



# ZERO WASTE REVOLUTION

2016-2017 School Year

## MONTHLY REPORT • AUGUST

### Summer summary

June and July were packed with activities to keep all current Resource Recovery operations on track and to set the stage for new initiatives launched in August of the 2016/2017 School Year.



### Pumpkin Patch planted

Compost piles Red and Pink were harvested over the summer by a number of enthusiastic adult volunteers who traded labor for buckets of compost. Each pile yielded over two cubic yards of gorgeous soil amendment that made digging a bed to establish a 40-foot pumpkin patch across a portion of the Horseshoe irresistible. Pumpkin seeds, an easy-to-connect drip system and consultation were generously supplied by Jay Bost of GoFarm Hawaii. Both cooking and carving varieties were planted in mid-July. Slugs ate all but one of our seedlings, but Mr. Sawyer wisely had back-ups on hand. As expected, once little roots hit our superlative soil, plants exploded across the ridge! The Pumpkin Patch anchors the plan to reinvent this year's Halloween celebration as a Zero Waste event.

### Edible Schoolyard Academy

Also in July, Mr. Sawyer and Ms. Espie attended this prestigious four-day conference at Martin Luther King, Jr. Middle School in Berkeley, California. They returned with plenty of great ideas and the most handsome conference t-shirts ever. The world-renown 20-year-old Edible Schoolyard Project is the brainchild of Alice Waters of San Francisco restaurant Chez Panisse. It is supported by its own non-profit foundation and is run at this one school alone by a *paid staff of TEN*. As much as we would like to see more public funding to support Zero Waste efforts, could it be that Edible Schoolyard realistically represents the more viable model?



*By mid-August, dozens of pumpkin blossoms were awaiting the visit of local pollinators and vigorous vines were reaching out in every direction.*

### Meetings with public officials

Gardening and nutrition are without a doubt valuable components to a well-rounded education, but conservation and pono waste management in schools is a matter of public interest and taxpayer benefit, so soliciting government support for Resource Recovery programs and Zero Waste campuses remains in play. In June, Ms. Mindy met with both **Representative Chris Lee** at his office at the Capitol, and **Robyn Pfahl**, Farm to School Coordinator for the State Department of Agriculture.

They were extremely enthusiastic about Lanikai's Zero Waste program and felt that with a few highly-placed bureaucrats on our side and further education for a number of key legislators, both departmental and legislative pathways were in place to potentially approve a pilot expansion project.

Both asked for published documentation. After diligently producing detailed Zero Waste Revolution Monthly Reports for nearly two years at Lanikai, plus collecting and logging daily data and cost breakdowns for two years at Pearl City High, the request for ten print copies was easily met.

The Zero Waste program boasts a solid track record, shows measurable results, clearly attracts widespread community interest and has even received a national award from the U.S. Environmental Protection Agency. The strength of this program is indisputable.

A follow-up meeting with Rep. Lee and Robyn to plan strategy is scheduled for late September.

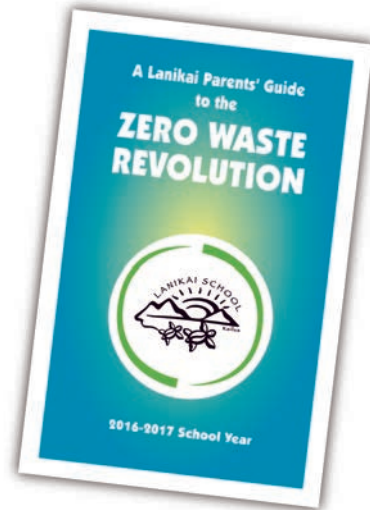
### A Lanikai Parents' Guide to the Zero Waste Revolution

With a July 27th deadline of mandatory Parents' Orientation fast approaching, over the summer much thought was given to how to best communicate the story of the Zero Waste Revolution, and what would be an appropriate way to involve parents. Although regularly mentioned at meetings, most parents have only a vague idea of the program, and with the 24/7 demands of multiple babies/small children taking priority, they have limited time and attention to engage.

