

# Kodiak Biosolids Composting

According to the US EPA, composting is a viable, beneficial option in biosolids management. It is a proven method for pathogen reduction and results in a valuable product that is easy to handle, store, and use. The bottom line is that composting provides an environmentally sound, sustainable solution that can promote economic development and minimize the impact on City and Borough residential and commercial sewer rates.

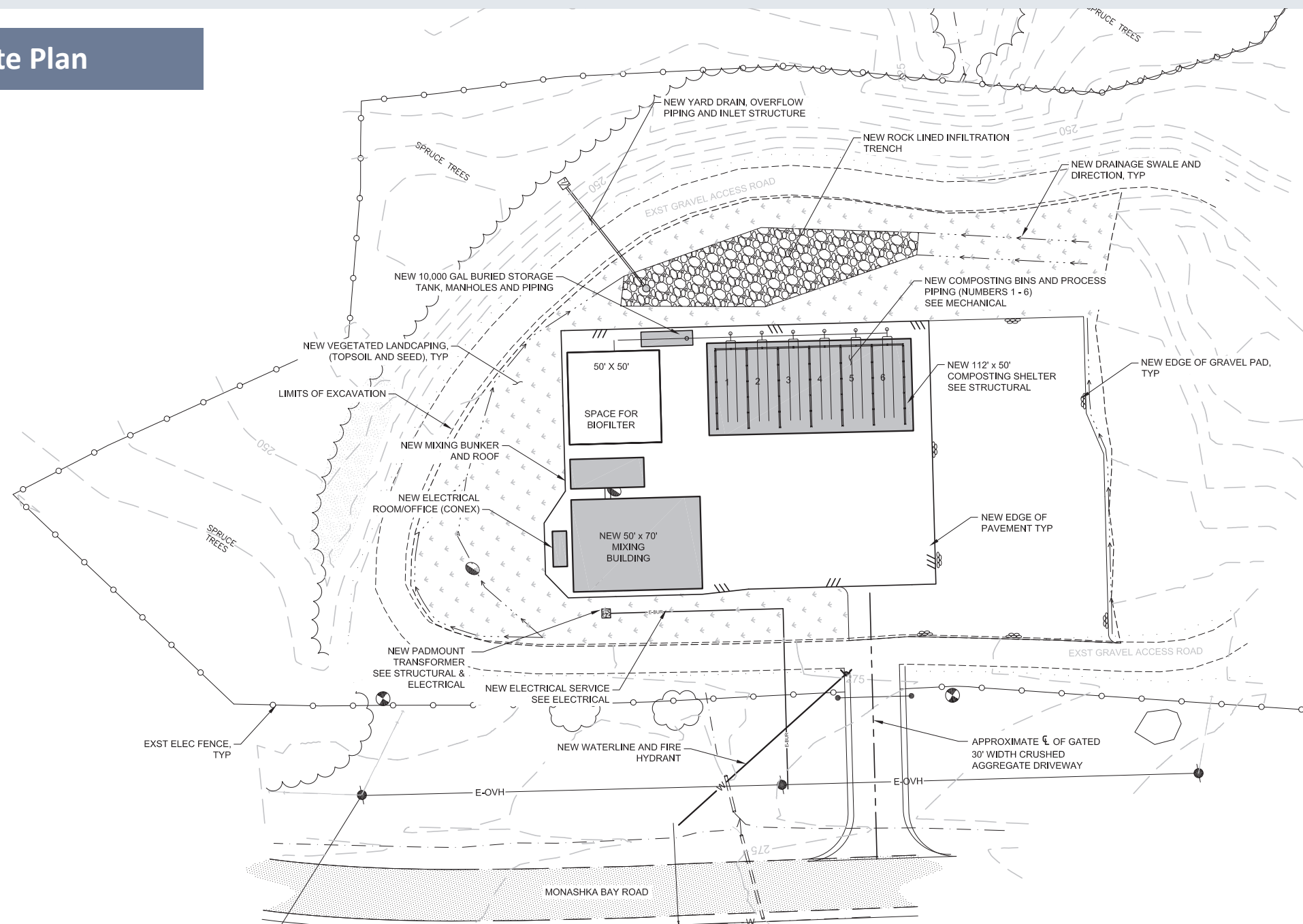
## TECHNOLOGY OVERVIEW

The composting process for the City of Kodiak Biosolids Composting Facility will be the aerated static pile (ASP).

