

# **WRRAP Compost End Use and Education on Campus**

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**Abstract:**

Since the 1970's Humboldt State University has been aware of the need for waste reduction measures in order to save money on waste transportation and landfill fees. One step to reduce our waste stream was the establishment of the Waste Reduction and Resource Awareness Program (WRRAP). By diverting fruits, vegetables, and other food products, as well as paper products from the waste stream to an on campus composting system, WRRAP has been saving over 5000 lbs of waste from going to landfills every semester. Not only does the waste diversion program save money for the campus on shipping and dump fees, the program also turns the diverted waste into usable compost. The purpose of this project is to establish a sustainable end use for the finished compost, as well as to increase student awareness of the waste diversion program and the composting process.

**Problem Statement/Background****Background Information:**

Nationally, on campus gardens are becoming more popular across the country. On campuses, such as Wisconsin University, and Mt. Holyoke, Stanford, and Harvard, and Chico State, students have diverted their waste stream into compost, and used that to feed their on campus gardens for education and for food.

At Mt. Holyoke University in Massachusetts, a garden was constructed specifically for education purposes. Their goals include... "promote {ing} environmental sustainability, healthy food choices, and sustainable lifestyles through organic farming practices." This project was successful project in that it promoted awareness about community building through educational gardening and composting.

Another project was completed at the University of Alaska Anchorage, where the students used raised beds to grow chard, radish, and lettuce. This shows the feasibility that HSU can grow even in a colder, temperate rainforest climate.

At CSU San Jose, students on campus started a campus community garden which eventually transformed in to an urban non-profit community garden to empower the community to grow their food independently. A short distance away, Stanford University also has a gardening program with raised beds on campus to support independent gardening. Harvard University also composts on campus and uses the finished compost to fertilize on campus gardens. They have one of the largest and highest yielding campus gardens in the nation.

Statewide, Chico State University has the most successful composting and raised bed gardening center of all the CSU's. Chico State has diverted 176,000 lbs. of waste in 2008-2009. This project shows the effectiveness and feasibility of continuing and expanding composting and gardening on campus. It also shows that in order to increase the amount of food waste we can divert, we need to have an end use for the compost.

#### Composting Background at Humboldt State University:

- Composting at HSU started in 1978 at CCAT for small usage on the CCAT site.
- CRP collaborated in efforts to manage compost with CCAT
- In 2002 BSS Construction started, and CCAT was relocated. CCAT composting was cancelled from 2002-2007 because of the relocation.
- The CRP took over the composting project and moved the site north west of the Jenkin's House.
- 2007, administration threatens to shut down the composting site due to rat infestation.
- Tall Chief Comet was able to keep the composting project by relocating the composting site to the Redwood Bowl temporarily.
- It wasn't until 2010, that WRAAP (formally CRP) was able to construct a permanent composting site behind the Student Recreation Center (SRC).
- Currently, the compost site lacks raised beds and educational signage.
- Composting at CCAT was used for their gardens.
- When WRRAP came in, compost was able to be donated to grounds and other establishments in the community.
- Drop in compost collection occurred in 2007 when the compost site was moved to Redwood Bowl.
- Currently, the finished compost at the SRC site is not being used.

#### Most recent HSU Student Garden Project:

At Humboldt State University, many students have conducted past projects in an attempt to provide educational gardens for students. In the past, the projects have failed to be sustainable in the long term. In spring 2010, for the Environmental Science 410 class, the "Sustainable food for Students, Organic Gardening for Humboldt State University" team aimed to establish an educational gardening location for students and to propel the sustainable gardening movement. In their words, this project was unsuccessful because the team did not have the resources to maintain the garden on extended school breaks. They then attempted to create a club, but were unable to establish the club by the end of the semester. However, they did submit a coherent plan, and were able to design a garden site that was approved by Plant Operations.

#### Problem Statement:

Since composting was introduced, students have had accessible input stations to dispose of their food waste, but lack the infrastructure to use the finished compost. Currently there is not an educational or functional purpose to our composting site. There is a general lack of understanding to the purpose and process of composting. We currently do not have use for the finished compost. If the finished compost has no end use there can be no educational value.

### **Goals and Objectives**

In general students at Humboldt State University are unaware of the compost facilities on campus that are available to them. Our project aims to educate students about the location and existence of the waste reductions resource programs composting site on campus, as well as to educate about the processes involved with composting, and the end uses for the compost. Furthermore, there is not an end use for the finished compost, and our group aims to have a practical application for the compost.

Goal #1: Educate students on campus about small scale composting from the food waste diverted through the WRRAP program:

#### **Objectives #1:**

To create an education component on campus to fill the educational gap in regards to composting by the end of the fall 2011 semester. We aim to educate 15% of the student population that there is a student run compost site on campus, and to educate 5% of the student population about the compost processes by the end of the spring semester.

Goal#2. To use the finished compost in a way that promotes sustainability on campus

#### **Objectives #2:**

To utilize the finished compost product from waste that is diverted from the WRRAP composting program by the end of the Fall 2011 semester. We will also weigh the alternative methods of achieving the stated goal.

### **Weighing Alternatives**

Goal 1: Alternatives: New educational signage

The creation of a new educational sign and or series of signs at the compost demonstration site would be very effective at educating students on the compost demonstration site and the general aerobic composting system. Depending on where the sign was located it would be a great tool for students to understand the demonstration site processes. If the sign was to be designed and approved it would have to be made of a durable weather proof material, adding to the cost. This would be an opportunity to add new educational information that is not currently covered by the approved WRRAP signage. If this signage was created as a compliment to the already agreed WRRAP signage, it would allow room for a more comprehensive education than merely a title sign. The downsides of this alternative are that it will be costly and the prices would most likely fall on WRRAP. The amount of bureaucracy that has been involved with getting the already planned WRRAP demo sign has been lengthy. It may also be harder to get support for an additional sign, with the preexisting proposal for the demonstration site title sign already under way.