A 16-page handbook was developed to concisely describe lunchtime and classroom waste collection and sorting, our various composting technologies, and to acclaim our considerable accomplishments so far.

The focus for the 2016-2017 School Year is on *packaging*. Parents are encouraged to reduce disposable single-use rigid and soft plastic packaged items in favor of reusable containers. Mylar packaging will be collected for a one-year experiment in upcycling. The overall goal of the booklet was to inspire parents and kids to work together to design Zero Waste lunches and snacks to minimize the waste items they bring on campus.

The 175 families (70% of a total of 250 families) who attended the Orientation received the *Guide*, along with a Participation Agreement to be signed and returned. Only 20 of the Agreement forms were returned – a modest start, not unexpected. There will be much more communication to come. A copy of the *Parents' Guide* is attached to this report.



## Failed dishwasher installation stalls progress

The campus was a whirlwind of activity all summer with extra custodians on hand to see that all floors were stripped and waxed and that deep cleaning efforts inside and out hit every nook and cranny. Heavy landscaping labor was provided over several days by the professional crew from WCCC, and a flurry of electricians drilled holes and ran cable for weeks to install air conditioning in every classroom.

**Unfortunately, the dishwasher that has been funded was not in place on July 29th, the first day of school, as promised.** This came as somewhat a surprise to our beloved caterer, Shannon Walker of One Love Cafe, who had to scramble to come up with disposable single-use items – trays, bowls, cups, bowls, and utensils – on short notice. Shannon had already ordered (using LSO monies) the washable food service items she had planned on using at Lanikai. Last year, when Lanikai was One Love Cafe’s only school client, Shannon schlepped washables back to her commercial kitchen to wash by hand, donating hours of volunteer time. Since then, One Love has been hired as lunch provider by Hanahau’oli School in Makiki and Malama Honua PCS in Waimanalo. “My job is to get lunches to three schools now – I can’t be washing dishes anymore!” Shannon says.

Insult added to injury, Shannon foots the bill on Lanikai disposables – the \$5.75 charge for student lunch is for food and service only. Fully committed to Zero Waste, Shannon buys the most expensive biodegradable disposables, so her growing business is taking an economic hit to make the best of a bad situation.

The impressively minimal amount of waste generated at lunch last year has ballooned into bags stuffed to overflowing with disposables – in the first time in two years, our waste volume has gone *up*.

Apparently, plumbers inspected the outflow area and determined that a new grease trap needed to be installed at considerable expense. Then it was determined that because Lanikai’s kitchen is not for cooking but serving only, the grease trap could be bypassed by the installation of a separate drainage pipe. Maybe this would take sawing through the concrete and maybe not. Would there be funds for this? At this point, the ball was dropped. The project is sitting on someone’s desk somewhere. August came and went and still no dishwasher.



Plumbing is not rocket science. Money can always be found to do what needs to be done. Failure to get a simple dishwasher installed with approved drainage in a timely matter is frankly embarrassing, damaging, costly, and has been the first serious downward plunge of our upward trajectory in achieving Zero Waste goals. Every effort to remedy this situation should be undertaken ASAP.

The “Proud to Pack” promotional campaign planned for August to encourage parents to plan lunches and snacks free of single-use disposables has been postponed until the dishwasher situation is resolved. It hardly seems fair to be pushing parents to comply with an effort to switch to washable reusables until our own house is in order.

## Community outreach

Many schools on Oahu are not going to wait for a government program to get started with Resource Recovery. Not every educational institution is appropriate for a full-on Zero Waste Revolution, but serious school representatives visiting the Lanikai campus for information and inspiration are determined to get started at some level because it is the right thing to do. In August, Lanikai was able to assist two schools make the transition from intention to reality: **The St. Andrew's Schools** and **Ka'elepulu Elementary**.