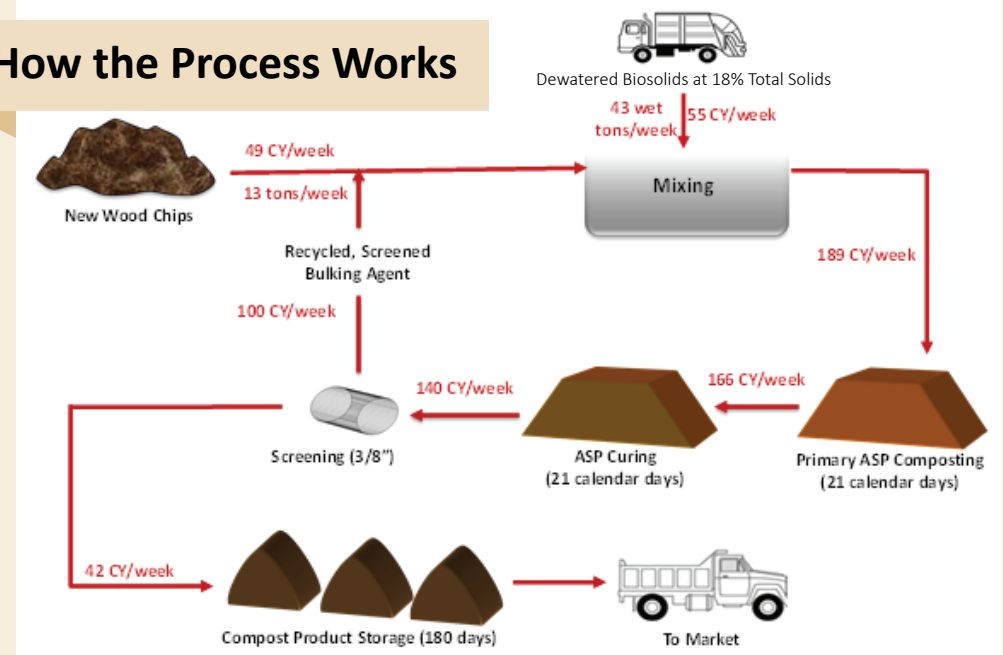
- This is the most commonly used biosolids composting system in North America used at over 100 of the 260+ facilities that process biosolids;
- It is one of the lowest cost systems for biosolids composting;
- The system can be designed to minimize odors and other environmental impacts;
- The process complies with the EPA and ADEC regulations for Class A Exceptional Quality Biosolids;
- The product produced can, and has been, successfully marketed; and
- The City staff and contractor are familiar with the process. They have operated a Class B composting demonstration project permitted by ADEC for more than a year at the KIB landfill.



## Site Plan



## How the Process Works



## PROCESS SUMMARY

Dewatered biosolids is generated at the City of Kodiak Wastewater Treatment Plant. Dewatered cake will be dumped within a 3-sided bunker in the mix and receiving building as shown on the Site Plan. Mixing of dewatered cake and wood chips will be conducted inside the mixing building using a stationary batch mixer. The initial mix will be moved with an elevating conveyor into a covered three-sided bin for pick-up by front-end loader for transfer to the composting bins.