This alternative would not be cost effective due to the price of long lasting signage that can with Humboldt weather. It would not be impossible to get additional signage supported by WRRAP, but due to the cost and the preexisting proposal for the demonstration Site Sign already being designed the demand for an additional sign may be seen as overkill to the members of WRRAP. As discussed above the creation of an additional sign to support the preexisting proposal one would be have a tremendous educational ability. This sign last WRRAP well into the future making it lasting. It would have a decent chance of meeting the objective of educating 15% of the student population that there is a student run compost site on campus, and to educate 5% of the student population about the compost processes by the end of the spring semester because of the additional info and promotion an additional sign would add.

#### Goal 1. Alternatives 2: Add on to back side of existing proposed signage

Depending on how informative the information is on the back of the sign the educational value could be comprehensive to medial. The facts that will be on back side of the proposed compost demonstration site sign, will allow easy access to info without the need to explore the site. This will be far cheaper than creating a new sign, since the information on the sign will be crafted on to the backside of the proposed demonstration site signage. The only additional fees would be to get the backside information of the sign crafted on. The likelihood of this informational signage on the back of the preexisting proposed signage has already been discussed with decision makers as cost efficient and preferred. This project will not personally cost us any money, because the creation of sign will fall under WRRAP's budget. Some downsides include the possibility of the information being looked passed seeing as the information will be on the backside.

The cost of graphics on the back side of the sign will be encompassed by WRRAP. Also it will be utilizing the back side of the proposed signage opposed to creating a new sign to be put up, which will make it incredibly cheaper. The likelihood of the preexisting sign being created are almost guaranteed to creation of an informational backside has been discussed with relevant decision makers, and is fairly likely if a design is put forth. The educational value of signs will vary on the quality of work and assistance we receive. The fact that is it is going to be put on the back of another sign may decrease the amount of people who notice it, and hence slightly lowered our chances of meeting our objectives. The type of material that is proposed will likely allow the sign to last a number. Designing the backside of this sign will greatly fill the educational gap for the compost demonstration site. It will likely have a modest chance of meeting the objective of educating 15% of the student population that there is a student run compost site on campus, and to educate 5% of the student population about the compost

processes by the end of the spring semester because it will give name and information recognition to the compost demonstration sight. However it will be slightly less than that of goal 1's first alternate because alt 1 will create a sign that is next to the equipment and be visual from the parking lot. Hand out brochures to students

#### Goal 1; Alternative 3: Hand out brochures to students

Handing out brochures to students would be an effective way to get information out to a wider group of students. It will allow for better circulation of our mission by grabbing the attention of the students. Handing brochures out could have more of an educational effect on a larger group people than word of mouth. We would need to make sure we have enough to give to almost every student. We could stand in the quad area where groups form and hand out information all the time. We could also give brochures out in classes that we think would have interests in the compost site like soils, biology, and botany. Brochures can be quick and easy way to distribute information on composting.

Brochures can be an effective tool for getting information out there, but it doesn't always guarantee that the reader will actually participate in the activity. Most students will skim the brochure and throw it away, making brochures a wasteful tactic for marketing an idea. The amount of money spent on paper would be expensive especially if we don't have a guarantee that the students will even read the information.

#### Goal 1; Alternative 4: Posters around school

Posters can be a great alternative to getting information out to a larger audience. By making the information bright and exciting people are more likely to stop and read the headlines. It would save on costs because we would not be printing a huge amount of paper as we would with brochures. Posters could spark creativity which could interest more people in the composting program. However, there is no guarantee that the campus community would stop to read the posters. Another drawback with using posters is the potential of wasted material if the posters do not serve their educational purpose. The university has a high density of students and there are places on campus where students have limited time and space which can limit the amount of views the posters could get.

#### Goal 1; Alternative 5: Announcements in class

An alternative for extending composting education is to make announcements in a variety of classrooms. This form of education could have the potential to provide education to an incredibly large audience depending on how often and how many announcements we make. The announcements would be given by volunteers from our group, and therefore would be cost effective. However, because students or professors or students might find our announcements annoying there would be a negative connotation with becoming educated on the compost process. Another problem we could face is accessibility to classrooms. The professors and lecturers more open to the idea, would be science classes, most of whom have more knowledge on composting than, English, Art, Math, and Theater; the classrooms we would have trouble accessing. This educational alternative could be effective for this semester, but with no funding, the announcements would discontinue after the semester. Also we do not have a place to direct students for more information on composting or to continue their interest. Going through our criteria this alternative

would be cost effective, realistic for a short period of time, would provide education, but would not be sustainable.

#### Goal 1, option 6: compost website

For an education goal, upgrades to the WRRAP composting website could help us reach our objectives. For upgrading a website, there is relatively low cost. It would take time to develop the information to provide on the website, but the only financial cost would be hiring a web-designer to update the website. Updating the website would not be as wasteful as distributing handbills or hanging posters around campus, which has a short lifespan. Updating the website could also enable a larger audience than what would be possible if we were to only promote on the campus. Having a website about composting allows people anywhere in the world to use our project as an example to learn from.

However, there is no guarantee to reach a definitive number of people, whereas passing out handbills at least assures that the information is in their hands. Students have access to Internet in the library, but there is no incentive for students to visit the website, limiting the target audience to those students at HSU that are aware of the WRRAP program, who are interested in composting on campus. For these reasons, we decided that this solution would not achieve our objectives.

#### Goal 2; Alternative 1: Distribute compost to students to make gardens

Distributing WRAAP's finished compost to students on campus has some great advantages, but also has its disadvantages. The compost would be accessible to everyone on campus, so there would be equal opportunity to anyone who wanted to start a garden or do as they please with their compost. This would also provide hands on education to those students. However it would only provide education to those who wanted it or already know how to utilize the finished compost. Another disadvantage is that we might not be able to get rid of all our finished compost if only a small portion of students decide they want the finished product. We are not guaranteed of educating the percentage of students in our objectives nor are we distributing all our finished compost, both of which are our main goals. One, to use the finished compost in a way that promotes sustainability on campus, and two, Educate students on campus about small scale composting from the food waste diverted through the WRRAP program. On the positive side, distributing the compost might be at a low cost, because it is up to the student to do what they want, and provides some educational value; however the effort WRAAP would have to contribute to effectively disperse the compost is not sustainable or realistic.

