Section 1: Background

As part of our contract with Portland Community College (PCC), the college requested in May 2013 that Community Environmental Services (CES) conduct a landfill-bound waste assessment for four (4) of PCC’s largest campuses. The four campuses selected in conjunction with the campus sustainability manager for waste assessments were Sylvania, Cascade, Southeast Center, and Rock Creek. PCC’s Sylvania Campus is located at 12000 SW 49th Avenue in Portland, Oregon. PCC’s Cascade Campus is located at 705 N Killingsworth Street in Portland, Oregon. PCC’s Southeast Center is located at 2305 SE 82nd Avenue in Portland, Oregon. PCC’s Rock Creek Campus is located at 17705 NW Springville Road in Portland, Oregon. CES is a research and service unit within the Center for Urban Studies at Portland State University.

The objectives of the four PCC waste assessments were as follows:

1. Determine the composition of the landfill-bound waste stream by conducting a waste sort on a minimum of 100 pounds of the landfill-bound material for each campus. This sample provides a snapshot of the waste composition and daily waste-generation activities of the campuses. Each waste sort includes hand sorting the waste into material categories, weighing the sorted materials, recording the data, and making quantitative and qualitative observations.

2. Provide a comprehensive combined overview of the four campuses in order to provide a larger context for PCC’s waste minimization opportunities and targeted education outreach.

3. Develop recommendations regarding material waste that could be diverted or reduced based on the collective findings from the sorts.

The four PCC campuses where the waste assessments occurred currently collect commingled recycling, cardboard, glass, and pre-consumer (and in some instances post-consumer) compost, with recycling stations and individual receptacles placed in multiple locations across each campus. Composting is a relatively new process for the Cascade and Southeast campuses with PCC’s composting program only expanding to service them within the last year.

The order in which each campus is presented in this report follows the chronological order in which the waste assessments occurred, with Sylvania first, then Cascade, Southeast Center, and finally Rock Creek. The report then concludes with a comprehensive analysis of the totals from the four campuses combined and recommendations.
PORTLAND COMMUNITY COLLEGE

SYLVANIA CAMPUS WASTE ASSESSMENT

MAY 8TH, 2013
Section 2: Sylvania Methodology

The Sylvania campus waste sort was conducted on May 8, 2013 by CES Project Lead, Anthony Hair, at the loading dock behind the College Center building, located at 12000 SW 49th Avenue, Portland, Oregon. With the assistance of Sylvania’s Recycling Technician Jim Wetmore, a random sample of landfill-bound waste was collected from six dumpsters located throughout the Sylvania campus. The total weight of the representative sample was 131.67 pounds. CES hand sorted the entire load for the assessment.

Figure 1 presents the entire landfill-bound waste load from the Sylvania campus, representing a sample of the campus’ daily waste. Figure 2 presents the waste sort in progress.

Figure 1. Landfill-Bound Waste Load

Figure 2. Waste Sort in Progress
The landfill-bound waste was sorted into the fourteen material categories listed below. Five of the categories are grouped under “other recoverables” for analytical purposes. The list of the material categories with a detailed description of each material category is provided in Appendix A: Glossary of Material Categories.

- Mixed Paper
- Corrugated Cardboard
- Aluminum/Metals
- Plastic Bottles and Tubs
- Glass Bottles and Jars
- Compostable Food and Fibers
- Non-Recoverable Waste
- Liquid
- Single-Use Coffee Cups
- Other Recoverables
  - Rigid Plastics
  - Plastic Film
  - Styrofoam
  - Aseptics
  - Milk Cartons
Fourteen categories were chosen in order to remain consistent across all four of the campuses CES assessed and when available to correspond with the previous waste sorts conducted at the various campuses. The materials can be viewed as four types of categories 1) Compostable, 2) Recyclable, 3) Other Recoverable Materials and 4) Non-Recoverable. The terms “recyclable” and “compostable” refer specifically to the material’s ability to be recycled or composted in the current diversion programs at PCC. For analytical purposes the category of “Other Recoverable Materials” includes five subcategories: Rigid Plastics, Plastic Film, Styrofoam, Aspetics, and Milk Cartons. Although not recyclable in PCC’s current commercial recycling system, there are outlets for rigid plastics, plastic films, and Styrofoam to be recycled. Part of the PCC waste assessment goals were to see if the volume of these materials might warrant exploring these outlets for potential collection. Aseptics and milk cartons can be recycled in PCC's current commercial recycling system, but like with coffee cups, these containers were separated out in order to gauge the volume of these materials in relation to the rest of the materials generated. For a visual presentation of sorted materials, see Figure 3.

