18.2.1 Sampling and Testing to confirm Solid Waste Exemption of Product

Finished Product Prior to Composting Phase 2

Current WAC 173-350-220 requires testing of composted material meet state standards before the material is considered to be a product. Any sample that fails the testing requirements in the Table below is still considered a solid waste.

Test for DOT and STA are separate procedures conducted by outside labs.

Samples must reach the laboratory within 24 hours and include a proper Chain-of-Custody.

For solid waste exemption testing the following sampling procedure applies:

- Pull sample before moving to Phase 2 of composting or as directed by Kittitas County Health Department.
- This sample must be pulled two days before removal in order to get sample results.
- Using the composite method, select 10 different locations in the pile to combine for one composite sample.
- Sample will be screened to 1" minus to replicate the screening process that will occur after the results are determined. This way false positives for inert materials will not occur because many inerts are screened out and not in the finished product material when the material goes into storage.

Take a split of the composite and test for Solvita to meet a level 5 and pH of 5-10.

Take another split and send to the analytical lab for the following:

- Salmonella
- Heavy metals
- Manufactured inerts
- Sharps
- Nitrogen Content

If material passes the test the material can be sent to Phase 2 product piles.

If material fails any one of the tests, reprocessing of some type might be needed depending on the failure but the material cannot be put with other finished product until all the test are passed. Keep track of the pile number sampled and maintain the information in the sample log.

Kittitas County Health Department will establish a frequency for this testing.

18.2.2 Grab Sampling

Screened Finished Product

- Wear plastic disposable gloves
- Select a location based on data need.
- Use a clean stainless steel spatula
- Dig into pile 12 to 18 inches or as needed based on data need.
- Mix in stainless steel bowl.
- Fill 1 gallon freezer bag as needed for analysis.

18.2.3. Composite Sampling for Washington State, WAC 173-350-220 and STA

Screened Finished Product

The following procedure is derived from USCC procedure for composite sampling.

- Wear plastic disposable gloves

- Select 5 random locations distributed across product pile.(Per USCC STA)

- Cut into finished compost using tractor skid loader, bobcat or shovel, or sample boring device. Cut into the finished compost pile or windrow at these five randomly selected positions. Collect samples from the full profile and breadth of the compost windrow or pile.

- Collect Point-Samples—Samples of equal volume are extracted from the compost pile at three depths or zones measured from the pile's uppermost surface. Collect no less than five point-samples from each of the three depths or zones. The five point samples for each zone must be collected in a manner to accurately represent the horizontal cross-section of the windrow or pile. Use a sanitized sampling tool (a gloved hand, and, clean shovel, spatula, scoop, or auger) when collecting samples and when transferring samples.

- Place all 15 point samples from one cutout together into one sanitized plastic pail. Completely mix the point samples by stirring thoroughly with a sanitized wooden stick or lath, and by covering and shaking to further mix the samples.

- Repeat the blending process at least four times until all point samples are thoroughly blended to form one composite sample that accurately represents the compost for the cutout.

- Proceed to the next compost sample cutout and repeat this process to collect one thoroughly blended composite sample from each of the five cutouts.

- Transfer the five composite samples from the sample collection pails onto a mixing tarp or other appropriately sanitized surface or container, such as into a large pail where all samples can be mixed, blended and then covered to minimize moisture loss.

Thoroughly blend the five composite samples to form one large sample that represents the average condition of the entire batch or windrow in question.

- Quarter the composite sample and thoroughly mix and quarter again. Continue to subdivide and split the sample into quarters and mix until sample size reaches the size necessary to perform the analysis.

18.3 Sampling Equipment

The following equipment and materials should be used for collecting, preparing, packaging and transporting compost samples.