(Note, regarding tours: Due to time constrictions, the decision was made to schedule tours this year only for those likely to produce actual *outcomes*. We will not be hosting, for example, PD (Professional Development) programs nor providing eco-entertainment for lookie-loos.)

### The St. Andrew's Priory & Prep

This esteemed private school, founded in 1867, planned to incorporate composting into 3rd Grade studies, championed by STEM specialist **Claire Fallon** and 3rd Grade teacher **Shawna Haas**. Claire completed CTAHR's GoFarm program and was introduced to Lanikai operations on the GoFarm tour last year. Three 2nd Grade teachers collaborated to expand their raised-bed gardening curriculum and landed a generous HMSA grant for equipment and supplies, and the administration was keen to decrease the volume of food waste going into the dumpster with help from 6th graders.

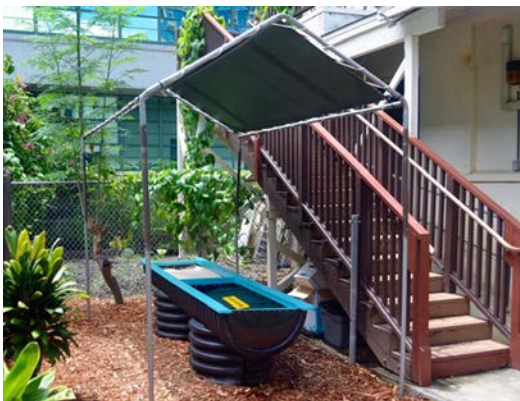


In June, Ms. Mindy was asked to visit their campus to assess the situation and make recommendations. This lovely, historical, uber-urban property is not at all suited for hot composting, but a small underutilized piece of real estate – with shade and platform modifications – presented possibilities for a worm bin. Discussion with their meal provider determined that adequate worm food was generated at lunch. Instructions were given for equipping and setting up a Separation Station. A Pipeline worm system was purchased with HMSA monies.



Later the same week, Ms. Mindy got a call from a woman who explained that she had attended a Worm Workshop in 2009 where she acquired a one-ounce starter colony. "They have done very well," she said, because now she had eight 10-gallon bins, each with about a pound of worms!

As she would soon be turning 87 years old, she felt she could no longer care for them and wanted to donate them to a school. Did I have any suggestions? Serendipity! This huge robust colony of healthy worms was picked up and transferred to summer quarters at Lanikai while the richly blessed Saint Andrew's folks got their worm bin site ready.





*St. Andrew's core worm team Sophie Halliday, Claire Fallon, Shawna Haas, and Lauren Gray-Wolff will enjoy a fully operating vermicomposting system on Day One. Lanikai had the same good luck thanks to the donation of the Big Blue and its established worm colony by Alvah Scott Elementary in July of 2014.*

On August 12th, six teachers and two administrators visited Lanikai School and spent a full morning observing all systems in action, asking detailed questions and taking copious notes.

On August 19th, their worm bin was delivered and installed. These educators did an outstanding job in creating a beautiful worm bin site and sorting operation, following our specifications exactly. St. Andrews' students started school on August 22, ready to collect food for their new worm colony.

The St. Andrew's team has been forewarned that they have a challenging road ahead. Collecting daily food waste and caring year 'round for a living system on campus is at its core a *facilities* activity, not an *educational* one. They believe vermicomposting can be successfully incorporated into science curriculum and become the permanent kuleana of students and teachers. This approach has been attempted by many in the past. *Time* is the culprit – educators invariably underestimate the time it takes to coordinate, prep, set up and clean up any on-going waste management operation. Can they establish a model that works once lessons are learned and the novelty wears off?

We hope they can. Lanikai School wishes them the best and will provide continued support and encouragement.

