Food Waste Composting Feasibility Study

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1.0 EXECUTIVE SUMMARY

Los Alamos County contracted with SCS Engineers to conduct a food waste composting feasibility study. The study evaluated various processing technologies and collection scenarios, and provides a financial analysis of those scenarios that will be used by the County as a guide to select and develop a proper and adequate food waste processing facility and collection plan.

The study encompassed a number of distinct aspects of food waste collection and processing, including organics tonnages and feedstock availability, composting recipes and facility size, site location, technologies, permitting, and environmental impacts. We also gathered information on similar food waste composting programs in other communities, regional partnership opportunities, and compost best management practices. The key results of this study are highlighted below.

Quantification of Materials: In 2019, the commercial and residential sectors in the County generated 14,481 tons of municipal solid waste (MSW). Existing source separated organics programs diverted 2,572 tons, including curbside residential green waste, self-haul at the transfer station, and pallets and brush from the Los Alamos National Laboratory. The estimated annual organics tonnage generated, including the current organics diverted and the estimated organics disposed, is projected to be 7,858 tons (2025).

Organics Processing Technologies: The organics processing technologies that are considered appropriate for the County's feedstock, criteria, and constraints can be broken down into two main types: composting and anaerobic digestion. SCS evaluated windrow composting (i.e., turned windrows), Aerated Static Pile (ASP) Composting, Covered Aerated Static Pile (CASP) composting, aerobic in-vessel composting, and dry Anaerobic Digestion (AD). The overall results of the technology evaluation indicate windrow composting as the preferred method, because the technology has lower capital and unit operating costs and tip fees than the other technologies, and has a proven history of operations; however, it requires more space than the other organics processing technologies.

In-vessel composting, CASP and ASP scored relatively similar to each other. These technologies have higher capital and operating costs than windrow composting, but lower costs than dry anaerobic digestion. They scored higher on odor management and wildlife management. Dry anaerobic digestion ranked the lowest, due to the significant costs (capital costs, unit operating costs and tip fees), and scored lower on the number of operating years of experience (with MSW) and the types of acceptable feedstock material.

Feedstock/Recipe: A compost recipe was developed to evaluate the amount of feedstock (food scraps and yard trimmings) necessary to build a sustainable compost system. The recipe that was designed is a marginally successful recipe from a process design perspective, in that the Carbon:Nitrogen ratio is a bit low due to limitations on available carbon (e.g. yard trimmings). Essentially, the amount of yard trimmings necessary to compost alongside the collected food scraps is a bit low for what is needed.

Environmental Impacts: SCS identified 10 potential environmental impacts that organics processing technologies can have on the environment and public health. The results from the assessment indicate the following:

- Windrow composting has the greatest environmental impacts.

- Enclosed composting systems (i.e. in-vessel, AD) have the lowest environmental impact.
- Windrow, ASP/CASP and In-vessel composting can have a greater impact on pathogen generation. The odor and environmental impacts may have lower environmental impact depending on the location.
- By composting 6,776 tons of organics (all yard trimmings and food), emissions decrease from 1,214 MTCO2E[1] to (-536), for a reduction of 1,750 MTCO2E annually.

Facility Siting: SCS evaluated the potential to locate a facility at four locations:

1. Bayo Canyon
2. Eco Station
3. Overlook Park - Area 1
4. Overlook Park – Area 2

Bayo Canyon site was ranked as the preferred site for a food waste processing facility in the County. The Overlook Park, Area 2 was ranked closely behind the Bayo Canyon location. Bayo Canyon scored higher in terms of its ability to accommodate any of the technologies, its remote location.

Similar Programs: SCS discussed the different challenges each municipality faced while implementing and managing a food waste/organics composting program. A common challenge was the difficulty in growing their organics program due to cost of collections and drop-off locations. Municipalities shared that many residents do not want to store their organic material inside their homes in-between curbside collection or drop-off days, which affects participation rates. Other residents could not afford the additional cost for third party collection. There were no solutions suggested for this challenge.

Another challenge noted by the municipalities was finding the right container to use that is easily accessible for the customer and hauler, while difficult for wildlife to access or move. Though there are options for locks on carts, the carts offered are heavy, and some haulers refuse to service those types of containers. Additionally, bears and other wildlife can tip some of the carts. Though municipalities did not mention wildlife being able to open a lockable cart, bears specifically are still able to damage them. Municipalities have learned that 2-cubic yard containers for organic materials work best for customers to use, haulers to service, and successfully keep wildlife from opening and damaging the containers.

Best Practices: SCS discussed best practices that each municipality found while implementing and managing a food waste/organics composting program. The municipalities and private organizations indicated that consistently providing education, outreach and training to customers has reduced contamination in their organics containers. Additionally, listening to customers' feedback helps to maintain participation in the programs. Customers prefer to be allowed adequate time to understand changes to organics programs, which in turn helps reduce contamination in their containers. Many of the municipalities and private organizations stressed that it is important to set rates based on realistic operating costs in order to operate the program cost effectively.

[1] MMCO2E or million metric tons carbon dioxide equivalent is a unit of measurement that represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit of mass of carbon dioxide based on the gas's (i.e. methane) global warming potential.

Collection Options: Collections options were evaluated for residential and commercial collections. A program-specific Collections Model was developed to compare four residential and two Commercial food scrap collection scenarios. Each of these scenarios were also subdivided into sub-scenarios, differentiated by either food scrap collection loose in the container or in biodegradable bags provided by the County, or purchased by customers. The model calculated the cost per month per account for each collection scenario, as follows:

1. Food in Green Waste Container Loose: $2.48 per month per account
2. Food in Green Waste Container Bagged: $3.44 per month per account
3. Food in New Food Waste Container Loose: $6.91 per month per account
4. Food in New Food Waste Container Bagged: $7.78 per month per account
5. Drop Off Site Collection Two Locations: $0.96 per month per account
6. Drop Off Site Collection Four Locations: $2.15 per month per account

Cost Analysis: A revenue sufficiency model was utilized to compare the alternative collection and processing scenarios. Based on the model outcomes, a number of the initial scenarios were eliminated. The final options considered were:

- **Option 1:** Windrow Composting with Two Drop-Off Sites; Commercial Collection using a new organics container.
- **Option 2:** In-Vessel Composting with Two Drop-Off Sites; Commercial Collection using a new organics container.
- **Option 3:** Windrow Composting with Collection Using Bags in the Collection Carts/Containers, using the existing residential organics cart; Commercial Collection using a new organics container.
- **Option 4:** Anaerobic Digestion with Collection Using Bags in the Collection Carts/Containers, using the existing residential organics cart; Commercial Collection using a new organics container.

The model results indicated for any of the options considered the County's current level of inflationary-like rate increases as required would not be sufficient to fund its ongoing operating, capital, and working capital reserve targets throughout the projection period with implementation of any of the proposed composting programs. The analysis concluded that, depending on the option considered, revenue increases of 6.00% to 13.50% for 3 years would be required for the County to meet its financial requirements throughout the 5-year planning period,

It is important to note that these plans assume the County will borrow about $2.0 million for a Windrow Composting system, $5.8 million for an In-Vessel system, and about $10.2 million for Anaerobic Digestion, which also requires a Windrow system. The loan is assumed to have a term of 10 years.