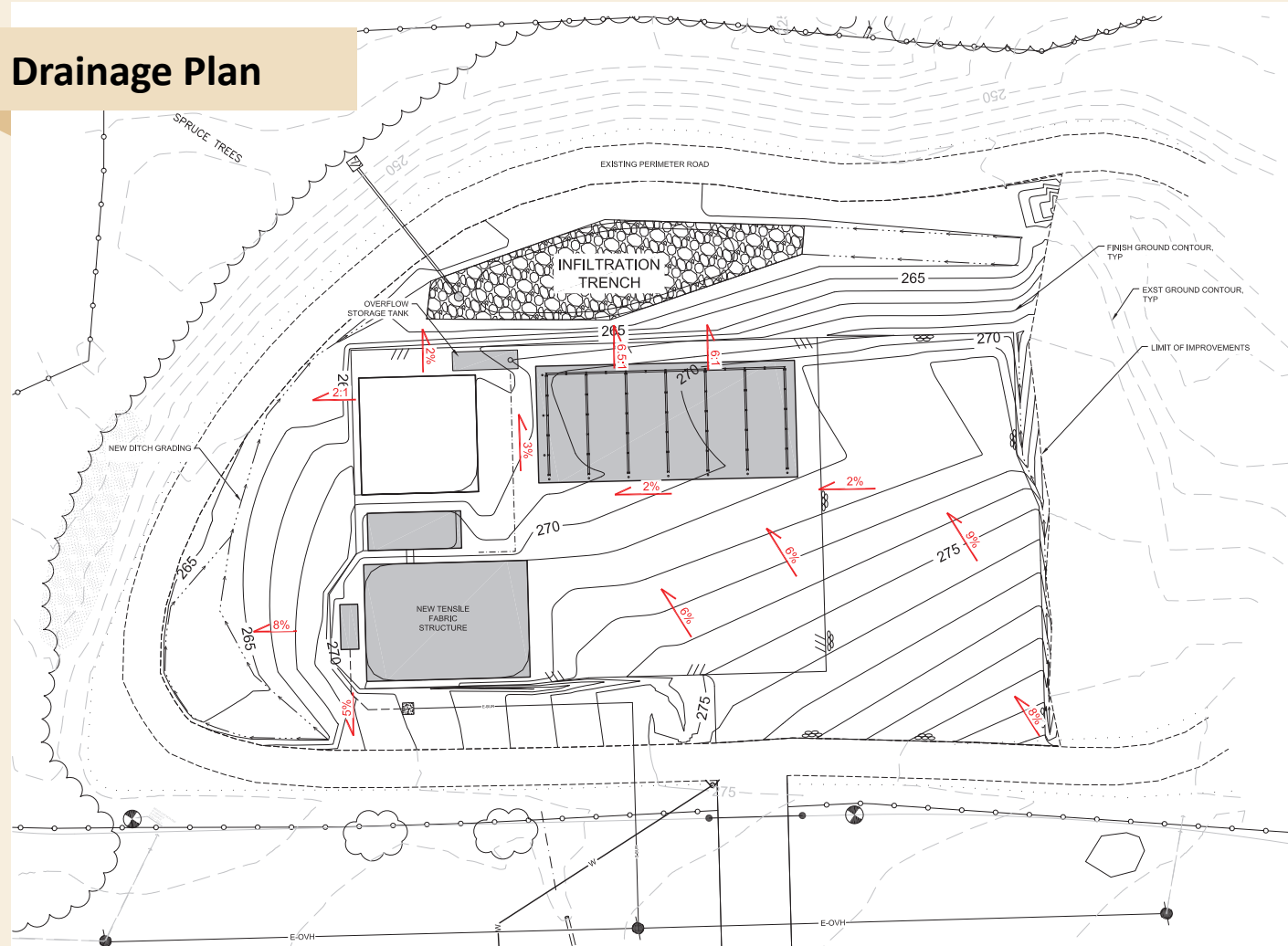
Composting will occur in three covered compost bins. The bins will have an asphalt pad upon which two perforated plastic pipes and associated fan will be placed to provide aeration for process and odor control. A 21-day retention time will comprise the active composting phase of the operation. Three additional bays of equal size are provided to allow three weeks of additional curing under aeration. One fan will be provided for each bin. Aeration will be continuous for the duration of the composting process. Screening of the finished compost will be done using a portable screen to recycle wood chips into the process and produce a high quality compost product.

## SURFACE AND GROUND WATER PROTECTION

The biosolids receiving, mixing, composting and curing areas are paved and covered to prevent impact from precipitation which also eliminates any contaminated rainwater runoff from these processes. Site grading will direct stormwater to an infiltration/settling basin sized to accommodate a 25-year storm event. Clean stormwater and snow melt will be diverted through the existing culvert to a rock outfall.

Wastewater will be generated from the composting aeration system. This condensate will be collected through a totally enclosed piping system and into a 10,000 gallon capacity underground storage tank that will be periodically pumped into a tanker truck and hauled to the City of Kodiak's WWTP for treatment. Any outdoor spillage of untreated biosolids will be flushed into the underground storage tank through the use of an operable grate manhole drain.

### Drainage Plan



For more information about Biosolids composting, see the following websites:

[http://water.epa.gov/scitech/wastetech/upload/2002\\_10\\_15\\_mtb\\_combioman.pdf](http://water.epa.gov/scitech/wastetech/upload/2002_10_15_mtb_combioman.pdf)

<http://www.akwater.com/compost.shtml>

[http://www.wef.org/AWK/pages\\_cs.aspx?id=1062](http://www.wef.org/AWK/pages_cs.aspx?id=1062)