### **Ka'elepulu Elementary School**

With only 185 students, located nearby in the nearby Enchanted Lake neighborhood, Ka'elepulu Elementary has all the key elements that make this charming, manageable public school a superb candidate for a viable Resource Recovery program.

The most essential component is a project *champion*, in the mold of Mr. Sawyer who did the research, found the funding, proposed the idea to administration and other stakeholders, followed through to make it happen, and remains an active, committed leader as the project grows and evolves.

Ka'elepulu parent and PSTA board member **Lindsey Whitcomb** made several visits to Lanikai over the past year to observe, ask questions and help out with harvests and other tasks. As recommended by the U.S. EPA, Lindsey wanted to do a food waste audit and requested our help.



*Lindsey Whitcomb champions the Resource Recovery initiative at Ka'elepulu Elementary School.*

Lanikai staff conducted its own food waste audit with the help of Cyrus Howe from KUPU, and often described the process to others, but we never conducted such an audit ourselves for another school. It seemed like a good opportunity to develop this important measurement tool as a Zero Waste outreach program in which experienced Lanikai students could participate.

The initial food waste audit was set for August 17th to be repeated on the 18th to average two representative days. You can't just drop a waste audit on everyone without warning! Ms. Mindy spent three days at Ka'elepulu prior to the audit to prepare. It was necessary to scope out current lunchroom protocol and student traffic patterns, access equipment availability, and to establish a safe and efficient Separation Station based on their limited space and narrow exits. From Lanikai we were able to round up buckets, scales, and other equipment to loan for the audit.

Lindsey facilitated meetings with Principal Jamie Dela Cruz, the kitchen staff, the lunchroom EAs, the 5th grade teacher who supervises the student rubbish monitors, and the all-important custodial staff. We consulted with the teacher in charge of the school garden regarding location of the compost operation and with the librarian who would be collecting lunch waste from teachers. A stick/mulch base for a compost pile was constructed ahead of time so that food waste collected could go directly to processing immediately following the audit.

The day of the audit, four Lanikai students took time out of their school day to travel to Ka'elepulu to assist. They did an exemplary job helping K-6 students encountering their first Separation Station to sort out their milk, food, waste, rubbish, and trays. They weighed and logged each bucket, and helped to carry the full buckets to the composting site. Ka'elepulu students were a little puzzled by the new rubbish regime but cheerfully cooperated and mostly picked it up on their first try.



*Head custodian Elliott Noorlun was very supportive of the food waste collection initiative! A big fan of recycling of all kinds, Mr. Elliott donned a goofy 3R's hat and burst into song! He played for us "Every Day's a Recycling Day," his own composition.*



*Lanikai students performed admirably in conducting the waste audit and will definitely be included on future audits. More schools will ask as word gets around.*



*From left to right, 6th graders and Student Council officers **Ella Chapman** and **Johnny Sawyer**, Ka'elepulu Principal **Mr. Jamie Dela Cruz**, Lanikai School Director **Mr. Ed Noh**, 5th grader **Brent Underwood** and Lanikai grad, soon-to-be Punahou 7th grader, **Emma McDonald**.*

As Ka'elepulu already has a well-established garden (4 years) with a big mulch pile originating from their campus tree-trimming dumped adjacent to it, hot composting was the obvious best option. Immediately following the second day of the audit, all collected food waste was composted in three layers providing a training session with Lindsey. The original plan was that she would compost one or two days a week, as her time allowed.

“Once the food is in the buckets, and you know what good it can do, there is just *no way* you can put it in the dumpster,” she said. “So we just kept collecting and composting.” At the end of the month, Lindsey had constructed – perfectly – a 950-pound hot compost pile. The next day she started a second one.

*Amazing!* Ka'elepulu Elementary has achieved 100% food waste diversion in record time making them the second school on Oahu to claim that distinction. The Lanikai model works. Total cost of a Separation Station and composting operation is less than \$300.