Conclusions: The results of the study indicated the most cost effective collection/processing scenario is to implement windrow composting using drop off sites for collection of the material. Revenue increases of 6.00% will be required for three years, and following that, the County can return to inflationary-like annual increases of 3.00% for the remainder of the projection period. This scenario assumes the County will borrow $2.0 million for development of the windrow composting facility and drop off sites. The County could choose to move to curbside collection later, and/or could also add AD in the future as the program matures, and the quantities of materials collected from residential and commercial customers increase.

2.0 QUANTIFICATION OF ORGANIC MATERIALS

SCS conducted an analysis of the existing and future organic materials generated in the County. The information was used to establish the County's organic materials baseline (2019) to determine the potential capacity of an organics processing facility.

2.1 EXISTING ORGANIC MATERIALS GENERATION

In 2019, 14,481 tons of municipal solid waste (MSW) was generated from the commercial and residential sectors. Existing source separated organics programs diverted 2,572 tons in 2019, including curbside residential green waste, self-haul at the transfer station, and pallets and brush from the Los Alamos National Laboratory.

Table 1 presents the quantities of waste and separated organics for the residential and commercial sectors of the County. Estimates are included for the medical, government, and educational business sectors (not actual tonnage) based on data from the 2018 CalRecycle Waste Characterization Study. As indicated, a total of 17,053 tons of materials were generated in the County in 2019

Table 1. Annual Tons of MSW and Separated Organics by Sector (CY2019)

Los Alamos County Material	Annual Tons
Waste	
Residential Collection	**5,622**
Commercial Collection	**2,416**
Medical	121
Government	72
Education	68
All Other Categories	2,155
Transfer Station (Self Haul) TOTAL	**6,442**
Transfer Station Self Haul	6,442
Los Alamos National Labs Material	0
Subtotal	**14,481**
Separated Organics	
Residential Green Waste Collection	**1,261**
Transfer Station Green Waste (Self Haul) TOTAL	**1,311**
Transfer Station Self Haul	896
Los Alamos National Labs Material	415
Subtotal Separated Organics	**2,572**
Total Tons	**17,053**

Specific data was not available on the total quantity and types of organic materials generated in Los Alamos County. Therefore, a modeling exercise was performed to estimate the quantity of organic materials generated in the County service area. For the commercial waste stream, SCS used data on the annual tons of waste disposed and diverted, and applied to this the 2018 County of Los Alamos Waste Characterization data. For the residential waste stream, we utilized the 2018 State of California Department of Resources Recycling and Recovery (CalRecycle) Waste Characterization data to estimate the quantity of organic materials in the residential waste stream.

As presented in **Table 2**, the estimated annual organic waste disposed for the County service area is 3,789 tons. There is no compostable product category in the CalRecycle Waste Characterization data, therefore, we were unable to estimate that material type.

Table 2. Organic Materials Disposed as Waste

Material Types	Percentage of total by Weight (Residential & Transfer	Percentage of total by Weight (Commercial)	Sector			Los Alamos National Labs
			Residential Collection	Commercial Collection	Transfer Station (Self Haul)	
Mixed Recycling	7%	18.7%	393.56	451.85	336.06	306.90
Cardboard	0%	9.4%	-	227.13	-	154.27
Food Waste	19%	20.0%	1,068.24	483.26	912.15	328.24
Green Waste	8%	5.3%	421.67	128.06	360.06	86.98
Glass	6%	1.7%	337.34	41.08	288.05	27.90
Scrap Metal	1%	4.6%	56.22	111.15	48.01	75.50
HHW	0%	0.3%	-	7.25	-	4.92
Trash	58%	39.4%	3,260.95	952.03	2,784.47	646.63
Electronics	0%	0.6%	-	14.50	-	9.85
Reusables	1%	0.0%	56.22	-	48.01	-
Total	100%	100.0%	5,622.33	2,416.32	4,800.81	1,641.20
Total Organics	**Proportion of organics in Trash**		**27%**	**25%**	**27%**	**25%**
	Annual Estimated Organics Tons by Sector		**1,489.92**	**611.33**	**1,272.21**	**415.22**
	LOS ALAMOS COUNTY TOTAL ESTIMATED ORGANICS TONS				**3,373.46**	
					ORGANICS TONS	**3,788.68**

2.2 PROJECTED ORGANIC MATERIALS GENERATION

SCS developed a model to project the future quantity of organic materials that will be generated in the County. This information was used to estimate the capacity of a future organics processing facility. The County Organics Disposal Projections Model utilizes population growth assumptions to project the future quantity of waste generation. Because the Los Alamos National Laboratory is the largest employer in the County, SCS used the hiring projections for the Lab to reflect population growth. These projections estimate an additional 3,000 households over the next five years, or a growth rate of 2.5% over the period.

The estimated annual organics tonnage generated, including the current organics diverted and the estimated organics disposed, is 7,858 tons (2025). **Table 3** highlights the projections from the baseline year (2019) through 2025. Based on these projections, by 2025 the County will need to develop an organics program to capture the estimated 4,394 additional tons per year of organics that are presently sent to landfill. The final output of the model estimates the tons of new organics processing capacity required to divert 100% of organics disposed of by the County. The organics projections spreadsheet is included in **Appendix A.**

Table 3. Projected Growth in Organics Generation and Disposal for the County Service Area

Year	Los Alamos County Population	Growth Rate	Estimated Organics Disposed (tons)	Current Organics Diverted (tons)	Total Estimated Organics (tons)
2019	19,369		3,789	2,987	6,776
2020	19,853	2.50%	3,883	3,062	6,945
2021	20,350	2.50%	3,980	3,139	7,119
2022	20,858	2.50%	4,080	3,217	7,297
2023	21,380	2.50%	4,182	3,297	7,479
2024	21,914	2.50%	4,287	3,380	7,666
2025	22,462	2.50%	4,394	3,464	7,858

3.0 ORGANICS PROCESSING TECHNOLOGIES

SCS researched organics processing technologies (including potential suppliers) that would be appropriate for the types and quantities of organic materials generated in the County, and evaluated the technologies using a consistent and equitable screening tool to identify those technologies that appear most suitable for further consideration.

The work performed by SCS included the following steps:

- Created key criteria to guide decisions on the consideration of organics processing technologies.
- Established a scoring and ranking methodology based on assigning a weight and point value to each criteria.
- Scored and ranked each technology.
- Developed recommendations based on the study results.

3.1 OVERVIEW OF ORGANICS PROCESSING TECHNOLOGIES

The organics processing technologies that are considered appropriate for the County's feedstock, criteria, and constraints can be broken down into two main types: composting and digestion. Within each, there are some sub-types.

Composting

- Windrow Composting (i.e., turned windrows)
- Aerated Static Pile (ASP) Composting
- Covered Aerated Static Pile (CASP) Composting
- Aerobic In-Vessel Composting

Digestion

- Dry Anaerobic Digestion
- Wet Anaerobic Digestion (SCS has included information on wet AD in this report to differentiate it from dry AD. However, it was not evaluated in the analysis because it is our understanding the County would not consider this technology for implementation.