Figure 3. Organized Material Categories Post-Sort
Section 3: Sylvania Findings

Findings and recommendations resulting from the waste sort are cited in terms of weight in pounds. Table 1 displays the individual material weights and their corresponding composition of the overall waste stream (in percentages). All findings and recommendations resulting from the waste sort are cited in terms of the material weight. Lighter materials such as plastic film, Styrofoam, and coffee cups can contribute to a large percentage of volume in the waste stream, however, we consider their weight alone, and they may not be recognized as a significant component of the load. Please refer to the pictures in Sections 4 and 5 for a visual example.

Table 1 and Figure 4 present the weight in terms of the four types of waste categories. Table 2 and Figure 5 presents the waste as a part of specific material categories.

Table 1. General Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td>10.82</td>
<td>8%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>33.61</td>
<td>25%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td>15.18</td>
<td>12%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td>72.06</td>
<td>55%</td>
</tr>
<tr>
<td>TOTAL WASTE</td>
<td>131.67</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 4. General Breakdown of Waste Stream
Table 2. Specific Material Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMMINGLED RECYCLABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>0.79</td>
<td>0.6%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>4.95</td>
<td>3.8%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>1.18</td>
<td>0.9%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>3.90</td>
<td>3.0%</td>
</tr>
<tr>
<td><strong>COMPOSTABLE FOOD AND FIBERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OTHER RECOVERABLE MATERIALS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>5.00</td>
<td>3.8%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>1.44</td>
<td>1.1%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>8.39</td>
<td>6.4%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>0.06</td>
<td>0.0%</td>
</tr>
<tr>
<td>ASEPTICS</td>
<td>0.27</td>
<td>0.2%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>0.02</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>NON-RECOVERABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>52.06</td>
<td>39.5%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>12.53</td>
<td>9.5%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>7.47</td>
<td>5.7%</td>
</tr>
<tr>
<td><strong>TOTAL LOAD WEIGHT</strong></td>
<td>131.67</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 5. Specific Breakdown of Waste Stream
CES completed a waste assessment report for PCC in March of 2007. Table 3 below presents a point of comparison of the landfill-bound waste stream from 2007 and 2013. The data from the 2007 assessment did not include all the same categories as were examined in the most recent audit so some material categories like coffee cups will have a N/A listed for them in 2007 if there was not a comparable category in the previous sort. The comparison allows for analysis and highlights changes over the past six years.

Table 3. Breakdown of Specific Material Categories by Year

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>2007</th>
<th></th>
<th>2013</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WEIGHT (LBS)</td>
<td>%</td>
<td>WEIGHT (LBS)</td>
<td>%</td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>11.3</td>
<td>4%</td>
<td>0.79</td>
<td>0.6%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>11.1</td>
<td>4%</td>
<td>4.95</td>
<td>3.8%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>5.9</td>
<td>2%</td>
<td>1.18</td>
<td>0.9%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>14.6</td>
<td>5%</td>
<td>3.9</td>
<td>3.0%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>49.9</td>
<td>17%</td>
<td>33.61</td>
<td>25.5%</td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>20.5</td>
<td>7%</td>
<td>5</td>
<td>3.8%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>14.7</td>
<td>5%</td>
<td>1.44</td>
<td>1.1%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>N/A</td>
<td></td>
<td>8.39</td>
<td>6.4%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>6.3</td>
<td>2%</td>
<td>0.06</td>
<td>0.0%</td>
</tr>
<tr>
<td>ASEPTICS</td>
<td>4.6</td>
<td>2%</td>
<td>0.27</td>
<td>0.2%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>N/A</td>
<td></td>
<td>0.02</td>
<td>0.0%</td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>105.85</td>
<td>35%</td>
<td>52.06</td>
<td>39.5%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>N/A</td>
<td></td>
<td>12.53</td>
<td>9.5%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>N/A</td>
<td></td>
<td>7.47</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

The comparison allows for analysis and highlights changes over the past six years.
Section 4: Sylvania Observations

The following qualitative observations were made in addition to the quantitative data gathered from the sort:

1. An abundance of single-use coffee cups were found within the waste stream (Figure 6).
2. A large amount of both food waste and compostable service ware were found (Figures 7 and 8).
3. Even with numerous commingled recycling stations placed throughout the campus, mixed paper and other traditional commingled recycling materials were still found in the landfill-bound waste (Figure 9).