#### Goal 2; alternative 2: Make a garden bed and use compost to grow plants

If we were to make a garden demonstration site in the current compost area, behind SRC, we would be able to address both of our goals and objectives. The site would be available to the entire student body, and would provide education through demonstrating a use for our finished compost. Because the beds would be on site, there would be no additional transportation cost. Extra maintenance costs could be a potential problem but would be under WRAAP's jurisdiction. Contamination could be a potential problem in using the compost, as WRRAP continues to improve the quality of the finished product. The cost of materials has potential to stay within the budget if our group gets donations. The site would not only create something new but has the potential to raise awareness on the importance of composting on campus.

#### Goal 2; Alternative 3: Give to CCAT



Giving our finished compost to CCAT, who already has a compost of their own, would ensure education for the students who learn from CCATs educational sites. The finished compost would have an effective end use and could be continued through a prolonged period of time. Disadvantages to the alternative are, first, the transportation costs of bringing the finished compost from the SRC to CCAT, which might increase costs for WRRAP. Second, there is no guarantee that CCAT would both agree to this and be able to use all our finished compost, since they already have their own. WRAAP's compost is still working on decontaminating, and there would be a high risk of contaminating CCAT's current educational garden. With CCAT's cooperation and demand for our finished product, this alternative would satisfy our goals. Under our criteria, there would be an increased cost due to transportation, it could be realistic, and it will have educational value, but not necessarily sustainable due to potential noncompliance from either party.

#### Goal 2: alternatives 4 Saving for upcoming community garden

Saving the completed compost product for the potential HSU community garden, would guarantee an end use for the finished compost created on campus. This would help us reach our goal of promoting sustainability on campus. Our educational goals could also be met with this alternative. Signs indicating the steps in composting, where the compost came from and how the compost arrived at the site would help provide the educational component of our project.

The transportation costs associated with this use of compost would be slightly higher than using the end product in the composting area, but would not be as costly as sending the compost to the Arcata community garden, Potawot Health Village or Mad River Hospital. The feasibility of this use for the compost is questionable, due to the fact that HSU has yet to approve plans for this community garden. If approval is denied, we may be stuck with a lot of compost that we have no designated use for.

As with most of the other alternatives, this one has its advantages and drawbacks. The educational value and potential for sustainability make this an alternative worth considering. However, the feasibility and transportation costs associated with this option make it not ideal for meeting our goals and objectives.

#### Goal 2 alternative 5: Distribute to F and 11th community garden in Arcata

Donating our compost to the Arcata Community Garden would provide an effective end use for finished compost. The size of the garden should allow us to distribute all of our potentially useful compost. Educational signs will provide citizens of the community with knowledge of the composting process and will inform them of the beneficial uses of compost.

As with some of the other alternatives, this one could have potentially high transportation costs. The finished compost must be transported to the community garden. The lack of funds associated with this project may prevent any of the compost from reaching the community garden. Another drawback to this alternative is edible plants require high quality compost. Any contamination in the finished compost could prevent it from being usable in the community garden.

The Arcata Community Garden is within 2 miles of the HSU campus. Although this is in close proximity to the school, students may not pass the community garden or even have any idea that it exists. This would have major implication on our educational goals and objectives.

The feasibility and transportation cost are the main drawbacks of this alternative. The distance of the community garden from the school will hinder our educational goals. Due to these components, this alternative does not appear to be the best option.

#### Goal 2, option 6: Give to Potawat

Giving our finished compost to Potawat (Native American community for sustainable living) has its merits. They could use the compost to grow food in their garden, and our compost would have an effective end use. Not only would the compost be useful for Potawat for growing vegetables, using the compost provided by our team would come with educational benefits. They could mention that the compost started as food waste that was diverted from Humboldt State University (HSU) through the WRRAP (Waste Reduction) program. This would generate support for WRRAP, it would teach young people about food diversion and composting, and we might be able to have a consistent consumer of the compost product.

However, because of the location of Potawat, there would be transportation fees associated with delivering the compost to the site. Although the site is only about a mile from the HSU campus, the costs would be associated with hiring a driver, and finding a truck to use to haul the compost. Furthermore, because of the inconsistency of the quality of the finished compost, Potawat may not want to risk the possibility of contaminating their garden. If they did choose to use the compost, there is no guarantee that they will use the amount of compost that we are supplying—They may only need a small percentage of our compost, or their demands may exceed our capabilities to produce enough compost needed for their facilities. For these reasons, we do not believe that this would be the best end use for the finished compost.

#### Goal 2, option 7: Donating to Mad River hospital

The same arguments can be made with donating the finished compost to the garden on site at the Mad River Hospital in Arcata. On one hand, the compost could provide valuable nutrients to their soil, increasing their productivity at a low cost, or free. The only associated cost would be transporting the compost from HSU to Mad River Hospital. If they were to use the compost, they hypothetically could have a consistent stream from the WRRAP site, but there is no guarantee of this. The donated compost could serve as an educational tool to those who use the garden, but the purpose of the Mad River Hospital garden is to produce vegetables, not to educate their patients.

This being said, quality of the compost is also a consideration to be made. We cannot guarantee quality from compost at this point, and Mad River Hospital needs a guarantee of a certain grade of compost to be able to grow vegetables for their patients. Because of our inability to assurance quality from our compost, it seems unlikely that Mad River Hospital will accept donations. For these reasons, we do not believe that this would be the best end use for the finished compost.

### **Implementation Strategies**

Alternative #1: Build Garden beds on site

Barriers:

1. lumber donation
2. acquiring space
3. design of garden beds
4. design of sign
5. signage approval
6. signage materials
7. re organizing site layout
8. AS approval

**September**

Activity	Date
Visited composting site	9/8/2011
Create tentative design of compost site	9/13/2011
Complete problem statement and background	9/22/2011

**October**

Activity	Date
Meeting with TC	10/4/2011
Complete list of goals and objectives	10/6/2011
Complete weighing alternatives	10/23/2011
Create draft of materials letter	10/24/2011

**November**

Activity	Date
Deliver letter once corrected and approved	11/8/2011
Signage proposal	11/16/2011
Flag/ Design project area	11/29/2011

**December**

Activity	Date
Prepare for presentation	12/1/2011
Construct garden beds and fill with compost	12/3/2011