3.2 EVALUATION OF ORGANICS PROCESSING TECHNOLOGIES

The development of an organics processing system is a significant undertaking and therefore a feasibility study must evaluate the opportunities and risks associated with siting, designing, and operating such a facility. Using our experience conducting similar studies for solid waste facilities, SCS identified the potential constraints and benefits of the project, and developed a methodology and criteria critical to the evaluation and selection process for composting and AD technologies.

SCS developed a scoring system based on assigning a weight and point value to each criteria identified during the constraints and criteria evaluation. Weighting factors were included for each criteria so the matrix could rank the potential technologies from highest to lowest score. The top ranked technology is not necessarily the best technology. The ranking only serves to provide the

County a sense of which technology appears to have a system that best suits their criteria and goals. For the list of categories and their scoring and ranking, refer to **Appendix B**.

3.3 TECHNOLOGY RESULTS

The overall results from the analysis are included in **Table 4**. As shown, windrow composting scored the highest with 83 points. This technology has lower capital and unit operating costs and tip fees than the other technologies, and has a proven history of operations; however, it requires more space than the other organics processing technologies.

Aerated Static Pile (78 points), CASP (77 points) and in-vessel composting (76 points) scored relatively similar to each other. These technologies have higher capital and operating costs than windrow composting, but lower costs than dry anaerobic digestion. They scored higher on odor management and wildlife management.

Dry anaerobic digestion ranked the lowest at 62 points, due to the significant costs (capital costs, unit operating costs and tip fees), and the lower number of operating years of experience (with MSW) and the types of feedstock material accepted.

The technology scoring is shown in Table 4, and the complete report is included in **Appendix C.**

Table 4. Technology Scoring

CRITERIA	WINDROW COMPOSTING	ASP COMPOSTING	CASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
Technological Criteria	54	55	58	63	53
Financial Criteria	29	23	19	13	9
TOTAL	**83**	**78**	**77**	**76**	**62**

4.0 FEEDSTOCK FOR ORGANICS PROCESSING TECHNOLOGIES

Important factors to consider in selecting an organics processing technology are the available feedstocks for the facility, and the markets for the by-products produced by the facility. Coker Composting & Consulting (CC&C) assisted SCS with this aspect of the study.

The Project Team compiled information on potential waste feedstocks generated in the region. We considered and evaluated projected volumes, availability, costs, chemical characteristics, fuel value, and regulatory considerations for materials from residential yard waste programs, wastewater treatment (biosolids), livestock and agricultural production, and certain industrial manufacturing operations (pulp).

Few facilities have large volumes of organic feedstock that are in close proximity to Los Alamos County. The one exception may be casinos. Before SCS contacted these facilities, SCS wanted to confirm what feedstock was needed to create a balanced compost product. The feedstocks used to develop the proposed mass-based recipe in this section were based on the data shown in Table 5, which included estimates of the organics currently diverted and potentially divertible within Los Alamos County. The Year 2025 estimates were used for the analysis.

Table 5. Projected Organics Tonnage

Material Type	2019	2020	2021	2022	2023	2024	2025
Green Waste	3,878	3,975	4,074	4,176	4,281	4,388	4,497
Pallets	106	109	111	114	117	120	123
Food	2,792	2,862	2,933	3,007	3,082	3,159	3,238
Total Organics	**6,776**	**6,945**	**7,119**	**7,297**	**7,479**	**7,666**	**7,858**

Note: this includes the 700 tons/year of yard trimmings used by Public Utilities for sludge composting

Table 5 tonnages include approximately 700 tons per year of greenwaste currently used by the Dept. of Public Utilities as a carbon/bulking agent amendment for the biosolids they compost at the wastewater treatment plant. If that program continues, that carbonaceous feedstock will not be available to support food waste composting initiatives.

4.1 COMPOSTING RECIPE

The following information outlines a proposed composting recipe (in-vessel, Aerated Static Pile or Covered Aerated Static Pile. CC&C developed a Compost Recipe Model, which is an Excel spreadsheet that models and balances four important composting process design parameters: carbon-to-nitrogen ratio; moisture content; volatile solids content; and predicted free air space (predicted based on bulk density). Table 6 summarizes the Year 2025 recipe.

Table 6. Organics Material Recipe for Compost Facility

Parameter	Targets	Recipe
Average Annual Compostables – food scraps (CY/yr.)		5,568
Average Annual Compostables – yard trimmings (CY/yr.)		14,089
Average Annual Compostables – LANL pallets (CY/yr.)		703
Compost recycle - inoculant (CY/yr.)		1,689
Oversize wood from screening (CY/yr.)		8,423
Carbon:Nitrogen Ratio	> 25:1	19
Moisture Content	50%-65%	55%
Volatile Solids	> 80%	84%
Predicted Free Air Space	40% - 60%	63%

This is a marginally successful recipe from a process design perspective, in that the C:N ratio is a bit low due to limitations on available carbon. Carbon provides both an energy source and the basic building block making up about 50 percent of the mass of microbial cells. Nitrogen is a crucial component of the proteins, nucleic acids, amino acids, enzymes and co-enzymes necessary for bacterial cell growth and function. This recipe removes the 700 tons or 2,597 CY/yr. of yard trimmings produced in the County that are being diverted to the Department of Public Utilities for their use in composting biosolids. This recipe becomes even more carbon-limited. There are a variety of ways to increase carbon, including an outreach program to raise yard waste diversion to above 72% of County households, a clean wood recycling program for construction projects in the County or at LANL, source a food processing waste with high sugar/starch content as a feedstock, combine food waste recycling with DPU's biosolids composting, or consider reducing the amount of food scraps collected to begin with, while looking for additional yard trimmings to expand the compost program.

Note that this recipe presumes capture of all Year 2025 compostables; in reality, not everyone will participate in an expanded organics diversion program unless mandated (which greatly increases contamination rates) but participation rates will grow over time with robust advocacy by the County. In addition, not all participants will set out their organics carts, or drop off organics at designated drop-off sites every week. This suggests that any new organics diversion infrastructure be very scalable to grow cost-effectively over time.

4.2 FOOTPRINT ANALYSES

In order to understand how much property is needed for a proposed organics recycling facility, a footprint analysis is conducted. The CC&C Compost Footprint Model is an Excel spreadsheet that takes data from the CC&C Compost Recipe Model to simulate the production footprint needed for processing defined quantities of feedstocks into compost using one of several composting methods. The detailed footprint analyses are summarized in Table 7.

Table 7. Feedstock Footprint Analysis

	Turned Windrow	ASP/CASP	In-Vessel	AD
		(dimensions in square feet)		
Feedstock Receipt			1,118	
Feedstocks Storage			8,115	
Composting/AD Area	43,273	20,088	22,140[1]	52,697[2]
Curing Area	57,697	38,225	60,775	75,900
Screening Area			5,428	
Product Storage Area			42,750	
Product Load-Out Area			6,138	
Allow for equipment movement at 25%	44,140	30,475	34,308	48,046
Totals (SF)	205,699	152,377	171,539	240,232
Totals (Ac.)	4.7	3.5	3.9	5.5

[1] Feedstock receipt and mixing are included in the enclosed rotary-drum composting complex
[2] Includes separate mixing area (3,847 SF), biogas storage (15,800 SF) and percolate tankage (22,500 SF)

4.3 POTENTIAL MARKETS

The SCS team reviewed potential products and markets from the processing technologies.