Figure 6. Sorted Coffee Cups  Figure 7. Sorted Food Waste
Figure 8. Sorted Compostable Service Ware  Figure 9. Sorted Mixed Paper and Plastic Bottles & Containers
Section 5. Sylvania Waste Sort Photos

Figure 10. Sorted Aluminum Cans

Figure 13. Sorted Glass, Aseptics, Styrofoam, and Milk Cartons

Figure 15. Captured Liquid

Figure 16. Sorted Non-Recoverables
PORTLAND COMMUNITY COLLEGE
CASCADe CAMPUS WASTE ASSESSMENT
MAY 15TH, 2013
Section 6: Cascade Methodology

The Cascade campus waste sort was conducted on May 15, 2013 by CES Project Lead, Anthony Hair, on the main quad located at 705 N Killingsworth Street, Portland, Oregon. With the assistance of student volunteers; Shelby Wilkinson, Kecia Jones, Jorge Torales, Evan Toloff, Nhat Le, Sebastian Ramirez, Morgan Miller, and Jordan Andrews, a random sample of landfill-bound waste was collected from four dumpsters located throughout the Cascade campus. The total weight of the representative sample was 195.85 pounds. CES staff and the student volunteers hand sorted the entire load for the assessment.

Figure 17 presents a portion of the landfill bound waste load from the Cascade campus, representing a sample of the campus’ daily waste. Figure 18 presents the waste sort in progress.

Figure 17. Landfill-Bound Waste Load

Figure 18. Waste Sort in Progress
The landfill-bound waste was sorted into the fourteen material categories listed below. Five of the categories are grouped under “other recoverables” for analytical purposes. The list of the material categories with a detailed description of the each material category is provided in Appendix A: Glossary of Material Categories.

- Mixed Paper
- Corrugated Cardboard
- Aluminum/Metals
- Plastic Bottles and Tubs
- Glass Bottles and Jars
- Compostable Food and Fibers

- Non-Recoverable Waste
- Liquid
- Single-Use Coffee Cups
- Other Recoverables
  - Rigid Plastics
  - Plastic Film
  - Styrofoam
  - Aseptics
  - Milk Cartons
Fourteen categories were chosen in order to remain consistent across all four of the campuses CES assessed and when available to correspond with the previous waste sorts conducted at the various campuses. The materials can be viewed as four types of categories 1) Compostable, 2) Recyclable, 3) Other Recoverable Materials and 4) Non-Recoverable. The terms “recyclable” and “compostable” refer specifically to the material’s ability to be recycled or composted in the current diversion programs at PCC. For analytical purposes the category of “Other Recoverable Materials” includes five subcategories: Rigid Plastics, Plastic Film, Styrofoam, Aspetics, and Milk Cartons. Although not recyclable in PCC’s current commercial recycling system, there are outlets for rigid plastics, plastic films, and Styrofoam to be recycled. Part of the PCC waste assessment goals were to see if the volume of these materials might warrant exploring these outlets for potential collection. Aseptics and milk cartons can be recycled in PCC’s current commercial recycling system, but like with coffee cups, these containers were separated out in order to gauge the volume of these materials in relation to the rest of the materials generated. For a visual presentation of sorted materials, see Figure 19.

Figure 19. Organized Material Categories Post-Sort
Section 7: Cascade Findings

Findings and recommendations resulting from the waste sort are cited in terms of weight in pounds. Table 4 displays the individual material weights and their corresponding composition of the overall waste stream (in percentages). All findings and recommendations resulting from the waste sort are cited in terms of the material weight. Lighter materials such as plastic film, Styrofoam, and coffee cups can contribute to a large percentage of volume in the waste stream, however, we consider their weight alone, and they may not be recognized as a significant component of the load. Please refer to the pictures in Sections 8 and 9 for a visual example.