(9/8/2011) Number one, we visited the site, evaluated the physical condition, the space available, and problems we might encounter. (9/13/2011) after visiting the site we created a tentative design for the composting and garden area through photo shop to layout dimensions of the garden beds. A barrier we encountered making the design was inaccuracy with scaling the dimensions. 9/22/2011 we completed

our background and problem statement, we had difficulties researching for the background, and finding relevant information pertaining to a garden using compost from diverted waste. (10/4/2011) We met with Tall Chief Comet to evaluate our project and goals we wished to obtain. We established the feasibility of constructing a gardening site alongside the current composting site behind SRC. We discussed potential materials needed along with quantities and where they could be donated from. (10/6/2011) When completing the goals and objectives, the difficulties were differentiating between goals and solutions, and coming up with obtainable objectives. (10/23/2011) We evaluated our alternatives through weighing options with our criteria and objectives in mind. The biggest problem we encountered was determining which alternative to use for obtaining our education goal. (10/24/2011) While drafting our letter of intent to numerous local lumber companies, we found it difficult to request a donation in a professional manner, while representing WRRAP at the same time. (11/8/2011) Potential barriers to obtaining donations could include a company's financial situation, and could result in not acquiring a single donation.

Alternative #2 : Bring compost to CCAT

Barriers:

1. Collaboration issues
2. CCAT's willingness
3. CCAT's busy schedule
4. Transporting compost
5. Time constraints
6. May not satisfy WRRAP's education goals
7. AS approval

Date:	Action:
11/15/11	The group Met with a CCAT, Eric Reccia, Tall Chief, Morgan King, and Braden Pitcher to discuss collaboration between organizations, and set guidelines for the memorandum of understanding.
11/15, 11/17	The group wrote a draft MOU, to be edited by TC and Morgan King
11/20- 11/27	Continuing edits made to MOU
12/01/11	Max worked on Monitoring and evaluation, while edits were made to paper, and work on presentation was done by the group.

(11/8/2011) Met with a CCAT representative, Scoped the site, gardens are in need of more compost, transportation of compost would be a barrier. (11/10/2011) Meet with TC to go over specifications, and set up a plan for new alternative. (11/15/2011) need to attend a group meeting with CCAT and WRRAP to come to a consensus for the most effective use of finished product, and to satisfy both parties. (11/17/2011) start planning project with CCAT .

## **Monitoring and Evaluation:**

**Goal 1:** educate students on campus about small scale composting from the food waste diverted through the WRRAP program, and to create an education component on campus to fill educational gap in regards to composting.

Objective 1: We aim to educate 15% of the student population that there is a student run compost site on campus by the end of the spring 2012 semester.

Monitoring Objective 1: Selective survey in general education classes will be distributed in week 1 to find baseline data of what percentage of students are aware of the WRRAP compost site. Another survey will be distributed in week 14 in a similar general education class to see if there was a 15% increase.

Evaluation: If the percentage of students aware of the WRRAP compost site is less than 15%, we could increase distribution of fliers and pamphlets on campus, and conduct additional surveys.

Objective 2: To educate 2.5% of student population about the compost processes by the end of the spring semester

Monitoring Objective 2: Because the compost will be distributed to CCAT, and CCAT hosts workdays and tours twice a month, we are expecting 200 students a semester to be exposed to the processes involved with composting end use, based on CCAT's estimates. If this is true, than 2.5% of the roughly 8,000 students at HSU will be educated about the compost processes by the end of the spring semester. Because we have a contractual agreement with CCAT that they will spend time on their tours and work days teaching participants about the composting process, we will be guaranteed that those on the tours and workdays will be part of the percentage educated, and no survey will be needed.

Evaluation: If the percentage of students aware of the processes of composting is below 2.5% after the spring semester because of low workday or tour attendance at CCAT, we will either need to promote CCAT tours and workdays through announcements and/or fliers, or we would have to conduct surveys to reveal the percentage of students who are educated about the process of composting.

**Goal 2:** To use finished compost in a way that promotes sustainability on campus

Objective 1: To utilize the finished compost product from waste that is diverted from the WRRAP composting program by the start of the spring semester.

Monitoring Objective 1: To monitoring objective 1 for goal 2, we simply need to verify that the finished compost coming from the WRRAP center is being properly used in the CCAT garden site. Also need to verify that compost is being delivered once a month.

Evaluation: If for some reason CCAT cannot fully utilize all the compost, we will donate the products to local establishments or students.

## **Results**

At the end of the spring 2012 semester, we will see if all our objectives are met, which defines if both of our goals have been achieved. The major result of our project is that compost from the waste diversion program put on by WRRAP will be transported every month to CCAT to be used for their demonstration gardens. This result indicates that we will have met our goal of having an effective end use for the finished compost. In order to see if we met our objectives for goal two, monitoring processes need to take place during the spring 2012 semester. Once we have surveys complete as to the awareness of HSU students to the student run compost site, we can evaluate if we have met the objective of educating 15% of students about the compost site. Similarly, we will have to wait until the end of the spring 2012 semester to see how many students took tours or participated in work days at CCAT. We are assuming that those who participated in the tours and work days would be educated by CCAT volunteers about the process of composting, which was our objective for goal 1. Based on their estimates of 15-20 students per workday, and over 50 on tours, both occurs once a month, this would generate about 200 students a semester learning about the process of composting. If this true, then we will have met our goal of educating 2.5% of students at HSU about the processes of composting. In order to truly see the results of this project, monitoring during the spring 2012 semester must take place.

## **Conclusion:**

This project taught our group a lot about the importance of clarity, communication, and accountability. We have the opportunity to learn about the inter-working of programs on campus by having meeting with Jaymes Silveira and Tall Chief Comet. In meeting with Jaymes, we were exposed to the fact that we were not the only group trying to implement a gardening site. It also became apparent that having more than one garden sites was not a favorable option for the administration. In the end, we were unable to construct raised garden beds, because the administration wanted to see more collaborative efforts among groups instead of having different projects simultaneously. However, we were able to achieve our goals of having an end use for the finished compost, and to educate students about composting by donating it to CCAT. This was not our ideal end result. Our group feels like sustainable facilities like composting and gardening beds should not be centralized, but distributed among the campus, as we would likely see in a sustainable community. Although we wholly support CCAT, campus sustainability cannot be achieved it is an isolated entity on the campus.