- Sampling bowl, stainless steel.
- Sampling device – stainless steel, plastic, glass or Teflon spatula, scoop, or tiling spade, etc.
- 5 gallon mixing bucket, clean.
- Plastic shipping cooler.
- Plastic disposable gloves
- Tarp – clean, plastic, canvas, etc. (if needed to mix slurry sample)
- Plastic bags – 1-gal "Ziploc" plastic freezer bags
- Cold packs – chemical ice packs
- Adhesive tape – duct tape, packing tape, etc.

18.4 Shipping and Container Labeling

Place the plastic Ziploc freezer bags containing the samples in the cooler and inter-weave with cold packs for shipping. Seal the cooler and secure the lid with adhesive tape. Place custody seals on at least 2 sides of the lid so that the cooler cannot be opened without breaking the custody seals. Label and send the cooler containing samples by overnight express service to the selected laboratory for analysis. Include a completed chain of custody form along with detailed laboratory instructions (i.e., testing program). Be sure sampling takes place early in the day to assure overnight delivery.

Each sample must be labeled to include the following information:

- Sample number
- Sampling date and time
- Cell/Pile number
- Age of compost sampled (time since pile formation)
- Person who obtained and processed the sample

18.5 Sample Equipment Cleaning

Make sure all sampling equipment and containers are clean prior to use. Clean sampling equipment used between each sample:

- Partially fill a five-gallon bucket with a 10% solution of household bleach or tri-sodium phosphate (TSP) and DI water.
- Lightly scrub with the bleach/TSP water. Double rinse by pouring DI water over item thoroughly directly from DI water container or use clean squirt bottle of DI water.
- Commence sampling the next pile and repeat the decontamination procedure after sampling has been conducted.

The bleach/TSP water should be discarded and remade after 5 samples.

18.6 Chain of Custody

Sample must reach the laboratory within 24 hours and include proper Chain-of-Custody.

Chain-of-custody (COC) forms and procedures should be used with all regulatory samples and STA required samples. A chain-of-custody form is used to track sample handling from the time of collection through laboratory analysis, and data reporting. Suggested information for the chain-of-custody record includes, at a minimum:

- Collectors name
- Signature of collector
- Date and time of collection
- Place and address of collection site
- Requested preprocessing
- Requested analyses
- Sample code number for each sample (if used)
- Signature of the persons involved in the chain of possession.

COC forms should be placed in a file along with the, Sampling Log Book, Shipping paperwork, and Laboratory Reports.

If the sample analysis is also going to be used for USCC STA be sure the COC is consistent with STA requirements.

18.7 Compost Ecology Required Analysis and Regulatory Limits

Table ____ Compost Regulatory Limits

PARAMETER	FREQUENCY	COMPOST CRITERIA
PHYSICAL		
Percent of Manufactured Inerts	MONTHLY	<1%

Sharps	MONTHLY	None
Stability	MONTHLY	Solvita Jar Test correlated to lab tests
CHEMICAL: INORGANIC		
pH	MONTHLY	5 – 10
Arsenic	MONTHLY	< or =20 ppm (dry weight).
Cadmium	MONTHLY	< or =10 ppm (dry weight).
Copper	MONTHLY	< or =750 ppm (dry weight).
Lead	MONTHLY	< or =150 ppm (dry weight).
Mercury	MONTHLY	< or =8 ppm (dry weight).
Molybdenum	MONTHLY	< or =9 ppm (dry weight).
Nickel	MONTHLY	< or =210 ppm (dry weight).
Selenium	MONTHLY	< or =18 ppm (dry weight).
Zinc	MONTHLY	< or =1400 ppm (dry weight).
BIOLOGICAL	MONTHLY	
Fecal coliform or	MONTHLY	<1,000 Most Probable Number per gram of total solids (dry weight).
Salmonella	MONTHLY	<3 Most Probable Number per 4 grams of total solids (dry weight).

Material is then moved to a second covered phase for two more weeks followed by two weeks uncovered may be (covered) drying before screening We may cover this third phase for the last two weeks for processing. See sampling plan for testing protocol.