Table 4 and Figure 20 present the weight in terms of the four types waste categories. Table 5 and Figure 21 presents the waste as a part of specific material categories.

Table 4. General Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td>25.01</td>
<td>13%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>51.14</td>
<td>26%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td>16.15</td>
<td>8%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td>103.55</td>
<td>53%</td>
</tr>
<tr>
<td>TOTAL WASTE</td>
<td>195.85</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 20. General Breakdown of Waste Stream
Table 5. Specific Material Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>2.96</td>
<td>1.5%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>14.13</td>
<td>7.2%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>1.78</td>
<td>0.9%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>6.14</td>
<td>3.1%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>51.14</td>
<td>26.1%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>5.54</td>
<td>2.8%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>3.37</td>
<td>1.7%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>6.98</td>
<td>3.6%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>0.08</td>
<td>0.0%</td>
</tr>
<tr>
<td>ASCEPTICS</td>
<td>0.08</td>
<td>0.0%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>0.10</td>
<td>0.1%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>76.96</td>
<td>39.3%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>17.91</td>
<td>9.1%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>8.68</td>
<td>4.4%</td>
</tr>
<tr>
<td>TOTAL LOAD WEIGHT</td>
<td>195.85</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Figure 21. Specific Breakdown of Waste Stream
Section 8: Cascade Observations

The following qualitative observations were made in addition to the quantitative data gathered from the sort:

1. An abundance of single-use coffee cups were found within the waste stream (Figure 22).
2. A large amount of both food waste and compostable service ware were found (Figure 23).
3. Even with a numerous commingled recycling stations placed throughout the campus, mixed paper and other traditional commingled recycling materials were still found in the landfill-bound waste (Figures 24 and 25).

Figure 22. Sorted Coffee Cups

Figure 23. Sorted Food Waste and Service Ware

Figure 24. Sorted Glass and Commingled Recycling
Section 9. Cascade Waste Sort Photos

Figure 25. Sorted Aluminum Cans and Plastic Bottles & Tubs

Figure 26. Sorted Rigid Plastics

Figure 27. Captured Liquid

Figure 28. Sorted Non-Recoverables
PORTLAND COMMUNITY COLLEGE

SE CENTER WASTE ASSESSMENT

MAY 22ND, 2013
Section 10: SE Center Methodology

The waste sort was conducted on May 22, 2013 by CES Project Lead, Anthony Hair, near the dumpsters behind Mt. Tabor Hall, located at 2305 SE 82nd Avenue, Portland, Oregon. A random sample of landfill-bound waste was collected from three dumpsters located throughout the Southeast Center. The total weight of the representative sample was 157.9 pounds. CES hand sorted the entire load for the assessment.

Figure 29 displays the area behind Mount Tabor Hall where the waste assessment for the campus occurred. Figure 30 presents the waste sort in progress.
The landfill-bound waste was sorted into the fourteen material categories listed below. Five of the categories are grouped under “other recoverables” for analytical purposes. The list of the material categories with a detailed description of each material category is provided in Appendix A: Glossary of Material Categories.

- Mixed Paper
- Corrugated Cardboard
- Aluminum/Metals
- Plastic Bottles and Tubs
- Glass Bottles and Jars
- Compostable Food and Fibers

- Non-Recoverable Waste
- Liquid
- Single-Use Coffee Cups
- Other Recoverables
  - Rigid Plastics
  - Plastic Film
  - Styrofoam
  - Aseptics
  - Milk Cartons
Fourteen categories were chosen in order to remain consistent across all four of the campuses CES assessed and when available to correspond with the previous waste sorts conducted at the various campuses. The materials can be viewed as four types of categories 1) Compostable, 2) Recyclable, 3) Other Recoverable Materials and 4) Non-Recoverable. The terms “recyclable” and “compostable” refer specifically to the material’s ability to be recycled or composted in the current diversion programs at PCC. For analytical purposes the category of “Other Recoverable Materials” includes five subcategories: Rigid Plastics, Plastic Film, Styrofoam, Aseptics, and Milk Cartons. Although not recyclable in PCC’s current commercial recycling system, there are outlets for rigid plastics, plastic films, and Styrofoam to be recycled. Part of the PCC waste assessment goals were to see if the volume of these materials might warrant exploring these outlets for potential collection. Aseptics and milk cartons can be recycled in PCC’s current commercial recycling system, but like with coffee cups, these containers were separated out in order to gauge the volume of these materials in relation to the rest of the materials generated. For a visual presentation of sorted materials, see Figure 31.