<http://www.wef.org/Biosolids/page.aspx?id=7522Sheet>

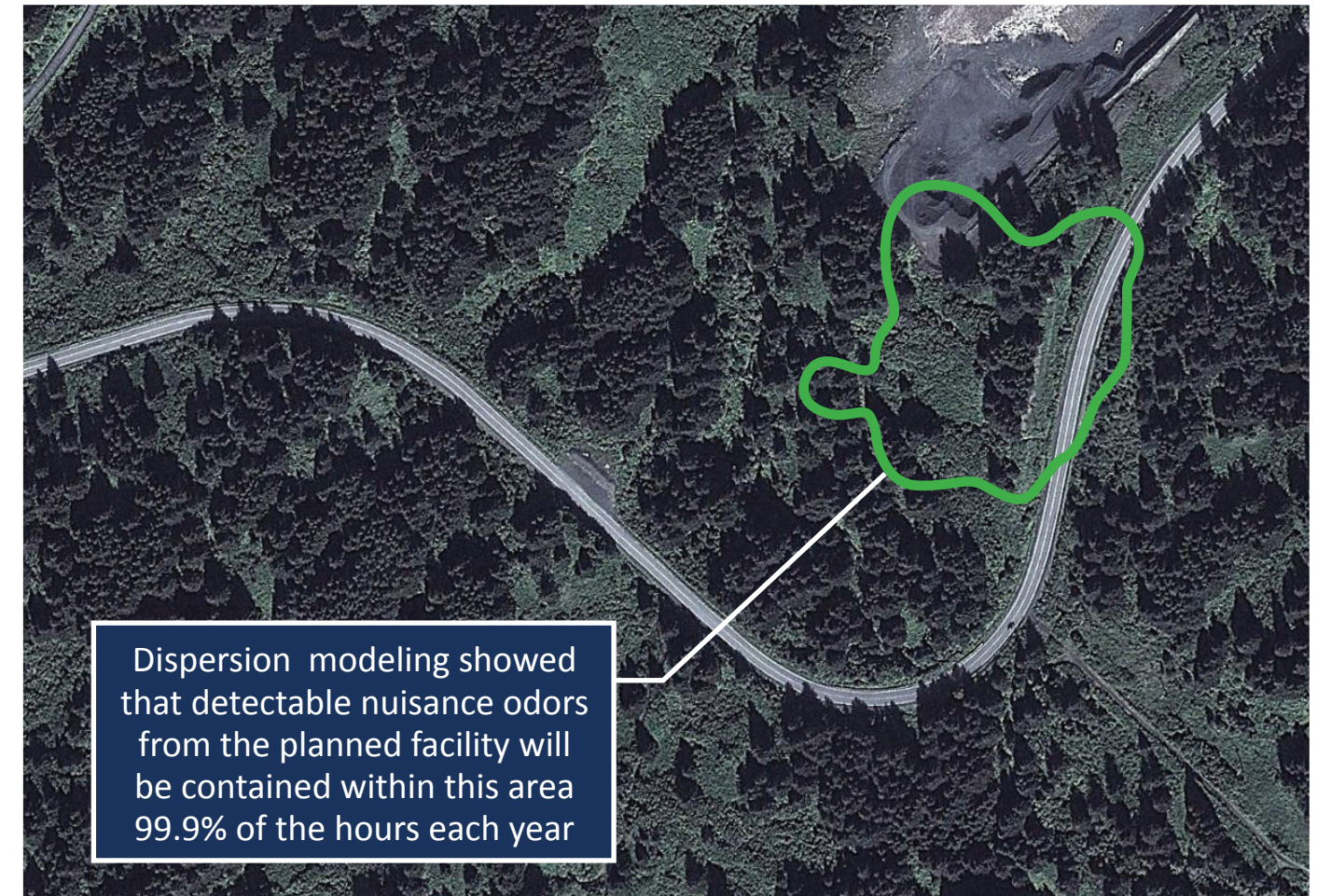
[http://www.newsminer.com/news/local\\_news/fairbanks-wastewater-plant-s-compost-garden-is-wildly-successful/article\\_3fed22db-efbd-559a-bbdf-19773bc97e9a.html](http://www.newsminer.com/news/local_news/fairbanks-wastewater-plant-s-compost-garden-is-wildly-successful/article_3fed22db-efbd-559a-bbdf-19773bc97e9a.html)

## ODOR CONTROL

Continuous negative aeration in both composting and curing processes will provide greater than 95 percent capture of compost odors. The process air will be collected and treated through a wood chip based media biofilter for removal of the odors. Biofiltration has been determined to be the best available control technology for eliminating compost odors in several

air pollution control districts in the United States. Air dispersion modeling has been performed at the planned Kodiak Composting Facility to ensure no odors pass the boundaries of the site.

The figure below shows the limits of perceptible odors from the planned facility based on the use of odor modeling using EPA recommended dispersion model.



Dispersion modeling showed that detectable nuisance odors from the planned facility will be contained within this area 99.9% of the hours each year

## COMPOST: PRODUCT BENEFIT AND USE

The compost end product that will be produced at the Kodiak Compost Facility will exceed all the highest level of USEPA and Alaska DEC requirements for a Class A Exceptional Quality (EQ) material including regulatory requirements for pathogen reduction, stability (vector attraction reduction requirements) and contaminant concentrations for metals. The product is humus-like and can be applied as a soil conditioner to gardens, food and feed crops, used in

landscaping such as for lawns and athletic fields and for erosion control in roadway and other construction activities. Biosolids compost provides large quantities of organic matter and low levels of nutrients (such as nitrogen and phosphorus) to the soil, improves soil texture, and improves the soil's ability to hold nutrients, thus preventing nutrient transport to adjacent surface or ground waters.