A Food Waste Audit Report was prepared and submitted to Mr. Dela Cruz, including set-up description, data, analysis, costs and recommendations. It is reprinted on the next two pages.



*Lindsey Whitcomb caught on to composting right away, and once she got started, she didn't want to stop. Although rewarding, composting daily is hard work and time-consuming. She agrees she needs to find help soon to keep up the pace she has established.*

## **FOOD WASTE AUDIT Ka'elepulu Elementary School**

**August 17 & 18, 2016**

A **Food Waste Audit** was conducted for two days at Ka'elepulu Elementary – courtesy of Lanikai Elementary PCS – to determine baseline data for the school's Resource Recovery initiative. This project was proposed by parent volunteer Lindsey Whitcomb with full support of administration, associated faculty, custodial, kitchen and cafeteria staff.

Ka'elepulu has a student population of 185, with 104 participating in the National School Lunch Program. Approximately 20 students also eat school-provided breakfast. Food is prepared off-site at Keolu Elementary and trucked over for service at Ka'elepulu, so there is no prep or surplus – only plate scrapings, a.k.a post-consumer waste, is generated.

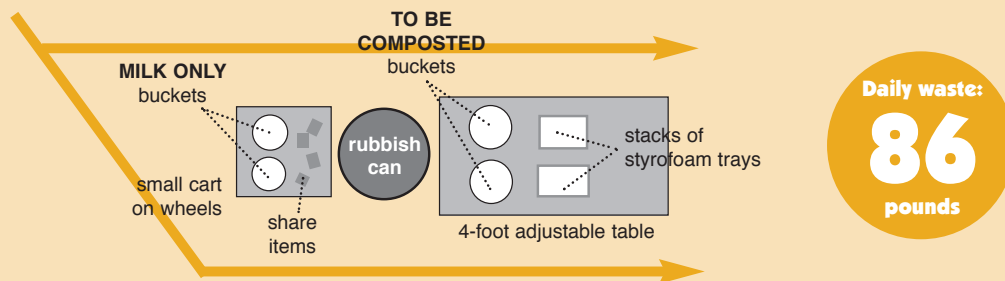
Food waste from breakfast, snack and lunch was sorted and weighed for two days and averaged. Additional collection from the teachers lunch in the library was added to the total both days. No food waste was collected from the after school program.

### **Separation Station Set Up**

The current procedure is to pour out extra milk into a bucket, dump food waste, milk cartons, and other items into the rubbish can and stack the trays. While spilling milk down the drain eliminates the mess and stink of drippy sour milk in the dumpster and stacking decreases volume so that fewer plastic trash liners are used, there is no diversion of food waste. Two 5th grade students are assigned rubbish duty for one week.

To conduct the waste audit, a Separation Station was set up on the concrete walkway outside the front exit door. Grade 3-6 children exiting the cafeteria line up on either side of the station to sort their breakfast and lunch waste. First, leftover milk goes into the MILK ONLY buckets. Unopened milks, juice boxes and Craisins packages can be left on the share table for someone else to take if they wish. Milk cartons, forks, napkins, ketchup packets and other rubbish is deposited into the rubbish can. Food waste is tipped into the TO BE COMPOSTED buckets, and trays are stacked on the table.

After the first lunch shift, the Station was relocated to the back exit door for the K-2 lunch shift.



### **Results**

100% of food/milk waste from all sources was collected and weighed for two days. **Aggregate average daily waste totaled 86 pounds.** In a 180-day school year, this adds up to 15,480 pounds, or 7.74 tons of valuable organic resource that can be diverted from the waste stream and used to benefit Ka'elepulu's garden and landscape.



### Recommendations

Register with the U.S. Environmental Protection Agency’s Food Recovery Challenge at <https://www.epa.gov/sustainable-management-food/food-recovery-challenge-frc>. They will ask you to submit your baseline data and state a goal for this school year for reducing food waste. If you plan to compost one day a week, for example, you will reduce your waste by 20%. Use a hanging scale to weigh buckets, log and post this information for everyone to see. You report this data annually and are eligible for national awards for meeting or exceeding your goal.