4.3.1 Compost

The primary markets for high-quality finished composts are in landscaping and agriculture, with secondary markets in vegetated stormwater management systems, sediment and erosion control, and in green infrastructure development[2], which includes measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. Compost quality from food wastes is generally quite good, although there are some concerns about the presence of per- and polyfluoroalkyl substances (PFAS).

The landscaping market for composts are strongest in owner-occupied single-family dwelling unit households, primarily for use in ornamental beds and in turf grass maintenance. In 2019, there were 5,543 of these households in the County[3]. Assuming each household has a 300 SF ornamentals bed and 1,500 SF of turf grass, and that 30% of households agree to use compost, that market could absorb about 4,800 CY of compost annually, or about 33% of full-scale Year 2025 production. The

[2] https://www.epa.gov/green-infrastructure/what-green-infrastructure
[3] Los Alamos Housing Needs Analysis, December 2019 at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_6435726/File/Government/Departments/Community%20Development/Housing/Los%20Alamos%20County%20Housing%20Analysis%20Final%2012-10-2019.pdf

County may have to consider programs to encourage the use of compost, or to require minimum soil organic matter contents to reduce demand for irrigation water[4].

Agriculture may not be a very robust market for Los Alamos County-produced compost as there is only one farm in the County and only 15,812 acres of harvested cropland in Santa Fe County[5]. It is not known if any of the 286 farms in Santa Fe County are within one hour of Los Alamos.

The use of compost as an erosion prevention mechanism through use of compost "blankets" and as a sediment filtration/capture system through the use of compost filter berms and filled permeable filter socks is growing in popularity due to the improved performance of these methods relative to conventional methods of sediment and erosion control.

4.3.2 Biogas – Electricity

A dry fermentation-style AD system can be expected to produce about 2,000 cubic feet (ft^3) of biogas per ton of feedstock digested. For the AD system modeled in this effort, an estimated 15.1 million ft^3/year of a 60% methane biogas could be produced. This biogas could be combusted, as is, in a combined heat-and-power electrical generation system. This could potentially produce in excess of 1.5 million kilowatt-hours per year (kWh/year) or 1500 MWh/year with recovered heat of about 3,474 million BTUs (MMBTU) per year. If this organics recycling processing option is preferred, the County Department of Public Utilities should be consulted to determine if they are interested in this power and recovered heat.

4.3.3 Biogas – RNG

A growing number of AD installations are processing the biogas to make renewable natural gas (RNG), either for vehicle fuel or for pipeline injection. Making RNG requires removing the carbon dioxide, hydrogen sulfide and other contaminants from the biogas. Production of RNG for vehicle fuel benefits from a partner with a vehicle fleet (school buses, trash trucks, taxicabs) willing to convert vehicles to natural gas engines. However, this appears to be a bit of a "chicken-and-egg" problem; fleet owners are not willing to make the investments in conversion without a reliable source of RNG and adequate numbers or refueling stations and RNG producers are reluctant to build refueling infrastructure without vehicles to refuel.

Pipeline injection is increasingly popular in the U.S., due, in part, to California's Low-Carbon Fuel Standard, which is a market-based program that focuses specifically on reducing carbon intensity (CI) of fuels used within California. Low-carbon fuels in the California fuel pool can generate credits based on emissions reduced compared to the established CI baseline. These credits incentivize developers to bring more clean fuel options to California.

Generally, RNG has to be injected into a transmission pipeline network (rather than a distribution pipeline network) as all gas pipelines flow full, so enough downstream gas demand has to exist to offset the amount of RNG to be injected. Fortunately, there is a transmission main in Los Alamos

[4] Coker, C., "Soil Organic Matter Mandates", *BioCycle,* July 2021 at https://www.biocycle.net/soil-organic-matter-mandates/

[5] USDA, National Agricultural Statistics Survey, 2017 at https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/New_Mexico/st35_2_0009_0009.pdf

County[6]. However, the quantity of biogas projected to be produced is not enough to justify the capital and operating costs of an RNG facility.

SCS used an RNG calculator which suggests about 11 million cubic feet of RNG per year based on the Los Alamos feedstocks, with 700 TPY diverted by DPU to biosolids composting.

4.3.4 Digestate

Digestate (the liquid or solid residual from AD) has a high moisture content and is expensive to haul long distances to farmlands. Given the limited number of close-in harvested crop fields, direct land application to cropland could be infeasible, although direct land application to disturbed lands needing remediation might have potential. Another alternative would be to compost the digestate with a volatile solids-rich amendment (like yard trimmings), but, as noted above, there are limits on the supply of yard trimmings.

To review the entire Feedstock for Composting Technologies Report, refer to **Appendix D.**

[6] https://pvnpms.phmsa.dot.gov/PublicViewer/

5.0 ENVIRONMENTAL IMPACT ASSESSMENT

SCS researched the environmental impacts of the different organics processing technologies, and evaluated the environmental impacts using a consistent and equitable screening tool to identify which organics processing technologies have the greatest environmental impacts.

SCS identified 10 potential environmental impacts that organics processing technologies can have on the environment and public health. The potential for composting systems to impact the environment may reduce some of the environmental benefits of composting organic materials versus disposal. SCS notes that properly operated and managed organics processing technologies can have little to no impact on the environment. Another characteristic of each composting technology that influences their potential impact on the environment is whether the system is contained in an enclosed structure. In general, closed composting systems such as in-vessel and dry anaerobic digestion that are contained in buildings or structures have additional aspects to protect the environment, compared to open, outdoor systems such as windrow composting. All of the studied technologies divert organic waste from landfilling, where the materials would otherwise decompose and generate methane. The following potential environmental impacts were considered in this assessment:

1. Odors
2. Sensitive Receptors
3. Attraction of Wildlife and/or Vectors
4. Pathogen Generation
5. Water Consumption
6. Surface Run-off
7. Air Quality / Dust Control
8. Greenhouse Gas Emissions Reduction
9. Energy Consumption
10. Noise

The key findings of the analysis include:

- Windrow composting has the greatest environmental impacts.
- Enclosed composting systems (i.e. in-vessel, AD) have the lowest overall environmental impacts.
- Windrow, ASP/CASP and In-vessel composting can result in higher pathogen generation. The odor and air impacts may be less, depending on the location.
- Composting 6,776 tons of organics (all yard trimmings and food), reduces GHG emissions from 1,214 MTCO2E[7] to (-536), for a reduction of 1,750 MTCO2E annually.
- Composting 2,792 tons of food waste compared to landfilling the material reduces GHG emissions from 1,552 MTCO2E to (-323) MTCO2E, thereby avoiding approximately 1,875 MTCO2E annually.

[7] MMCO2E or million metric tons carbon dioxide equivalent is a unit of measurement that represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit of mass of carbon dioxide based on the gas's (i.e. methane) global warming potential.

