolate. It is full of nutrients that grow strong and healthy plants.
 - The most important thing to remember about compost is that it naturally helps grow very healthy fruit and vegetables that are full of vitamins. When decomposers break down things like carrot tops, apple cores and banana peels, nutrients like nitrogen get released and end up in compost. It is the nitrogen that helps add vitamins to our food grown with compost.
- So, when we compost our food scraps, they get turned into compost that grows more food! It's a really neat cycle in nature!



Part Four: Food to Flowers!

- Who in this class remembers *Phoebe the Phoenix* and the composting program that we have here at school? Great! Starting this week, our class is going to be compost monitors in the lunchroom. So not only will we be composting our own leftover lunches, but we will be helping other students to compost their leftovers too!
- In San Francisco, we can compost anything that comes from a plant or an animal!
- Let's review.
- There are three types of things that can go in the green bin at school. Those things are:
 - Leftover food like pizza crusts, chicken bones, and banana peels.
 - Dirty paper like used napkins, empty milk cartons, dirty pizza boxes, and your cardboard lunch trays if they're dirty with food like ketchup or mayo. If your cardboard lunch trays are clean, they should be recycled like usual.
 - And...yard or garden waste from your school garden! Stuff like weeds, old flowers, raked up leaves and cut branches.
 - Whatever we put in the green bin is taken away and turned into compost. Then the compost is used on local Bay Area farms and gardens!
- Remember: Only leftover food and dirty paper can go into the green cart during lunchtime, so no plastic. Please repeat after me, "Only food and dirty paper, no plastic!"





- Can you put an apple core, a leftover burrito, or a sandwich crust into the green bin? *Yes!*
 - Those items came from either a plant or an animal, so they can be composted in the green bin.
- Can you put a foil candy wrapper, a juice box, soft plastic wrap, or a plastic straw into the green bin? *No!*
 - Those are NOT compostable, because they did NOT come from a plant or an animal! A juice box is made up of plastic, metal, and paper all mixed up so you can't compost it.
- Now, can you put paper napkins, a dirty cardboard tray, or a pizza box into the green bin? *Yes!*
 - Those things should be composted. That's because it's made out of paper, and paper products come from trees, which are plants.

Part Five: Compost Monitors

- Being a compost monitor is an important job! We are going to take turns monitoring the green bin at lunch. Each of you will have a chance to stand by the bin, wearing this fabulous orange apron (*hold up orange compost monitor apron*).
 - Part of your job will also be to teach other students why something can or cannot go in the green compost bin or blue recycling bin.
 - Remember that if someone makes a mistake and puts a plastic or metal item in the green bin, I DON'T want you to stick your hands into the bin to get it out. It's okay to make a mistake, sometimes we all need a little time to learn new things.
 - Also remember that like homework, I don't want you to do the job for the other students.
 - Our job is to teach students where everything goes, not compost for them!
 - Let's say that a student comes up to the bins at lunch while you are monitoring and they need help sorting. Please point at their tray and say the name of the exact item and tell them where it goes. For example, "Your sandwich crust goes into the green bin!" or "Your juice can goes into the blue bin! Or "The soft plastic wrap goes into the trash!" This will help your classmates remember where everything goes next time.
 - You might need to help your classmates remember exactly what goes into the green bin. Remind them by stating in a firm but polite manner, "Please, only food and dirty paper, no plastic!"

Part Six: Game

- Now we are going to play a game to see how much you remember about what can be recycled and composted. This is compost monitor practice!
 - Separate class into groups that they are familiar with.
 - Pass out several of the game cards to each team to share along with one or two of the items listed as “game items” in the materials list.
 - Ask each team to work together as a group to figure out whether the items pictured on their game cards and the actual items in front of them can be composted (can a worm eat it?) or recycled or if it has to go in the garbage.
 - Place the colored graphics of the Fan3 bins up on the ledge of the chalkboard or desk.
 - Explain that you will call on a student representative from each team (one at a time) to bring their items up and place them in front of the bin that they think the item should go in. Can the item be recycled, composted (can a worm eat it?), or does it go in the garbage?
 - Give your students a few minutes to figure out how to sort their items using the Fan3 bins and come to a decision about where each item should go.
 - Quickly review after each student and discuss his or her answer. If not correct, go over what they should have done.
 - Review the more challenging items like juice box, granola bar inside wrapper, and milk carton.



Part Seven: Conclusion

- You all did a great job today! I want to finish by saying that you are all VERY good Compost Monitors and I look forward to seeing your good work in the lunchroom!



Food for Soil. Food for People. Food for Industry. ®

Composting

We appreciate the opportunity to submit a proposal for composting with Denver Public Schools. Given that each of the participating schools is dedicated to building a better community, reduce waste and increase recycling, we see the reintegration of urban organic waste nutrients with agricultural and other uses as a way to bring the cycle and your efforts full circle. We would be honored to be a part this effort and appreciate the opportunity to submit our proposal to you.