Figure 31. Organized Material Categories Post-Sort
Section 11: SE Center Findings

Findings and recommendations resulting from the waste sort are cited in terms of weight in pounds. Table 6 displays the individual material weights and their corresponding composition of the overall waste stream (in percentages). All findings and recommendations resulting from the waste sort are cited in terms of the material weight. Lighter materials such as plastic film, Styrofoam, and coffee cups can contribute to a large percentage of volume in the waste stream, however, we consider their weight alone, and they may not be recognized as a significant component of the load. Please refer to the pictures in Sections 12 and 13 for a visual example.

Table 6 and Figure 32 present the weight in terms of the four types waste categories. Table 7 and Figure 33 presents the waste as a part of specific material categories.

Table 6. General Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td>23.0</td>
<td>15%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>29.3</td>
<td>18%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td>12.2</td>
<td>8%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td>93.4</td>
<td>59%</td>
</tr>
<tr>
<td>TOTAL WASTE</td>
<td>157.9</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 32. General Breakdown of Waste Stream
Table 7. Specific Material Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMMINGLED RECYCLABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>4.80</td>
<td>3.0%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>12.70</td>
<td>8.0%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>1.40</td>
<td>0.9%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>4.10</td>
<td>2.6%</td>
</tr>
<tr>
<td><strong>COMPOSTABLE FOOD AND FIBERS</strong></td>
<td>29.30</td>
<td>18.6%</td>
</tr>
<tr>
<td><strong>OTHER RECOVERABLE MATERIALS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>0.40</td>
<td>0.3%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>2.40</td>
<td>1.5%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>7.10</td>
<td>4.5%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>0.30</td>
<td>0.2%</td>
</tr>
<tr>
<td>ASCPECTICS</td>
<td>1.10</td>
<td>0.7%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>0.90</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>NON-RECOVERABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>67.70</td>
<td>42.9%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>15.60</td>
<td>9.9%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>10.10</td>
<td>6.4%</td>
</tr>
<tr>
<td><strong>TOTAL LOAD WEIGHT</strong></td>
<td>157.90</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Figure 33. Specific Breakdown of Waste Stream
Section 12: SE Center Observations

The following qualitative observations were made in addition to the quantitative data gathered from the sort:

1. A large amount of both food waste and compostable service ware were found (Figures 34).
2. Even with a numerous commingled recycling stations placed throughout the campus, several black garbage bags mostly filled with shredded paper were found in the trash along with other items that could have been included with the commingled recycling (Figure 35 and Figures 39 to 44).
3. An abundance of single-use coffee cups were found within the waste stream (Figure 36).

Figure 34. Sorted Food Waste

Figure 35. Sorted Shredded Paper
Section 13. SE Center Waste Sort Photos

Figure 36. Sorted Coffee Cups

Figure 37. Sorted Rigid Plastics and Film

Figure 38. Sorted Non-Recoverables

Figure 39. Sorted Commingled Recycling
Figure 40. Sorted Aluminum Cans

Figure 41. Sorted Plastic Bottles & Tubs

Figure 42. Sorted Milk cartons and aseptics

Figure 43. Sorted Mixed Paper
Figure 4. Sorted Cardboard

Figure 45. Captured Liquid
PORTLAND COMMUNITY COLLEGE

ROCK CREEK CAMPUS WASTE ASSESSMENT

MAY 29TH, 2013
Section 14: Rock Creek Methodology

The waste sort was conducted on May 29, 2013 by CES Project Lead, Anthony Hair, near the loading area at the northwest corner of Building 3, located at 17705 SW Springville Road, Portland, Oregon. A random sample of landfill-bound waste was collected from four dumpsters located throughout the Rock Creek campus. The total weight of the representative sample was 116.53 pounds. CES hand sorted the entire load for the assessment.