With its established garden, convenient hose bib location, access to unlimited tree mulch, and plenty of space, Ka’elepulu Elementary is ideally suited for a **hot composting operation**. Eighty-six pounds of mixed food waste comprises a typical layer or two on a static aerated pile. Piles can be built to accept 500-1,000 pounds of food waste and take about seven months from start date to maturation.

The limiting factors are TIME and LABOR. Student rubbish monitors could probably take on more responsibility to set up and manage daily collection, but an adult – better, two adults – will spend 45-minutes to an hour working the compost piles, washing out the buckets, cleaning up and putting away equipment.

It is reasonable, given the current volunteer situation, to compost at least once a week. If more volunteers become available, add more days of composting. Best case, compost every day!

### Costs

*The single most important first step is to establish a Separation Station to use every day starting NOW*, whether or not you are able to recover the resource daily. The sort-and-separate protocol is one all students should learn, practice and perfect. Throwing food waste into a rubbish can is never OK.

Changing the current waste management procedure can be done as soon as you can assemble the needed equipment and supplies. Below is an approximate cost breakdown:

#### SEPARATION STATION

• One 4-foot adjustable table	\$ 45	(Costco, City Mill, etc.)
• Four labeled and lidded TO BE COMPOSTED buckets @ \$27	108	(Lanikai School)
• Two small MILK ONLY buckets @ \$10	20	
• Small rolling table	----	(You have already)
• Rubbish can	----	(You have already)
• Hanging scale	7	(Longs - travel section)

Pre-tax TOTAL	<hr/>	\$180
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#### COMPOSTING

You already have a hose, nozzle, and pitchfork. Pick up a hose key at the hardware store for \$2.79. Tarps will run \$10-\$20. Bricks are \$1 each. Check Amazon for compost thermometers – a good one is \$30. Figure you will spend \$100 on your start-up composting operation.

## Garden Party attracts record crowd

The semi-annual AINA in Schools Garden Party (AINA-speak for “Work Day”) held on Saturday, August 13th, was a festive family affair that drew over 40 kids, parents, neighbors, and friends of Lanikai School all eager to get their hands good and dirty.

With the first of the AINA garden beds scheduled to be planted in early September, there was no shortage of jobs. A summer’s worth of weeds needed to be pulled, seeds had to be started, seedlings tended to, offshoots split and potted, compost screened and spread.

The garden shed was cleaned out and all the tools and supplies re-organized. New signs were built and hand-painted to mark each grade-level bed. A good time was had by all.



*The highest Garden Party participation so far exceeded last year’s attendance by almost 400%! Lanikai’s extraordinary, expanding garden program brings validity to the value of rich soil created on site through resource recovery operations and composting technologies. No other school garden on the island (yet!) can claim such remarkable bounty, vigor, and beauty. This is one big bandwagon people want to jump on.*

*Equipment was repaired!*



*Keikis were planted!*



*Mountains of mulch were moved!*



*Expansion of the Joanna’s Bananas Memorial*

### *It ain’t just the dirt...*

Making Lanikai’s Magnificent Gardens grow takes unending attention, organization, volunteer recruitment, docent care and feeding, hours of toil, buckets of sweat, and a bottomless pit of patience. All credit goes to **Mr. Parker Sawyer** and **Ms. Espie Chapman**, who are indisputably the heart and soul, the brains and brawn, and the wind beneath our wings....

## First Green Waste harvest a surprise

It wasn't until February of last year that we finally organized our Green Waste operation. It took quite a while to convince our custodians to buck the standard DOE protocol of bagging up in plastic bags all the leaves, grass, trimmings, etc., for disposal in the dumpster.