COMPOST PROGRAM OVERVIEW

Compost Collection system

- Waste Farmers will provide your organization with **External** containers for collection
 - External Containers- 65 gallon roll carts. Please note, though not reflected in the picture below, the external containers will be forest green to help coordinate the internal compost collection efforts and eliminate potential confusion.



- Only approved compostable bags are acceptable
- Do not use regular plastic liners

Collection of Compostable Materials

Below is a proposal to implement composting based on the baseline information that you provided. Please note, these variables are adjustable as we determine the actual needs. The pricing outlined reflects two scenarios:

- **Non-Bundled Service:** This reflects the cost per school assuming that not every interested school participates in the composting program.
- **Bundled Service:** This reflects pricing assuming that every interested school participates in the composting program.



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School Name	Type	Est. Qty	Size (Cubic Yard)	Desc	Freq. Per Week	Total Weekly Cubic Yards	Total Annual Tons	Non-Bundled Cost Per Month	Bundled Cost Per Month
Abraham Lincoln HS	Compost	6	0.32	toter	2	4	75	\$ 250	\$ 200
Abraham Lincoln HS	Suggested Trash	4	8	dump	2	64	374		
Asbury ES	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Asbury ES	Suggested Trash	2	3	dump	1	6	35		
Bill Roberts	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Bill Roberts	Suggested Trash	1	6	dump	2	12	70		
Bradley	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Bradley	Suggested Trash	2	6	dump	1	12	70		
Brown ES	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Brown ES	Suggested Trash	2	3	dump	2	12	70		
Cole CASA	Compost	6	0.32	toter	1	2	38	\$ 150	\$ 110
Cole CASA	Suggested Trash	2	6	dump	2	24	140		
Denver Green School	Compost	6	0.32	1	1	2	38	\$ 150	\$ 110
Denver Green School	Suggested Trash	0	0	dump	0	0	0		
Edison ES	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Edison ES	Suggested Trash	2	3	dump	2	12	70		
Ellis Elementary	Compost	5	0.32	toter	1	2	31	\$ 145	\$ 105
Ellis Elementary	Suggested Trash	3	3	dump	2	18	105		
George Washington HS	Compost	6	0.32	toter	1	2	38	\$ 150	\$ 110
George Washington HS	Suggested Trash	4	8	dump	2	64	374		
Grant Beacon MS	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Grant Beacon MS	Suggested Trash	2	3	dump	2	12	70		
Green Valley ES	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Green Valley ES	Suggested Trash	2	6	dump	1	12	70		
Lowry ES	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Lowry ES	Suggested Trash	2	8	dump	2	32	187		
McMeen ES	Compost	5	0.32	toter	1	2	31	\$ 145	\$ 105
McMeen ES	Suggested Trash	1	6	dump	2	12	70		
Merrill MS	Compost	6	0.32	toter	1	2	38	\$ 150	\$ 110
Merrill MS	Suggested Trash	5	3	dump	2	30	176		
Polaris at Ebert	Compost	3	0.32	toter	1	1	19	\$ 110	\$ 85
Polaris at Ebert	Suggested Trash	1	3	dump	2	6	35		
Skinner MS	Compost	4	0.32	toter	1	1	25	\$ 135	\$ 95
Skinner MS	Trash	2	3	dump	2	12	70		
Slavens k-8	Compost	3	0.32	toter	1	1	19	\$ 110	\$ 85
Slavens k-8	Suggested Trash	2	3	dump	2	12	70		
Teller ES	Compost	3	0.32	toter	1	1	19	\$ 110	\$ 85
Teller ES	Suggested Trash	1	6	dump	2	12	70		
Westerly Creek	Compost	3	0.32	toter	1	1	19	\$ 110	\$ 85
Westerly Creek	Suggested Trash	1	6	dump	1	6	35		



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Frequently asked questions about composting organics:

Q: Will collecting materials for composting attract pests?

A: Our Composting Program uses a secure, contained storage approach. Waste Farmers will work with you to develop a pick up schedule that minimizes the amount of time that organic material is stored at your location. We provide leak-proof, covered containers and free training.

It is also important to communicate with Waste Farmers and request a replacement bin if your containers develop leaks or holes that all pests to enter.

Q: Will composting smell?

A: These same materials were present in your garbage before, they are just being separated for collection and processing. Washing bins as mentioned above will resolve both odor and pest challenges.

Q: Where do the materials go and what do they get made into?

A: Compostable materials are, mixed with leaf and yard debris, and made into a soil amendment that is purchased by area landscapers, farmers, and gardeners.

Q: What type of compostable products can I compost?

A: The biodegradable products institute sets the standards for biodegradable products: www.bpiworld.org

Q: Why should my business compost?

A: There are countless reasons why your business should compost. To name a few:

75 percent of waste that goes to the landfill comes from businesses. Studies show that food waste, food contaminated paper and waxy corrugated cardboard make up nearly 30 percent of that total. Roughly 54,000 tons of food waste and food-contaminated paper enter the commercial waste stream each year.