- Processing 2,792 tons of food waste in an anaerobic digester and 3,984 tons of yard trimmings in a composting facility reduces GHG emissions from 1,214 MTCO2E to (-330), resulting in a reduction of 1,544 MTCO2E annually.
- Processing 2,792 tons of food waste in an anaerobic digester (instead of landfilling the material) reduces emissions from 1,552 MTCO2E to (-116) MTCO2E, thereby avoiding approximately 1,668 MTCO2E annually.

A summary comparison of the environmental impacts from each technology is included in **Table 8**. The higher the score, the greater the potential for adverse environmental impacts.

Table 8. Environmental Impact Scores

TECHNOLOGY	Windrow Composting	ASP/CASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
SCORE	40	36	19	7

To review the FULL Environmental Impact Assessment, refer to **Appendix E**.

6.0 SITE EVALUATION

The successful siting of a food waste composting facility depends a number of key factors, including: availability of land in relation to site requirements; traffic and access; proximity to sensitive receptors; land use; solid waste facility and other agency permitting; public understanding and acceptance; and additional local and regional issues (e.g., bears, odor control, etc.). All of these factors were taken into consideration when evaluating the potential to site a facility in Los Alamos County.

Based on input from the County, SCS evaluated the potential to locate a facility at four locations:

1. Bayo Canyon
2. Eco Station
3. Overlook Park - Area 1
4. Overlook Park – Area 2

SCS reviewed available data on the sites, such as County-provided site maps showing utilities, and current on-site uses. Information was also reviewed regarding property ownership or lease, and planning/zoning information. In addition, a site visit was conducted at each site. A site evaluation scoring matrix was developed to score each site based on criteria established for the study. The criteria included the following factors:

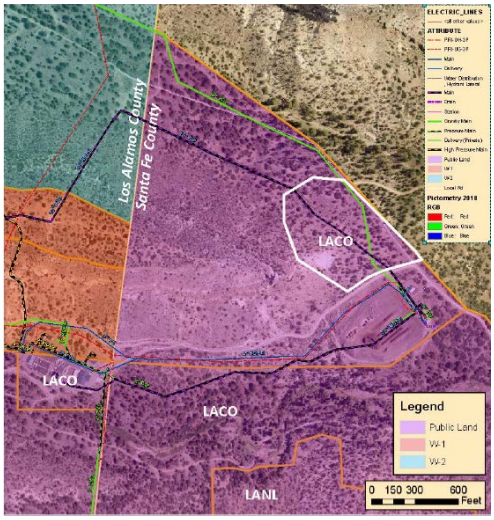
1. Land use and location: compatible with existing and surrounding land uses
2. Access: Accessible by existing road network
3. Access: Does existing road network require improvement?
4. Located in proximity to Eco Station Transfer Station (<12 miles)
5. Distance/proximity from residential community
6. Distance/proximity from commercial development
7. Adequate space for proposed operations
8. Property Owned by Agency
9. Need for Vector, Bird, and Animal Control
10. Aesthetics: Potential for negative impacts to views and vistas

The results of the study indicate the Bayo Canyon site is the most suitable for locating a food waste composting facility in the County. The Overlook Park, Area 2 was ranked closely behind the Bayo Canyon location. Bayo Canyon scored higher because of its remote location, and therefore it is not in close proximity to residential areas, and would have relatively little impact on aesthetics. Further in-depth analysis of both these sites in relation to environmental impacts, permitting, and costs for the development of the facility will be needed to determine the most optimal site for location a food waste processing facility in Los Alamos County.

6.1 BAYO CANYON

An approximately 10-acre site is owned by Los Alamos County, located in Santa Fe County. The County operates a wastewater treatment plant and biosolids composting in this area. The area under consideration for the composting facility is circled in White, labeled LACO (**Figure 1**).

Figure 1. Bayo Canyon Site Location



This site could be considered for open windrow or aerated static pile composting due to its remote location. However, the area is native, and will require clearing and most likely some grading to create a level area for composting. Although located off a dirt road, the road is improved and able to handle truck traffic. Due to its remote location, there is little potential for impacts to sensitive receptors or aesthetics. Compost from this location may need to be transported to Los Alamos (Eco Station or other location) for distribution to the public. The site consists of approximately 10 acres, which is adequate for windrow composting, which requires approximately 4-5 acres, aerated static pile/covered aerated static pile (ASP/CASP), which requires approximately 3.5 acres, in-vessel composting, which requires approximately 4 acres, and anaerobic digestion (AD), which requires approximately 5.5 acres.

The cost estimates for developing the various processing technologies at the site are:

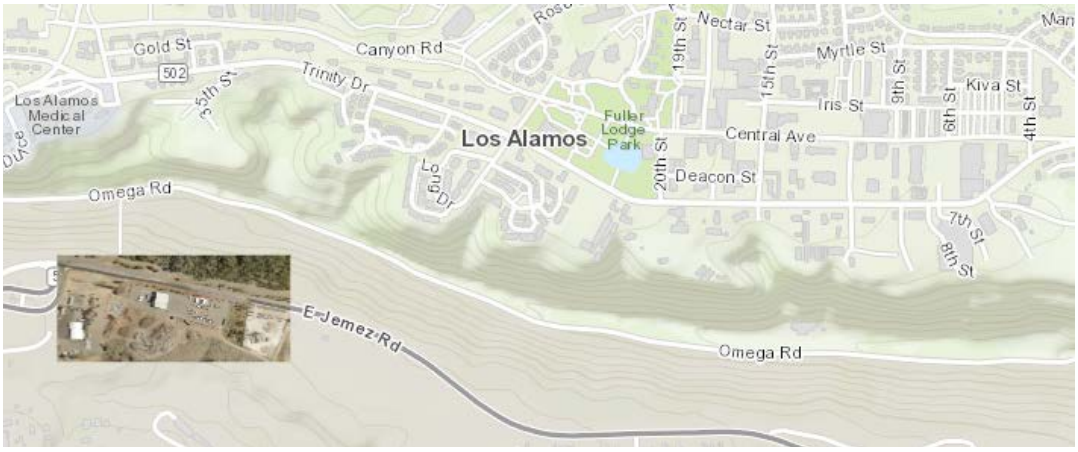
Windrow:	$ 811,000
ASP / CASP:	$ 1.48 million
In-Vessel:	$ 1.6 million
AD:	$ 2.5 million

There may be additional costs for this area due to rezoning requirements (to remove the W restriction) and any major clearing or grading to create a level area for composting. There is a 15% contingency fee included in the cost estimate.

6.2 ECO STATION

The Eco Station is located at 3701 E Jemez Rd, Los Alamos, NM 87544 (**Figure 2**). The site is located approximately 2 ½ miles from the center of Los Alamos. The site is owned by the US Department of Energy, National Nuclear Security Administration, and leased to Los Alamos County for operation of the Eco Station and a utility scale solar photovoltaic and battery storage system. The existing lease was signed in 2011 for a 25-year term. The lease can be renewed at the County's option for an additional 25-year term.

Figure 2. Eco Station Site Location



Previously, the County operated a composting operation at the site, however there were complaints regarding odors from the facility affecting the Los Alamos National Laboratory (LANL), so the operation was required to shut down. The current lease only allows containerized composting operation at the Eco Station site with approval from the property owner. The lease allows the County to bring fully composted material to the site for distribution to County residents.