## **What we would have done differently:**

If we were to start this project over again, we would have immediately went to the decision makers and found out exactly what documentation was needed in order to construct raised beds. We realize now that in changing any small thing on campus, proper approval must be attained. Furthermore, early collaboration with AS, CCAT, and TC Comet would have put us in a better position to negotiate with the administration in terms of appeasing their request for collaborative efforts. The earlier the group gets approval from the administration, and the earlier a group collaborates with the stakeholders, the

smoother the project will go, and achieving the end goal would be more likely.

**Future Implications:**

With the MOU in place, finished compost will be delivered every month to CCAT, which will help to expand these gardening site. In the future, we would like to see gardening projects grow beyond the scope of CCAT, as their directors admit that they are quickly running out of gardening space. We would like to see the continuation of WRRAP supplying compost to CCAT, but additionally, would like to see the raised garden beds behind the SRC be constructed. The administration admitted that the main barrier to the raised beds was the lack of collaboration with CCAT. Theoretically, if the compost delivery system is successful, and CCAT runs out of additional gardening space, this would present an opportunity to resurface the possibility of raised garden beds by the WRRAP compost site. We hope that our findings and research will make it easier to initiate student run compost and gardening sites.

**Hours**

	Max	Tanja	Andrew	Heather	Alex
Paper:					
background:	3.5	3.5	6	3.5	4.5
goals:	1	1	1	1	1
alternatives:	2	2.5	2	2	3
implementation	1.5	1.5	1.5	1.5	1.5
monitoring/eval	1				
appendix/other	2		2		
editing	1	4			
Total Paper:	12	12.5	12.5	8	10
Meetings:					
TC 10/03			1		
Jayme 10/11	1	1	1	1	1
TC 10/20	1	1	1	1	1
Jayme 10/24				1	
Jayme 10/25	1	1	1	1	1
CCAT 11/05	0.25	0.25	0.25	0.25	0.25
CCAT 11/15	1.5	1.5	1.5	1.5	1.5
Total Meetings:	4.75	4.75	5.75	5.75	4.75
Presentation:	4	3	3	4	3
Other:					
emails:	1	1	3	1	1
pictures				1	
general research	2	2	2	2	2
Total Other:	4	3	5	5	3
Total:	23.75	23.25	26.25	21.75	20.75

## Appendix

### Letter of Intent to 'Do it Best Lumber'

Dear Do It Best:

Last year the Waste Reduction and Resource Awareness Program (WRRAP) diverted over 5000 pounds of food waste, producing an incredible amount of finished compost. WRRAP is an on campus program that diverts food waste on campus to what would have gone to landfills and converts it to composting material. WRRAP educates students on campus about waste reduction, resource awareness, and zero waste practices through several branches. Reusable Office Supply Exchange (ROSE), saves thousands of dollars for students in education material costs, and the "Take Back the Tap" program educates people about the benefits of healthy local water. Currently WRRAP is planning to expand the waste reduction message by improving the compost demonstration site.

We are a team of students working on a class project to assist the campus composting program at Humboldt State University. Currently, we are working on our senior project to provide garden beds for the composting facility. The end goal of our project is to educate the campus community on waste diversion through the demonstration site. We will be constructing raised garden beds demonstrate the fertilizing benefits of compost to the campus community. In addition to the garden, the demonstration site will include educational signage to not only promote waste diversion but also to illustrate the composting process.

After weighing various alternatives, we have determined that constructing five 18 inch high raised beds would be optimal for our designated location and for the amount of compost we are producing. In order to construct the beds in our desired dimensions, we will need 660 feet of 2x6 inch of pressure treated planks.

The dimensions of each of the five beds are as followed:

1. 10ftx3ftx18in



2. 14ftx3ftx18in
3. 16ftx3ftx18in
4. 19ftx3ftx18in
5. 24ftx3ftx18in

In addition to the wood, we will need 500 square feet of hardware cloth, and 15 pounds of galvanized 3 inch deck screws.

These items are what we are aspiring to obtain for our project by donation. Anything your company can help us with would be greatly appreciated, and we would be eager to help acknowledge your donation placing your company on the donor list displayed on our permanent educational sign. The Waste Reduction Resource Awareness Program would benefit greatly from your donation, as well as the entirety of the campus community. Thank you for considering our request, thank you!

Sincerely,

Andrew Demos  
Heather Weiche  
Alex Duncan  
Max Vecchitto  
Tanja Hopmans  
&  
WRRAP

#### **MOU between CCAT and WRRAP**

#### **Memorandum of Understanding**

This is an understanding to collaborate on the campus composting program,

Between

Waste Reduction & Resource Awareness Program (WRRAP)

And

Campus Center for Appropriate Technology (CCAT)

**Purpose:** The purpose of this document is to ensure mutual responsibility between both parties, and to form a partnership between the two parties to efficiently and cooperatively establish a collaborative composting program. This program would not only utilize portions of WRRAP's finished

compost but would provide CCAT with ample resources for CCAT's gardens. The program would also fulfill each party's goal to educate the campus community.

Both CCAT and WRRAP should ensure that these activities comply with campus regulations and each programs mission statements.

**MOU term:** This arrangement will be in effect from fall 2011 until dissolved by either party, and will be jointly re-assessed on an annual basis.

**WRRAP responsibilities:**

- 1) Meet with CCAT a minimum of twice a semester to discuss logistics, educational goals and collaborative practices (Compost Director, Compost Coordinator, and relevant Compost Operator)
- 2) Participate in joint work days in the CCAT garden (Compost Operator)
- 3) Deliver finished compost for use in the CCAT garden throughout the entire year, including summer (Compost Operator)
- 4) Facilitate a comparative analysis of WRRAP-generated and CCAT-generated compost samples (Compost Director and or Compost Coordinator)
- 5) Participate in CCAT's educational programs, where appropriate (Compost Director, Compost Coordinator, Education Director, Education Coordinator)
- 6) Design informative signage for waste diversion on campus, displaying program partnership (Multimedia Editor)
- 7) Plan and implement WRRAP educational events on CCAT site (Compost Director and or Compost Coordinator)
- 8) Provide CCAT access to the WRRAP compost demonstration site for educational purposes (Compost Director)