Compost is easily transformed into a valuable commodity, **returning nutrients and important soil building properties** to home gardens and local agriculture.

Removing food from the waste stream significantly **reduces the global warming impact** from landfills, as decomposing food waste is a major source of the greenhouse gas methane.

Composting is the most **VISUAL** sustainable practice your business could implement. Your Customers will appreciate your commitment to reducing waste and your environmental impact.

Benefits of Recycling Food Scraps and Other Organics:

According to a recent assessment of annual average waste composition sponsored by Denver Solid Waste Management, 57.1% of Denver's municipal solid waste is compostable. These items include food scraps, coffee grounds, yard waste and other carbon based materials. When buried in dumps, these valuable organic resources decompose without oxygen, releasing methane, a Green House Gas (GHG) and major contributor to Climate Change. Composting is one of earths' oldest processes and is one of the



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most effective means of stabilizing and converting organic waste. Composting enriches the soil, remediates contaminated soil, and helps prevent pollution and the release of GHG's. Source separation and composting of organic materials, reduces the amount of waste sent to dumps and incinerators, reduces GHG emissions, and allows us to support sustainable food production systems, and keep our soils healthy and productive.

ADDITIONAL BENEFITS OF WORKING WITH WASTE FARMERS:

Education

Waste Farmers understands the key factor to a successful composting and recycling program is Education of ALL stakeholders. To help ensure this success, we provide initial and continued Education opportunities for all staff and students as requested by the client's operations team. By educating your team, the risk of contamination is reduced and your diversion rates are increased. Engaging students also contributes to their enthusiasm for the program and changes being made with their operation.

Metrics

Metrics are critical for our clients to remain transparent in their sustainable efforts. In addition, this information is useful for setting goals, measuring achievement, encouraging continued participation, and calculating environmental impact. To help with this effort, Waste Farmers includes a monthly diversion report with each billing cycle, and a yearly impact report.

PREFERRED PRICING FOR WASTE FARMERS' COMPOST TEA

Waste Farmers' Compost Tea is brewed in oxygenated water using Waste Farmers' worm castings and other valuable micronutrients. The resulting brew is full of the living microbes and other beneficial soil nutrients necessary to build healthier soils and stimulate healthy plant growth when applied as a foliar spray or soil drench.

This product can replace the need for synthetic fertilizer, increase nutrient and moisture retention in your soils, and reduce the pollutants that may be leading to the degradation of your soils and surrounding water systems.

Due to your involvement in the Waste Farmers' composting program, Waste Farmers' Composting Tea can be purchased at a reduced cost. This preferred pricing in conjunction with a decreased spend on synthetic fertilizer may lead to an additional cost savings to the participating facilities departments.

Thank you again for the opportunity to submit our proposal. I look forward to discussing this with you further. Please do not hesitate to contact me if you have any questions or adjustments to this proposal.

Sincerely,
John-Paul Maxfield
Waste Farmers
303.525.8766
jpmaxfield@wastefarmers.com



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Grant Metrics

Date project fully operational:

August 1, 2011

(Based on deliverables- month that impact of grant would have changed volumes/job creation/participants)

Diversion Rates:

(Choose one material per box. Only list those collected over the grant cycle. Must be listed as "tons". See tab labeled "Conversion Tables" if needed.)

Material Diverted #1

Tons Diverted

July-11	
August-11	2.18 mT
September-11	11.82 mT
October-11	14.68 mT
November-11	12.66 mT
December-11	10.63 mT
January-12	14.49 mT
February-12	13.25 mT
March-12	16.46 mT
April-12	20.32 mT
May-12	10.63 mT
June-12	
Total	127.12 mT

Other div. material:

Material Diverted #2

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #3

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #4

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #5

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #6

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #7

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

Material Diverted #8

Tons Diverted

July-11	
August-11	
September-11	
October-11	
November-11	
December-11	
January-12	
February-12	
March-12	
April-12	
May-12	
June-12	
Total	0

Other div. material:

End use of diverted materials:

(Describe where materials are going [e.g., MRF, new products, reuse])

All materials diverted into compost bins were taken to compost plants where they decomposed and were reused for soil amendments.

Number of Permanent Jobs Created:

Include full-time & part time paid positions.
1 FTE = 40 Hours Per Week

NA

Type of Permanent Job(s) Created:

(Provide titles of jobs created)

NA

Average Salaries of Jobs Created:

(Average of all jobs created)

Average Monthly Customers for FY 2011:

(July 1, 2010 - June 30, 2011)

6480

Average Monthly Customers for FY 2012:

(Estimate or customer lists)

	Avg. Monthly Amount
July-11	6480
August-11	6480
September-11	6480
October-11	6480
November-11	6480
December-11	6480
January-12	6480
February-12	6480
March-12	6480
April-12	6480
May-12	6480
June-12	6480
Ave. / FY 12	6480