There are two parcels the County identified as potential locations for a composting operation at the Eco Station. The eastern parcel is 8.81 acres and the western parcel is 2.78 acres. They are approximately half a mile apart. After initial evaluation, the western parcel was eliminaed from further consideration, due to its small size and existing use for equipment and product storage. The eastern parcel has the appropriate space to accommodate in-vessel composting and AD, which are the only two technologies that are allowed at the site, due to the above-described lease restrictions. In-vessel composting requires approximately 4 acres and anaerobic digestion (AD) requires approximately 5.5 acres.

The cost estimates for developing organics processing technologies at the site are:

In-Vessel:	$ 1.6 million
AD:	$ 2.5 million

There may be additional costs for this area due to adding a gas line (AD) or connections to the main water and electrical lines. There is a 15% contingency fee included in the cost estimate.

6.3 OVERLOOK PARK

The Overlook Park site is located at 580 Overlook Rd., White Rock. The site is located approximately 9.5 miles from Los Alamos. Overlook Park currently is home to a dog park, playground, sports complex, nearby hiking trailheads, picnic areas, and the White Rock Overlook Collection Center/ Trash Convenience Center. The Park is located in close proximity to the community of White Rock, an unincorporated area within Los Alamos County (Figure 3). White Rock is comprised of a small downtown area, shopping center, and residences, with a population of approximately 5,700 people.

Figure 3. Overlook Park Site Location

There are two areas considered for the development of a composting facility at Overlook Park:

Overlook Area 1: Wastewater Treatment Plant
This area is located north east of the existing wastewater treatment plant. It is county-owned property. It is used by public works and community services as a staging/storage area for gravel, stone, dirt, and construction supplies for County operations. This area would most likely not be suitable for food waste composting, due to the zoning restrictions and small size of the available area. The area is 2.5 acres and the technologies that were analyzed require approximately 3.5 – 5.5 acres.

Overlook Area 2: Collection/Convenience Center
Area 2 is located adjacent to the existing collection/convenience center and is approximately 3 ½ acres. It has a few established trails, and a number of unofficial trails, and is very flat. It has no zoning restrictions as it is zoned P-L. It has a developed road and a gate, and electric utilities are nearby. As the adjacent area is presently used for the collection/convenience center, siting the composting facility in this area may be easier than in Area 1.

Overlook Park Area 2 could be used for the development of a food waste composting facility. It's location in proximity to the existing convenience center, as well as relatively flat, undeveloped area affords it consideration for this project. The site is located the furthest from downtown Los Alamos; therefore, materials transferred to and from this site to the County center would have a greater impact. There is the potential for odor impacts to the nearby residential areas, as well as to visitors to the Park. Water utilities would need to be extended to the area as well. The site may be able to accommodate ASP/CASP composting (requires approximately 3.5 acres) however, this type of processing would require utilizing 100% of the space. Windrow composting (requires approximately 4-5 acres), in-vessel composting (requires approximately 4 acres), and AD (requires 5.5 acres), all require more area than what is available at this site.

The cost estimates for developing the processing technologies at the site are:

ASP / CASP $ 1.48 million

There may be additional costs for this area due to adding water or electrical lines. There is a 15% contingency fee included in the cost estimate.

The complete siting report is included in **Appendix F**.

7.0 PERMITTING REQUIREMENTS

SCS performed national, state and local research and spoke with the County of Los Alamos (County) Planning Department to identify the permit requirements and regulations, permitting documents, fees, and timelines for Compost Facilities and Collection Centers. Permitting requirements are dictated by the types and quantities of feedstock that are accepted at each facility.

The regulatory definitions of each facility are as follows:

- "Collection center" means a facility managed for the collection and accumulation of solid waste with an operational rate of less than 240 cubic yards per day monthly average and that serves the general public.
- "Composting facility" means a facility, other than a transformation facility, that is capable of providing biological stabilization of organic material.

For purposes of this study, we presume a County-operated composting facility will accept only source-separated compostable materials at a rate of 25 tons per day (annual average) or less. A County-operated collection center is presumed to accept solid waste at a rate of less than 240 cubic yards per day (monthly average). As such, the New Mexico Solid Waste Rules, 20.9.3.27 NMAC[8], will require the registration of both types of facilities (i.e., composting facility and collection center) with the New Mexico Environment Department (NMED), Solid Waste Bureau. A permit is not required per 20.9.3.8 NMAC.

Composting facilities may also be regulated by other agencies in addition to the Solid Waste Bureau. The requirements of the following statutes, programs and agencies may apply, depending on the specific details of the facility. The applicability of these programs cannot be assessed until a site is selected and conceptual design details are prepared. Additionally, a timeline and assessment of fees will depend on the organics processing technology selected.

Additional applications and documents that will need to be developed include:

- **Groundwater discharge**: Notice of Intent to Discharge or Groundwater Discharge Permit.
- **Surface runoff**: National Pollutant Discharge Elimination System, 40 CFR Part 121, includes requirements for Stormwater Pollution Prevention Plan (SWPPP). NMED Surface Water Quality Bureau.
- **An Air Quality Permit is not required.**
- **Los Alamos County Planning Department** requires an application from the construction contractor. Once the application is received by the County, the review process is approximately three days.
- **Biosolids and septage**: 40 CFR Part 503[9] and 20.6.2 NMAC
- **Compost sales**: NM Fertilizer Act, 76-11-1 to 76-11-20 New Mexico Statutes Annotated (NMSA), includes requirements for fertilizer / soil conditioner registration. NM Department of Agriculture.
- **Storage of combustible materials**: International Fire Code, Chapter 28 (2018)

[8] https://www.env.nm.gov/regulatory-resources/
[9] https://www.govinfo.gov/content/pkg/CFR-2018-title40-vol32/xml/CFR-2018-title40-vol32-part503.xml

Based on the proposed throughput of the composting facility and collection center, registrations for each facility must be obtained through the Solid Waste Bureau as opposed to a permit. The process is the same whether windrow, aerated static pile, or anaerobic digestion is selected. The owner or operator of the proposed composting facility and collection center must apply for a registration at least 30 days prior to any operations and every five years thereafter. This registration must be updated whenever operations change. No fee is required for a compost facility registration. An application form must be completed and submitted to the Solid Waste Bureau. The County may need to include correspondence from the NMED Surface Water Quality Bureau, confirming permitting is not needed.

The complete permitting report is included as **Appendix G**.

8.0 SIMILAR FOOD WASTE COMPOSTING PROGRAMS

A survey was conducted to gather information on existing organics composting programs comparable to what is planned in Los Alamos County. The objective of this effort was to identify best practices, program efficiencies, and challenges and opportunities associated with these programs, and to assist the County in their decision-making regarding the establishment of a food waste recycling program.

SCS surveyed seven municipalities that have established organics composting programs that service communities with similar size, population and systematic design. The data collected from the survey included the program type, material quantities, participation rates, program costs, outreach and education activities, contamination levels, and other pertinent information.