**CCAT responsibilities:**

- 1) Provide WRRAP access to the gardens for the express purpose of educating the campus community on the use of compost (CCAT relevant position)
- 2) Provide an on-site location to store WRRAP-generated finished compost until it is used to amend garden and landscape soils (CCAT relevant position)

- 3) Co-advertise WRRAP's waste diversion program on tours and student work days (CCAT relevant position)
- 4) Facilitate opportunities for WRRAP to educate CCAT staff and volunteers on soil amendment aspects (CCAT relevant position)
- 5) (CCAT relevant position)
- 6) (CCAT relevant position) Utilize WRRAP-generated finished compost throughout the entire year, including the summer (CCAT relevant position)
- 7) Provide adequate space for interpretive signage describing the compost process (CCAT relevant position)

**Collaborative Goals**

- 1) To establish a functioning garden through CCAT, using WRRAP's finished compost
- 2) To illustrate the benefits of WRRAP's finished compost on gardens
- 3) To demonstrate the benefits of organic waste diversion on campus
- 4) To strengthen CCAT's workshops by providing them with educational signage and in depth education
- 5) To demonstrate the abilities of green oriented programs to strengthen an overall sustainable campus
- 6) To strengthen alliance of AS programs to increase efficiency, cooperation, and collaboration

**Effective Date and Signature**

This MOU shall be effective upon the signature of CCAT and WRRAP authorized officials. CCAT and WRRAP indicate agreement with this MOU by their signatures.

\_\_\_\_\_

Authorized signature of CCAT Director

\_\_\_\_\_

Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Authorized signature of WRRAP Compost Director

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of CCAT advisor TallChief Comet

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of WRRAP advisor Morgan King

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

## Important Emails between Group and involved parties

### Site Signage Follow-up

Sep 13

Hello,

I was able to meet with Marcom and have finalized comments associated with the design of the sign you are proposing.

Here are our comments:

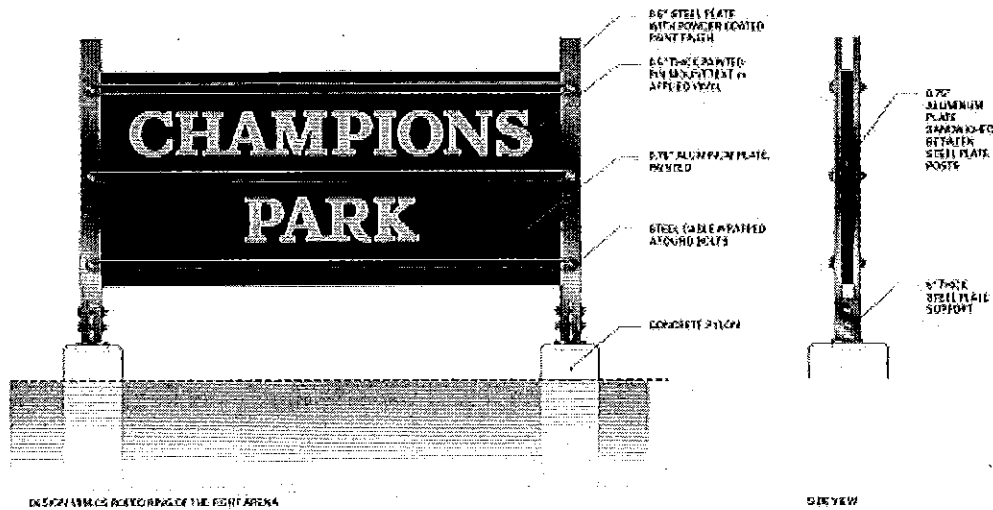
1. Ensure the left and right margins of the sign (beyond the letters) are equal.
2. Include the Humboldt State University logo (attached) Humboldt should be in white; State University should be brown at 50% screen. Please the logo immediately to the left of the WRAPP logo.
3. Revise Waste Reduction and Resource Awareness Program to read "Waste Reduction & Resource Awareness Program".
4. At the lower left hand corner of the sign, ensure all lettering is green (do not use white for ".", @, or ).
5. Maximum total signage size allowed shall be 24 inches tall by 36 inches wide.
6. Framing around the sign shall be similar to the photo attached (materials to be wood; do not use steel cable).
7. Provide final sign artwork for approval prior to production.
8. Set-Up on-site meeting with TC and myself to finalize the approved location.

Please let me know if you have any questions,

TRACI FERDOLAGE | Director, Campus Planning & Design  
HUMBOLDT STATE UNIVERSITY | 1 Harpst Street Arcata, CA 95521  
Office: [707.826.4111](tel:707.826.4111) | Mobile: [707.267.4146](tel:707.267.4146) | Fax: [707.826.5703](tel:707.826.5703)  
E-Mail: [traci.ferdoiage@humboldt.edu](mailto:traci.ferdoiage@humboldt.edu)



*Please consider the environment before printing this email.*



**CHAMPIONS PARK  
MONUMENT SIGNS**

DATE: 07/27/2011	DESIGNER: J. H. HANSEN	PROJECT: CHAMPIONS PARK	CONCEPT: <b>CONCEPT 4b</b>
AGE: 01/21/2011	FOR: SUSTAINABLE DESIGN	SCALE: 1/4\"/>	

**Compost Site Proposal Letter**

Sep 14

Andrew,

The copy of the original letter Luke sent to the administration I gave you at the meeting today is only one part of the documentation I had mentioned to you that explained the original intent of the CDS and how it would be used. The other document was a draft sketch of the site layout, which showed the raised beds in relation to the compost bins, shed, etc. I thought Luke had sent me a scan of that hand-drafted sketch, but I did not find it in any of my emails. A hard copy of it was with the letter in the CRP office back in 2008, when all the process was being worked on.

The other location that mentioned constructing raised beds at the CDS was the CRP budget in both the 2008-9 and 2009-10 years. My copy of the 08-9 document did not mention dimensions, but described the general activities and provided estimates of the supplies budget expected to be spent on the new sign and the materials to construct beds. I could not find a copy of the 09-10 version, but remember it from memory being there as well. Dig up the office copies of these documents to look at what was envisioned.