APPENDIX

A. **WAC 173-350-220 Cross Reference Table**
B. **Reporting Forms**
C. **Analysis Procedures On site**
D. **Analysis Procedures Off Site**
E. **List of Laboratories**

Final

Economic Impact Analysis for the PacifiClean Elk Heights Integrated Organics Processing Facility Kittitas County, Washington

Prepared for

PacifiClean Environmental, LLC

January 2013

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Executive Summary

PacifiClean Environmental, LLC, proposes to construct and operate an organic processing facility known as the Elk Heights Integrated Organics Processing Facility Project on private land in Kittitas County, Washington. The facility is being developed on over 120 acres of land to provide organic materials processing for the Puget Sound region and small and large communities in Kittitas, Yakima, and surrounding counties. A primary objective of the project is to assist the region in significantly increasing the diversion of materials from landfills through source-separated organics processing. Construction of the project is expected to occur over an 8-year construction window with most of the construction assumed to occur in four phases during years 1, 3, 6 and 8. Commercial operation is expected to commence after completion of the construction of each phase. Operational capacity is expected to increase after construction of each phase until full capacity is reached at the end of the 8-year construction window. A summary of the total estimated capital costs for the project is provided in Table ES-1.

TABLE ES-1
Estimated Capital Costs of the Proposed Elk Heights Integrated Organics Processing Facility, 2012 Million Dollars

	Total Capital Cost	Total Materials Expenditure	Total Construction Payroll
Out of County	—	$0	$0
In-County (local)	—	$28	$7
Total	**$35**	**$28**	**$7**

Source: PacifiClean, 2012.

This report provides a screening-level economic analysis of the project's impacts on Kittitas County and a regional economic analysis of the project's benefits to the county. The amounts shown are based on current estimates and are subject to change as the project definition evolves.

The annual capital costs for years 1, 3, 6 and 8 are estimated to be $16 million, $8 million, $5.5 million, and $5.5 million, respectively. Because the values for annual construction expenditures are within the range represented by the first and 6th (or 8th) year of the project construction window, the analysis presented in this report is based on two of the four years; years 1 and 8. As such, the construction phase impacts of the project are presented as a range of values with the impacts during year 8 providing the lower estimate and those during year 1 providing the upper estimate of the range.

Although operational capacity is expected to increase after construction of each phase until full capacity is reached at the end of the 8-year construction window, the operation phase impacts of the project are evaluated only at full project operational capacity.

Property and Sales Tax Effects

Kittitas County will benefit from substantial property and sales taxes collected during construction and operation of the project.

The total value of goods and services that will be purchased locally (within Kittitas County) during the 8-year construction window is estimated to be $28 million. The total value of local purchases during years 1 and 8 are estimated to be $6.4 million and $4.4 million, respectively. The total value of goods and services that will be purchased locally during operation is estimated to be $3,500,000 per year. Table ES-2 shows the resulting sales tax revenue in Kittitas County during construction and operation of the project, estimated to be $1.1 million during construction and $0.3 million annually during operations.

TABLE ES-2
Estimated Annual Sales Tax Revenue on Goods and Services During Construction and Operation, 2012 Dollars

	Construction	Operations
State	$286,000 - $832,000	$228,000
County	$66,000 - $192,000	$53,000
Total Annual Sales Tax Revenue from Project	$352,000 - $1,024,000	$280,000
Percent Increase in County Sales Tax Revenues*	1.7% - 5.0%	0.5%

*Kittitas County fiscal year (FY) 2011–12 amended budget sales taxes were $3,805,000.

Source: CH2M HILL, 2012; Kittitas County, 2012a.