Figure 46 displays the loading area behind Building 3 where the waste assessment for the campus occurred. Figure 47 presents the waste sort sampling in progress.
The landfill-bound waste was sorted into the fourteen material categories listed below. Five of the categories are grouped under “other recoverables” for analytical purposes. The list of the material categories with a detailed description of each material category is provided in Appendix A: Glossary of Material Categories.

- Mixed Paper
- Corrugated Cardboard
- Aluminum/Metals
- Plastic Bottles and Tubs
- Glass Bottles and Jars
- Compostable Food and Fibers

- Non-Recoverable Waste
- Liquid
- Single-Use Coffee Cups
- Other Recoverables
  - Rigid Plastics
  - Plastic Film
  - Styrofoam
  - Aseptics
  - Milk Cartons
Fourteen categories were chosen in order to remain consistent across all four of the campuses CES assessed and when available to correspond with the previous waste sorts conducted at the various campuses. The materials can be viewed as four types of categories 1) Compostable, 2) Recyclable, 3) Other Recoverable Materials and 4) Non-Recoverable. The terms “recyclable” and “compostable” refer specifically to the material’s ability to be recycled or composted in the current diversion programs at PCC. For analytical purposes the category of “Other Recoverable Materials” includes five subcategories: Rigid Plastics, Plastic Film, Styrofoam, Aspetics, and Milk Cartons. Although not recyclable in PCC’s current commercial recycling system, there are outlets for rigid plastics, plastic films, and Styrofoam to be recycled. Part of the PCC waste assessment goals were to see if the volume of these materials might warrant exploring these outlets for potential collection. Aseptics and milk cartons can be recycled in PCC’s current commercial recycling system, but like with coffee cups, these containers were separated out in order to gauge the volume of these materials in relation to the rest of the materials generated. For a visual presentation of sorted materials, see Figure 48.

Figure 48. Organized Material Categories Post-Sort
Section 15: Rock Creek Findings

Findings and recommendations resulting from the waste sort are cited in terms of weight in pounds. Table 8 displays the individual material weights and their corresponding composition of the overall waste stream (in percentages). All findings and recommendations resulting from the waste sort are cited in terms of the material weight. Lighter materials such as plastic film, Styrofoam, and coffee cups can contribute to a large percentage of volume in the waste stream, however, we consider their weight alone, and they may not be recognized as a significant component of the load. Please refer to the pictures in Sections 16 and 17 for a visual example.

Table 8 and Figure 49 present the weight in terms of the four types waste categories. Table 9 and Figure 50 presents the waste as a part of specific material categories.

Table 8. General Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td>8.30</td>
<td>7%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>33.98</td>
<td>29%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td>8.41</td>
<td>7%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td>65.84</td>
<td>57%</td>
</tr>
<tr>
<td>TOTAL WASTE</td>
<td>116.53</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 49. General Breakdown of Waste Stream
Table 9. Specific Material Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>1.47</td>
<td>1.3%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>3.50</td>
<td>3.0%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>0.91</td>
<td>0.8%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>2.42</td>
<td>2.1%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>33.98</td>
<td>29.2%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>0.99</td>
<td>0.8%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>1.25</td>
<td>1.1%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>5.16</td>
<td>4.4%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>0.06</td>
<td>0.1%</td>
</tr>
<tr>
<td>ASCEPTICS</td>
<td>0.39</td>
<td>0.3%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>0.56</td>
<td>0.5%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>50.75</td>
<td>43.6%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>8.42</td>
<td>7.2%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>6.67</td>
<td>5.7%</td>
</tr>
<tr>
<td>TOTAL LOAD WEIGHT</td>
<td>116.53</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Figure 50. Specific Breakdown of Waste Stream
**Section 16: Rock Creek Observations**

The following qualitative observations were made in addition to the quantitative data gathered from the sort:

1. A half of a dozen VHS cassette tapes were found in the landfill-bound waste (Figure 51).
2. An abundance of single-use coffee cups were found within the waste stream (Figure 52).
3. A large amount of both food waste and compostable service ware were found including entire packages of tortillas and fajita mix from the cafeteria (Figures 53 to 55).