If you want assistance in coming up with new dimensions (and associated material lists) for raised beds at the site now, just let me know and I can go up there with a tape measure and do some rough layout. TC

--  
TallChief A. Comet  
Sustainability Office Director  
Humboldt State University

1 Harpst Street  
Arcata, CA 95521  
707-826-5920  
tcc4@humboldt.edu

From: **Tall Chief Comet** <[TallChief.Comet@humboldt.edu](mailto:TallChief.Comet@humboldt.edu)>  
Date: Wed, Sep 14, 2011 at 4:46 PM  
Subject: CDS raised beds  
To: Andrew Demos <[abd11@humboldt.edu](mailto:abd11@humboldt.edu)>

Andrew,

The copy of the original letter Luke sent to the administration I gave you at the meeting today is only one part of the documentation I had mentioned to you that explained the original intent of the CDS and how it would be used. The other document was a draft sketch of the site layout, which showed the raised beds in relation to the compost bins, shed, etc. I thought Luke had sent me a scan of that hand-drafted sketch, but I did not find it in any of my emails. A hard copy of it was with the letter in the CRP office back in 2008, when all the process was being worked on.

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--  
TallChief A. Comet  
Sustainability Office Director  
Humboldt State University  
1 Harpst Street  
Arcata, CA 95521  
707-826-5920  
tcc4@humboldt.edu

**compost Demo site sign revision**

2 messages

**Jacob Stadfeld** <burniemcburn@gmail.com>  
To: Sarah Niznik <xfirexrabbitx@yahoo.com>,  
tcc4@humboldt.edu, Andrew Demos  
<abd11@humboldt.edu>

Thu, Sep 15, 2011 at 9:26 AM

Hey all,

Here is the sign with the requested revisions. My only concern is that the logo for HSU that they said was attached is not there, so I used this one as a substitute until we get ahold of the full rez copy. Any way I should go about doing that?

Jacob



From: **Jaymes Silveira** <jas195@humboldt.edu>  
Date: Mon, Sep 19, 2011 at 6:57 PM  
Subject: HSU Campus Garden  
To: Richard Hansis <richard.hansis@humboldt.edu>

Prof. Hansis,

This is Jaymes Silveira, an HSU undergraduate student and Representative of the College of Natural Resources and Sciences on HSU's Associated Students council. I don't know if you remember me, but I took your Environmental Practicum class several semesters ago, with my project being the grocery bag tax in Arcata.

I remember that one of the projects of another group was the campus garden idea, that had been carried out several times by other groups throughout the years, and that you had at least one complete binder from a previous group on how that group set it up. This year, AS is interested in starting a long-term sustainable campus garden project similar to previous projects, but that differs in that it will be designed to be an ongoing program throughout future years. If you would be willing to provide us with the information and contacts previous groups have/have used in order to enhance, speed up, or augment our plans, as well as directing any students currently interested in this idea, to us, we would be most grateful.



Jaymes Silveira

--

Richard Hansis  
Environmental Science and Management  
Humboldt State University  
Arcata, CA 95521  
707 826-4148  
Fax 826-4145  
Latitude: 41N, Longitude: 124W; Humboldt Bay Watershed

"Every time I see an adult on a bicycle, I no longer despair for the human race." H. G. Wells  
It is difficult to get a man to understand something when his salary depends on his not understanding it. Upton Sinclair

----- Forwarded message -----

From: **kelly karaba** <kellykaraba@hotmail.com>  
Date: Sat, Sep 24, 2011 at 2:13 PM  
Subject: garden bed ideas  
To: CRP Andrew Demos <abd11@humboldt.edu>

good article with attractive looking beds:

<http://www.popularmechanics.com/home/how-to-plans/lawn-garden/4308264>

Other good building materials for raised beds are: old, old growth redwood railroad ties, because they are so thick it will take them a very long time to rot. Also redwood logs can be made into raised beds. They are round but they will hold soil, take a very long time to decompose and they double as a bench. You'll want to strip the bark off of them though because bugs will hide/live under the bark and most likely eat what you are growing. Railroad ties can be found at ReSale Lumber on 101 between Arcata and Eureka. I do like the thought of using a composite timber-made of a blend of wood fiber and UV-protected polypropylene (100% recycled). They are attractive - with an organic texture and color - and durable. Plus, unlike pressure-treated wood, there are no dangerous chemicals. On the phone I suggested a height of 2.5'-3' but anywhere between 1.5'-2.5' is better. 3' is a little high. Ok hope this helps. Keep up the good work Andrew.

Kelly

Tall Chief Comet <TallChief.Comet@humboldt.edu>  
Reply-To: TallChief.Comet@humboldt.edu  
To: Andrew Demos <abd11@humboldt.edu>

Off hand I would say there was a miscommunication because I have a hard time believing she would expect the beds to be 36" high. Most garden plants would rarely put down roots more than 12" deep, so you are really looking at the capacity of the soil to hold moisture, keep a consistent temperature, and develop a good microbe/worm/fungal ecosystem. I don't think I have ever seen a raised bed higher than ~18 inches for ordinary gardening. You may want to clarify the size with her or let me ask a gardener at Plant Ops for a third opinion.

I agree with the 1/4" hardware cloth in the bottom - 2 layers. TC

{Quoted text hidden}

--

TallChief A. Comet  
Sustainability Office Director  
Humboldt State University  
1 Harpst Street  
Arcata, CA 95521  
707-826-5920  
tcc4@humboldt.edu

>> On Sat, Oct 1, 2011 at 3:00 PM, Tracie Brandt <[trb34@humboldt.edu](mailto:trb34@humboldt.edu)> wrote:

>>> Hello Andrew,

>>> Hope your weekend is going well! I have been thinking about the

>>> composting

>>> site garden, and wanted to know what you are thinking and who you might

>>> be

>>> working with? We should probably have a meeting soon to figure out a

>>> plan of

>>> attack. Let me know when you would like to schedule one or if there is

>>> anyone that I could contact for help. Maybe the California Native Plant

>>> Society? I would love for them to send us a volunteer or two to give us

>>> planting advice. We could use California native plants for so many

>>> things in

>>> the garden: attracting native pollinators, some are medicinal, etc. The

>>> Arcata Educational Farm is looking forward to working with the GPA this

>>> year; they might be able to donate some seeds/plants/labor. I am

>>> excited!