The programs selected for the survey, along with the reason(s) they were chosen, are listed below:

- **Albuquerque, New Mexico:** Collection and drop off programs are located in New Mexico
- **Aspen, Colorado** : Rural, bear concerns, similar population size
- **Flagstaff, Arizona:** Animal concerns, similar population size
- **Northfield, Minnesota:** Similar population size
- **Redmond, Oregon:** Similar population size
- **Santa Fe, New Mexico**: Collection and drop off programs are located in New Mexico
- **Truckee, California:** Rural, bear concerns, similar population size

The programs are elective for all residents and commercial businesses. The Town of Truckee was the only municipality that has a mandatory organics program for commercial businesses only. A majority of the programs were initiated within the last six to twelve years. The compost sites all accept food, bones, coffee grounds, coffee filters, shells, bio-plastics, food soiled paper and houseplants. All of the programs provide customers with a variety of educational information. The majority of the educational information provided can be found on websites, but many of the programs also provide educational outreach documents, including stickers, post cards, and flyers. Of the seven communities surveyed, only one did not respond to our inquiries (Redmond, Oregon). Information on that program was gathered from internet research. The survey program selection criteria are shown in **Table 9**.

Table 9. Survey Program Selection Criteria

Location	Population	Municipal or Private Program	Number of Customers or Participation Rate	Program Dates	Organics Accepted	Collection System
Albuquerque, New Mexico	559,374	Municipal	Not tracked	Not listed	Green waste Only	Resident drop-off
		Private: Soilutions	30-50 Food Waste Customers	2009 - present	Yard Waste, Food Waste, Food soiled paper, bioplastics	Resident Green Waste Drop-off & Curbside Food Waste
		Private: Little Green Bucket	600 customers (98% residential)	2018 - present	Food waste & minimal green waste	Resident drop-off & curbside
Aspen, Colorado	7,431	Municipal	Not tracked	2005 - present	Yard waste Only	Green waste drop-off
		Private: Evergreen Zero Waste	4% Participation	2010 - present	Food scraps, green waste, compostable paper	Curbside collection
Flagstaff, Arizona	72,402	Municipal	Not tracked	Food scrap October 2021	Food waste & green waste	Residential food scrap drop-off & community compost bins
Northfield, Minnesota	20,347	Municipal	400 Residents	2015 - present	Food waste & paper production	Residential drop-off compost & curbside green waste collection
		Private: Northfield curbside collection	Not listed	2017 - present	Food scraps & certified compostable paper products	Residential curbside Compost collection

Location	Population	Municipal or Private Program	Number of Customers or Participation Rate	Program Dates	Organics Accepted	Collection System
Redmond, Oregon	30,167	Waste Management	Not listed	Not listed	Food scraps & yard trimmings	Residential curbside collection
Santa Fe, New Mexico	83,922	Municipal	Not listed	Not listed	Green waste Only	Residential drop-off
		Private: Reunity Resources	370 Residents receive compost at their doorstep, 51 Commercial	2012 - present	Food scraps, food soiled paper, yard trimmings, compostable products	Doorstep compost delivery, food scraps drop-off, & commercial services
Truckee, California	16,474	Municipal	60 businesses, residential not tracked	2019 - present	Food waste only (no paper or bioplastics)	Resident drop-off, commercial hauler

8.1 CHALLENGES / LESSONS LEARNED

SCS discussed the different challenges each municipality faced while implementing and managing a food waste/organics composting program. A common challenge with municipalities and organizations was the difficulty in growing their organics program due to cost of collections and drop-off locations. Municipalities stated many residents do not want to store their organic material inside their homes in between curbside collection or drop-off days, which affects participation rates. Other residents could not afford the additional cost with third party collection. There were no solutions suggested for this challenge.

Another challenge noted by the municipalities was finding the right container to use that is easily accessible for the customer and hauler, while difficult for wildlife to open or move the container offsite. Though there are options for locks on carts, the carts offered are heavy, some haulers refuse to service those types of containers, as well as bears, and other wildlife can still tip some of the carts. Though municipalities did not mention wildlife being able to open a lockable cart, bears specifically are still able to damage them. Municipalities have learned that 2-cubic yard dumpsters for organics material work best for customers to use, haulers to service, and successfully keep wildlife from opening and damaging the dumpster.

8.2 BEST PRACTICES

SCS discussed best practices that each municipality found while implementing and managing a food waste/organics composting program. The municipalities and private organizations indicated that consistently providing education, outreach and training to customers has reduced contamination in their organics containers. Additionally, listening to customers' feedback helps to maintain participation in the programs. Customers prefer to be allowed adequate time to understand changes to organics programs, which in turn helps reduce contamination in their containers. Many of the municipalities and private organizations also stressed that it is important to estimate correctly the

program operating costs. Making sure to run the numbers in order to charge customers the correct amount is key to keeping the program running cost effectively.

The complete report on other food waste composting programs is included in **Appendix H**.

9.0 REGIONAL PARTNERSHIP OPPORTUNITIES

In order to maximize the development of a regional food waste composting system, it was anticipated that potential sources of available organic materials outside of the County, or other partnership opportunities would be identified. The project team selected a number of potential sources of materials in the region, and contacted them to discuss their interest. The potential sources included the following:

- City of Santa Fe
- Jemez Pueblo
- Jemez Springs
- San Ildefonso Pueblo
- Santa Clara Pueblo
- Santa Fe Solid Waste Management Agency

The Project Team reached out to each of these potential entities to gauge their interest in the project. The only entities that responded to our inquiry were the City of Santa Fe and the Jemez Pueblo. The other entities were nonresponsive.

The City of Santa Fe's green waste is taken to the Buckman Road Recycling and Transfer Station where it is ground into chips. Those chips are transferred to the Caja del Rio Landfill where the materials are composted. The transfer station, landfill and composting site are owned by the Santa Fe Solid Waste Management Agency (SFSWMA). The City of Santa Fe indicated they would be interested in exploring how they could do more food waste diversion, as that is in their sustainability goals. There are a number of large food waste generators in the City, including hotels and supermarkets. The challenge with a potential partnership is how to get the material to Los Alamos. Any potential partnership with Los Alamos County would need to be coordinated with the SFSWMA.

Reunity Resources is a 501(c)3 not for profit organization that operates a regenerative two acre urban farm and soil compost yard in the Santa Fe area. They operate a doorstep residential compost collection program and collect food scraps from Santa Fe area restaurants and schools. They also have a food waste drop off location at their site.

The Jemez Pueblo is located in Sandoval County, approximately 50 miles northwest of Albuquerque. The Pueblo operates a transfer station that collects green waste self-hauled by residents. The Pueblo indicated interest in the project, and would be interested in receiving compost in exchange for providing the material. The challenge with a potential partnership is the considerable distance from the Pueblo to Los Alamos.

It is recommended that moving forward the County initiate additional outreach to these and other entities to further evaluate potential regional partnerships for the food waste processing project.

10.0 COLLECTION OPTIONS

An important aspect of the Los Alamos County food waste composting project was to review the potential methodologies for organics collection and their respective costs. SCS reviewed background data provided by the County to develop a comparative and incremental-cost collections model for the potential collection of source separated organic waste. Collections elements were evaluated and projected based on scenarios (including sub-scenarios) for two primary service lines: residential and commercial collections. All potential future scenarios were examined as *additional* ("incremental") costs relative to baseline operations and capital expenditures.