For equipment, we revitalized a couple of neglected Costco LifeTime tumblers and a homemade rubbish-can tumbler decorated by students. Nothing fancy. A big pile on the ground, dubbed "The Lump" was the depository of disintegrating burlap bags, between which garden waste, leaves, whatever, was sandwiched in from time to time.

So it had been six months of collecting green waste, spinning the tumblers and keeping everything moist. Since helping hands were going to be available at the Garden Party for screening, tumblers were emptied in a pile and The Lump was shoveled out and added on. Screening commenced.



Much to everyone's surprise, Ms. Mindy's hodgepodge of low-grade odds and ends produced 24 ten-gallon boxes full of very decent compost! Not quite rich enough to support flowering and fruiting, this product is just fine for landscaping and lawns. It was all hauled out to the front schoolyard and spread around.

The common practice of catching grass clippings for disposal elsewhere whenever the front lawn is mowed has steadily depleted the area of essential organic matter, in lawns a layer called *thatch*. Custodian Jeff says this is so it "looks good," but after his twenty years (likely totalling 50 years under his predecessor ) of removing the only nutrients available to the grass with no replenishment in sight, the ground is as hard as cement with no moisture retention capabilities nor substrate to support the soil organisms that support plant resiliency. After only a few days with no rain, everything is dust.

Twenty-four boxes of compost will do little to reverse decades of depletion but it can't hurt. Every effort will be made to change the current mowing practice so that grass clippings will be left in place.

*The Lump was replaced by two modified, repurposed ProtaPods – relics from the Pearl City High Black Soldier Fly project – to keep the decomposing material off the ground. Roots from the nearby monkeypod tree had invaded The Lump from below.*



*Parents got a chance to try their hand at screening compost, the popular Zero Hero Service Activity assigned every year to 4th Graders.*



## Bottom line for August 2016

This report covers the period from July 29 through August 31, 2016. There were 22 school days during this period.

During this interim **2,407 pounds** of food waste was collected and processed via vermicomposting and hot composting technologies. This is also the school year total to date and represents a 100% landfill diversion rate.

Our lunch provider is now servicing two additional schools who have no systems in place to process prep waste. We have taken on that additional load – averaging 120 pounds a week – as a courtesy as Shannon who cannot in good conscience throw it out. Two new Pipeline POD worm bins have been started up that will in time absorb 50 pounds. The rest will go into the hot compost piles.

- 100% of all HI-5 cans and bottles were collected and redeemed
- 100% of all green waste was recovered.
- Only 50% of all paper and cardboard waste was collected and processed. The tremendous glut of paper and cardboard backlogged at the end of last school year and generated at the beginning of this one was absolutely overwhelming and impossible to deal with given our current resources. Half of it was dumpstered in August because there was no time to process it and no place to store it.

### Record harvest and strong sales

The first week of August, all the worm bins were harvested and generated a record yield of 566 pounds of premium vermicast. Yellow, our largest compost pile to date, yielded over two cubic yards of rich, finished soil amendment. Most of this material was screened and packaged for sale within days. With the addition of compost tea and worm bedding sales, a total of **\$1,215** was added to the Garden Fund account.

### Serious setback

With the unwelcome reappearance of single-use food service items, we are feeling awash in disposable trash, the volume of which has gone up considerably. Hopefully, the dishwasher installation issue will be resolved quickly.



Sixth grader **Jake Graham** has been appointed official Brewmaster for the year. His job is to manage the weekly compost tea brewing, dispensing, and clean-up, and to teach other kids how to do it. Parents called in their reservations for gallons of tea the very first week of school and nearly every tea batch has sold out since.



The 28 sixth grade students who bring home lunches tracked their disposable rubbish for 10 days. They collected 120 pieces of mylar, 113 pieces of soft plastic, 64 pieces of hard plastic, and 90 pieces of Everything Else, which was mostly non-biodegradable juice or milk drink containers.

This experiment will be repeated later in the year to see if numbers go down following a rubbish reduction promotional campaign.