>>> Thanks,

>>> Tracie Brandt

>>> Graduation Pledge Alliance Coordinator

From: **Tall Chief Comet** <[TallChief.Comet@humboldt.edu](mailto:TallChief.Comet@humboldt.edu)>  
Date: Fri, Oct 28, 2011 at 4:32 AM  
Subject: Re: Letter of Intent to Do it Best Lumber (rough draft)  
To: Max Vecchitto <[mkv11@humboldt.edu](mailto:mkv11@humboldt.edu)>

Max,

Attached is the document with my comments and edits using track changes. The overall comment I have is that WRRAP directors (all of them) have to approve of the letter as well and it has to be consistent with any other donation letter language they will be putting out this year for any of their programs. They should also pass it by their current advisor, Morgan King. TC

- Show quoted text -

--  
TallChief A. Comet  
Sustainability Office Director  
Humboldt State University  
1 Harpst Street  
Arcata, CA 95521  
[707-826-5920](tel:707-826-5920)  
[tec4@humboldt.edu](mailto:tec4@humboldt.edu)

## **Raised beds at compost site Unapproved**

6 messages

**Tall Chief Comet** <[TallChief.Comet@humboldt.edu](mailto:TallChief.Comet@humboldt.edu)>

Fri, Nov 4, 2011 at 11:01 AM

Reply-To: [TallChief.Comet@humboldt.edu](mailto:TallChief.Comet@humboldt.edu)

To: Andrew Demos <[abd11@humboldt.edu](mailto:abd11@humboldt.edu)>

Cc: "Morgan P. King" <[morgan.king@humboldt.edu](mailto:morgan.king@humboldt.edu)>

Andrew,

In response to a request from AS regarding campus approval of raised beds at the compost site I talked with Tim Moxon about providing something to them confirming this was OK. Unfortunately, Tim was not necessarily in favor of such structures being installed at this time. Tim and I talked about the original proposal from CRP for that location and that it included having raised beds for growing things as part of the demonstration aspect of compost as a good growing medium. He is still receptive to that intent, but would like WRRAP to first make a legitimate effort to collaborate with CCAT to demonstrate the virtues of growing things from former compost at the CCAT location, before he is ready to agree to raised beds at the WRRAP compost site.

I am a little dismayed at not being able to have WRRAP automatically fulfill the original plan for the compost location and I believe I am largely responsible because I did not council CRP to better formalize the site plan with the decision makers at the time. I should have anticipated conditions or views changing and gotten more specific agreement when the topic was fresh to everyone. I also understand Tim's point of wanting student groups/programs to better coordinate their complimentary/overlapping activities to be more efficient with campus space and/or resources.

Moving forward, I would suggest you, as Compost Director, set up a meeting with CCAT ASAP to discuss the project and the Administration's request of collaboration. I would definitely like to attend the meeting to at least provide the context of how we arrived at the need to have the discussion and I think I can provide some suggestions on how to potentially make the project ultimately successful.

Please respond with your thoughts at your earliest convenience. TC

TallChief A. Comet

Sustainability Office Director

Humboldt State University

1 Harpst Street

Arcata, CA 95521

707-826-5920

[tcc4@humboldt.edu](mailto:tcc4@humboldt.edu)

Tue, Nov 8, 2011 at 1:12 PM

Sarah Niznik <[xfirexrabbitx@yahoo.com](mailto:xfirexrabbitx@yahoo.com)>

Tue, Nov 8, 2011 at 8:27 PM

To: WRRAP-Andrew Demos <[abd11@humboldt.edu](mailto:abd11@humboldt.edu)>

Hmm let's arrange a meeting then.

On another note, CCAT is actually planning to have an 8 week course next semester called organic gardening. Maybe WRRAP can incorporate something w/this class that will help us reach our goal for the CDS garden.

What do you think?

Sarah Niznik  
WRRAP office manager

## WRRAP and CCAT collaboration

5 messages

Andrew Demos <[abd11@humboldt.edu](mailto:abd11@humboldt.edu)>

Sat, Nov 5, 2011 at 7:34 PM

To: CCAT <[ccathsu@gmail.com](mailto:ccathsu@gmail.com)>

Dear CCAT Staff,

Back in 2007 WRRAP(CRP at the time) got our permanent compost site approved by the head of grounds and Admin Affairs. Part of this proposal included a demonstration garden. This fall I entered ENV 410 which requires us to form groups solve a problem. TC visited the class and proposed the fact that although WRRAP has the Demonstration site, it does not have a garden yet to complete it. I am part of that group and we have made great progress, however campus just denied us the permission to go forward. This email from TC will better explain it:

---

Andrew,

In response to a request from AS regarding campus approval of raised beds at the compost site I talked with Tim Moxon about providing something to them confirming this was OK. Unfortunately, Tim was not necessarily in favor of such structures being installed at this time. Tim and I talked about the original proposal from CRP for that location and that it included having raised beds for growing things as part of the demonstration aspect of compost as a good growing medium.....

---

TC stated to me that is still receptive to that intent, but would like WRRAP to collaborate with your program to ensure that the demo garden can work and successful with our compost. TC and I were a bit shocked but can understand Moxon's concerns. I would like to set up a meeting to discuss the project and the Administration's request of collaboration. Can we set up a meeting this coming week? please let me know as soon as you are able, so that I can set up a doodle. Thank you

Andrew Demos  
Compost Director  
Waste Reduction & Resource Awareness Program  
Humboldt State University  
(925)-788-7745

CCAT <ccat@humboldt.edu>

Tue, Nov 8, 2011 at 1:24 PM

To: Andrew Demos <abd11@humboldt.edu>

Roger, adam and myself spoke with TC about this at length last night. We are interested in collaborating, and I can meet with you sometime beginning of next week to try and establish some details. Does next Monday work okay for you?

-Eric

-----  
Campus Center for Appropriate Technology

[ccathsu@gmail.com](mailto:ccathsu@gmail.com)

[\(707\) 826-3551](tel:(707)826-3551)

Website: <http://www.ccathsu.com/>

Facebook: <http://www.facebook.com/campuscenterforappropriatetechnology/>

CCAT

1 Harpst St