![Figure 51. VHS Cassette Tapes](image1)

![Figure 52. Sorted Coffee Cups](image2)
Figure 53. Sorted Food Waste

Figure 54. Sorted Compostable Service Ware

Figure 55. Food Waste on Scale

Figure 56. Captured Liquid
Section 17. Rock Creek Waste Sort Photos

Figure 57. Sorted Non-Recoverables

Figure 58. Sorted Glass, Aseptics, Styrofoam, and Milk Cartons

Figure 59. Sorted Aluminum Cans

Figure 60. Sorted Plastic Bottles & Tubs
Figure 51. Sorted Rigid Plastics

Figure 52. Sorted Plastic Film
Section 18: Combined Campus Findings

Findings and recommendations resulting from the combined waste sorts are cited in terms of weight in pounds. Table 10 displays the individual material weights and their corresponding composition of the overall waste stream (in percentages) from all four of the campus waste assessments that CES performed in May 2013. All findings and recommendations resulting from the waste sort are cited in terms of the material weight. Lighter materials such as plastic film, Styrofoam, and coffee cups can contribute to a large percentage of volume in the waste stream, however, we consider their weight alone, and they may not be recognized as a significant component of the load.

Table 10 and Figure 53 present the weight in terms of the four types waste categories. Table 11 and Figure 54 presents the waste as a part of specific material categories.

Table 10. General Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td>67.13</td>
<td>11%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>148.03</td>
<td>24%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td>51.94</td>
<td>9%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td>334.85</td>
<td>56%</td>
</tr>
<tr>
<td>TOTAL WASTE</td>
<td>601.95</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 53. General Breakdown of Waste Stream
Table 11. Specific Material Waste Composition by Weight

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WEIGHT (LBS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMINGLED RECYCLABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDBOARD</td>
<td>10.02</td>
<td>1.7%</td>
</tr>
<tr>
<td>MIXED PAPER</td>
<td>35.28</td>
<td>5.9%</td>
</tr>
<tr>
<td>ALUMINUM/METALS</td>
<td>5.27</td>
<td>0.9%</td>
</tr>
<tr>
<td>PLASTIC BOTTLES/TUBS</td>
<td>16.56</td>
<td>2.8%</td>
</tr>
<tr>
<td>COMPOSTABLE FOOD AND FIBERS</td>
<td>148.03</td>
<td>24.6%</td>
</tr>
<tr>
<td>OTHER RECOVERABLE MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLASS BOTTLES &amp; JARS</td>
<td>11.93</td>
<td>2.0%</td>
</tr>
<tr>
<td>PLASTIC FILM</td>
<td>8.46</td>
<td>1.4%</td>
</tr>
<tr>
<td>RIGID PLASTICS</td>
<td>27.63</td>
<td>4.6%</td>
</tr>
<tr>
<td>STYROFOAM</td>
<td>0.50</td>
<td>0.1%</td>
</tr>
<tr>
<td>ASCEPTICS</td>
<td>1.84</td>
<td>0.3%</td>
</tr>
<tr>
<td>MILK CARTONS</td>
<td>1.58</td>
<td>0.3%</td>
</tr>
<tr>
<td>NON-RECOVERABLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUE WASTE</td>
<td>247.47</td>
<td>41.1%</td>
</tr>
<tr>
<td>LIQUID</td>
<td>54.46</td>
<td>9.0%</td>
</tr>
<tr>
<td>COFFEE CUPS</td>
<td>32.92</td>
<td>5.5%</td>
</tr>
<tr>
<td>TOTAL LOAD WEIGHT</td>
<td>601.95</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Figure 54. Specific Breakdown of Waste Stream
Section 19: Recommendations

After analysis of the data, CES recommends the following:

✓ Given on average that approximately 24% of the sorted waste was compostable food and fibers, continue to educate staff on composting practices. Ensure signs are placed throughout the back-of-house kitchen operations on what can be composted and that the composting containers are easily accessible at all four participating campuses.
  
  o Educate staff through monthly emails. Remind staff of the compost potential of frequently overlooked items and to avoid tossing entire packages of unused food into the trash.
  
  o Present trainings to newly hired staff to ensure that correct information about composting is being passed on and to emphasize overall the importance of PCC’s composting program.