In addition to the sales tax revenue generated during construction and operation, the project will also provide property tax revenues. The property tax rate is assumed to be $8.245368 per $1,000 of assessed value (Kittitas County, 2012b). Of the total annual property tax revenues of approximately $289,000 generated by the project, approximately $36,000 would go to the County while the remaining $253,000 would go to the various taxing districts within the county. The annual property tax revenues generated during project operation represent about 4.4 percent of the total FY 2012 County property tax revenues. Table ES-3 shows the distribution of the estimated annual property tax revenue between the various taxing districts in Kittitas County.

TABLE ES-3
Estimated Annual Property Tax Revenue During Operation, 2012 Dollars

Taxing Districts	Operation (assuming $36M capital cost)
State (Public Schools)	$78,000
County Funds	$36,000
County Road District No. 1	$31,000
School District No. 400 Thorp M&O Levy	$92,000
Fire District #1	$38,000
Hospital District #1	$11,000
Cemetery District No. 1	$2,000
Total Annual Property Tax Revenue from Project	$289,000
Percent Increase in County Property Tax Revenues*	4.4%

* Kittitas County FY 2011–12 amended budget property taxes were $6,550,858.

Note: Numbers may not add up as a result of rounding.

Source: CH2M HILL, 2012; Kittitas County, 2012b.

Regional Income Effects

During the project construction phase, it is estimated that between $5,170,000 and $15,040,000 per year in income will be directly generated in Kittitas County during year 8 and year 1 from construction spending, respectively. In addition, it is estimated that another $2,024,000 in secondary (indirect[1] and induced[2]) income will be generated annually for the County during year 1. Similarly, during operations, the annual operations and

[1] Indirect project impacts on the economy include income and employment impacts that result when entities that receive direct purchases from a project in turn purchase goods and services from their own suppliers and additional rounds of expenditures from suppliers continue to occur.

[2] Induced project impacts on the economy include income and employment impacts from employees directly or indirectly receiving income from the project and respending the income within the economy.

maintenance expenditures of $5,215,000 will generate approximately $898,000 in secondary income for the County. Table ES-4 provides an overall summary of project effects on income in the county.

TABLE ES-4
Summary of Annual Income Impacts, Kittitas County, 2012 Dollars

	Construction	Operations
Direct Income	$5,170,000 - $15,040,000	$5,215,000
Indirect Income	$602,000 - $1,790,000	$753,000
Induced Income	$80,000 - $234,000	$146,000
Total Income	$5,852,000 - $17,064,000	$6,114,000
Income Multiplier	**1.1**	**1.2**

Notes:
Numbers may not add as a result of rounding.

Income estimates are in 2012 dollars.

Employment Effects

As shown in Table ES-5, the direct average direct employment in Kittitas County during years 1 and 8 of the construction window is estimated to be between 41 and 120 full-time equivalent (FTE).[3] Secondary (indirect and induced) employment in the County is estimated to be between 14 and 47 FTEs during years 1 and 8. In total, it is estimated that between 55 and 167 FTEs will be generated during 8th year when construction expenditures are the lowest and the 1st year when the construction related expenditures are the highest.

In addition to the direct employment of 35 staff, the operational phase of the project is estimated to result in secondary employment within Kittitas County of 10 FTE permanent jobs, resulting in a total of 45 long-term jobs in the county.

The employment multiplier associated with construction employment is calculated to be between 1.3 and 1.4. This means that for every one construction job provided by the project, between 0.3 and 0.4 FTE will be created in a support capacity. Similarly, the annual operation of the project will generate 45 long-term jobs in the county, with an employment multiplier of 1.3, or for every permanent job created by the project there will be just about 0.3 FTE in support services.

TABLE ES-5
Summary of Annual Employment Impacts, Kittitas County

	Construction	Operations
Direct Employment	41 - 120	35
Indirect Employment	12 - 40	6
Induced Employment	2- 7	4
Total Employment	**55- 167**	**45**
Employment Multiplier	**1.3 – 1.4**	**1.3**

Notes:
Numbers may not add as a result of rounding.

[3] Data are calculated on an average annual basis.

Employment estimates are in FTE.