✓ To reduce edible food in the waste stream, look into food donation programs such as “Fork It Over,” through Metro, that accept surplus food from businesses and restaurants to reduce hunger and food waste.
  
  o More information can be found at http://forkitover.org/

✓ Continue to advocate for the use of reusable mugs and tumblers for hot and cold drinks through district-wide campaigns and mug drives to attempt to reduce the number of single-use coffee cups that are being sent to the landfill.

✓ Continue to improve the collection of recyclable materials such as glass bottles and jars, corrugated cardboard, mixed paper, plastic bottles and tubs, and aluminum, steel, and tin cans.
  
  o Provide periodic in-service recycling training to custodial staff, current staff, and new employees.
  
  o Remove all waste containers that are not currently paired with recycling containers or install additional recycling containers next to the unpaired waste containers.
  
  o Develop a brief online sustainability web training for students and/or employees that can be taken through PCC’s Desire2Learn platform. The training can be required of all incoming students and inform them of the current recycling system that PCC has in place.

✓ Consider the option of collecting rigid plastics and plastic wrap (Figures 51 and 52) for pickup by Agri-Plas, Inc. or another plastics hauler. Often these services can be done for free if a large enough volume of plastics can be produced for collection.
  
  o More information about Agri-Plas can be found at http://www.agriplasinc.com/
Appendix A: Glossary of Material Categories

- **Aluminum/Metals (Cans, Scrap and Foil)** – Containers made of aluminum, steel or tin, including containers for beverages, food, and other materials. Empty aerosol cans and clean aluminum foil are included in this category.

- **Aseptics** – Multi-layered plastic, paper and metal packaging that usually contains juice, soy milk, and other liquids.

- **Compostable Food and Fibers** – Vegetables, fruit, grain-based food scraps, meat, fish, fat, bones, eggshells, coffee grinds and paper fibers contaminated with food including coffee filters, soiled napkins, soiled paper bags, pizza boxes, waxed corrugated cardboard, and compostable food-service ware products that meet the guidelines set by Cedar Grove Composting (http://www.cedar-grove.com/acceptable/Accepted%20List.asp). This category excludes non-compostable hot drink cups, gable-top or square-shape aseptic cartons, and utensils, straws, lids, or bags made of plastic.

- **Corrugated Cardboard** – corrugated boxes or sheets used for shipping and packaging materials.

- **E-Waste** – Items that contain electronic components.

- **Fluorescent Light Tubes** – Light tubes made with mercury to produce light at a higher efficiency than typical incandescent bulbs.

- **Glass Bottles and Jars** – Containers made of glass. This category excludes light bulbs, flat glass, vases, drinking glasses, and tempered glass such as baking dishes.

- **Mixed Paper** – Office paper, newspaper, magazines, phonebooks, paper board/soft cardboard, folders, scrap paper, sticky notes, shredded paper, paper bags, egg cartons, cereal boxes, and all other non-corrugated cardboards. This category also includes aseptic containers such as gable-top milk and juice cartons and square-shaped cartons often used for soups or soymilk.

- **Non-recyclables** – Materials that cannot currently be recycled through most commercial haulers. Non-recyclables include plastic utensils, lids, and straws, plastic trays, non-compostable food-service ware, Styrofoam, and a range of consumer durables. These materials are also known as “true waste” because there are currently no recycling markets for the materials or they are not readily recycled.

- **Office Reuse** – Lightly used office supplies and furniture that may be re-used through donation to a program or in-house.

- **Plastic Bottles and Tub**s – Plastic containers with a neck, including containers for beverages, other fluids; plastic tubs of primarily food grade plastic often used for yogurt, margarine, and other food or non-food materials, rigid plant pots larger than four inches, and plastic buckets smaller than five gallons.

- **Plastic Film** - All bags including grocery, trash and sandwich bags. Also includes shrink wrap, plastic pallet wrap, and bubble wrap.

- **Rigid Plastics** - Plastic containers that are often used for serving “to-go” food from restaurants and food carts as well as other similarly rigid plastics such as straws, fast food cups, and plastic lids.

- **Restroom Waste** – Bathroom paper towels, and other related items originating from the restroom.

- **Single-Use Coffee Cups** - Single use coffee cups from outside vendors and within the building.

- **Styrofoam** – Materials made from expanded polystyrene foam ranging from packaging to coffee cups.
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