10.1 CURRENT SERVICE LINES

Residential

- **Trash** collection in the County is accomplished weekly using an automated side loader vehicle. Trash has four routes per week with two vehicles servicing each route daily.
- **Green Waste** collections are conducted once every other week, alternating with recycling using an automated side loader vehicle. Green waste has four routes per week, every other week, with two vehicles servicing each route on each "on" week.
- **Single Stream Recycling** collections are conducted once every other week, alternating with green waste using an automated side loader vehicle. Recycling has four routes per week, every other week, with two vehicles servicing each route on each "off" week.

The residential collection schedule is shown in **Figure 4**.

Figure 4. Residential Collection Schedule

ON WEEK

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	3		5	7	NA	NA
2	4		6	8	NA	NA
1	3		5	7	NA	NA
2	4		6	8	NA	NA

OFF WEEK

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2		3	4	NA	NA
1	2		3	4	NA	NA
1	3		5	7	NA	NA
2	4		6	8	NA	NA

Trash	Green Waste	Single Stream Recycle

Commercial

- **Trash** collection in the County is accomplished weekly using a front loader vehicle. Trash has a route every day for six days each week, with two vehicles servicing each route daily on Friday and Saturday.
- **Cardboard** collections are conducted twice each week, alternating with recycling Monday through Thursday using a front loader vehicle.

- **Single Stream Recycling** collections are conducted twice each week, alternating with cardboard Monday through Thursday using a front loader vehicle.

All residential and commercial collections are taken to the Eco Station. The commercial collection schedule is shown in **Figure 5**.

Figure 5. Commercial Collection Schedule

EVERY WEEK

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	NA
1	1	2	2	5	6	NA

Trash	OCC (Corrugated Cardboard)	Recycle

10.2 COLLECTIONS MODEL

SCS developed a program-specific Collections Model (Model) exploring potential future alternatives ("Scenarios") relative to the baseline, or business as usual operations. The Model was developed for review and comparison of the food scrap collections scenarios, of which there were four for Residential and two for Commercial. Each of these six scenarios were also subdivided into two –sub-scenarios, differentiated by either food scrap collection loose in the can or in biodegradable bags provided by the County (or purchased by customers themselves).

The Model only estimated incremental costs, and did not account for synergies/savings, as savings were assumed negligible on a customer-by-customer basis (for example, the fuel savings associated with removal of the weight of food scraps from the residential trash collections service line). No processing or disposal costs were included in the Model.

Eight final collection scenarios were developed for the two service categories: six for residential, and two for commercial. The scenarios are shown in **Table 10**.

Table 10. Collection Scenarios

Scenario	Description
RESIDENTIAL	
R1	Food in existing Green Waste collection cart
	R1.1: Food loose in cart
	R1.2: Food in biodegradable bags in cart
R2	Food in (new) Food Waste collection container
	R2.1: Food loose in cart
	R2.2: Food in biodegradable bags in container
R3	Food scrap collection at drop-off sites
	R3.1: Two new sites, collection at Eco Station and Overlook Park

Scenario	Description
	R3.2: Four new sites, collection at Eco Station, Overlook Park and two additional
COMMERCIAL	
C1	Food in (new) Food waste collection containers
	C1.1: Food loose in bin.
	C1.2: Food in biodegradable bags in bin

10.3 COLLECTION MODEL RESULTS

The Model served as a central worksheet to compare collections scenario inputs and correlating output results. The model results incorporated background research, various discussions during the course of the study, prior analysis, as well various new analyses specific to the collection scenarios.

The summary results of the gross incremental costs associated with each collection scenario are shown in **Table 11** (Residential) and **Table 12** (Commercial).

Table 11. Residential Gross Incremental Collection Costs (2021$)

	Food in Green Waste Cart		**Food in New Food Waste Cart**		**Drop-off Site Collection**	
Scenario No.	R1.1	R1.2	R2.1	R2.2	R3.1	R3.2
Collection Type	Bin (loose)	Bag-in-Cart	Bin (loose)	Bag-in-Cart	Eco Station & Overlook Park	ES, OP & 2 sites
Collection Cost ($/year)	$204,620	$ 279,500	$579,168	$654,048	$3,598	$45,490
Transport Cost ($/year)	$0	$0	$0	$0	$61,027	$122,054
Education & Outreach Cost ($/yr. flat)	$18,000	$18,000	$18,000	$18,000	$82,625	$18,000
Total Annual Cost ($/year)	**$222,620**	**$297,500**	**$597,168**	**$672,048**	**$125,041**	**$185,544**
Cost per Month per Account ($/mo.)	$2.58	$3.44	$6.91	$7.78	$0.96	$2.15
Cost per Ton Recovered ($/T)	$198.36	$265.08	$532.08	$598.80	$73.62	$165.32

Table 12. Commercial Gross Incremental Collection Costs (2021$)

	Food in New Food Waste Container	
Scenario No.	C1.1	C1.2
Collection Type	Bin (Loose)	Bag-in-Cart
Collection Cost ($/year)	$201,638	$222,080
Transport Cost ($/year)	$0	$0
Education & Outreach Cost ($/yr. flat)	$ 5,000	$5,000
Total Annual Cost ($/year)	**$206,638**	**$227,080**
Cost per Month per Account ($/mo.)	$68.33	$75.09
Cost per Ton Recovered ($/T)	$406.98	$447.25

Overall, the Model serves as a key tool for the decision-making process, because typically collection costs are a significant portion of the overall solid waste management program. The collection scenarios were then integrated with the processing technologies and siting options to present an integrated scenario analysis of the processing alternatives, as presented in Section 12.

The collections model results are included as Appendix I.

11.0 BEST MANAGEMENT PRACTICES

A description of Best Management Practices (BMPs) for composting and Anaerobic Digesters was prepared, based on experience in the United States managing and regulating these types of facilities. The BMPs include design, operational, and/or managerial features and programs implemented by facility operators for the purpose of minimizing potential off-site adverse impacts on adjacent land uses and/or the environment.

BMPs include:

- Pathogen and vector attraction reduction measures
- Off-site odor, dust and noise controls
- Traffic controls
- Spill management
- Health and safety measures
- Product quality testing and verification
- Vegetated buffer zones

Compost BMPs include measures incorporated into the facility design and process operations. The site design should consider relation to prevailing winds and sensitive receptors, incorporating buffer areas as necessary. The layout should allow for adequate access and egress, surface water and contact water drainage control, treatment and disposal methods, and incorporate space for material receiving, processing, stockpiling, and management.

Composting process operational controls depend on the types and quantities of feedstocks, and may include receiving and mixing of material in an enclosed building. In general, consistent performance of composting systems requires that the blended feedstocks be correctly proportioned to achieve good chemical (C:N, pH, and moisture), physical (porosity, particle size) and biological properties, and that process conditions (temperature, moisture, mixing) be controlled. Regular testing of the feedstock and finished product will assure this. For windrows, regular turning of the piles is required, for ASP systems, sizing of blowers and piping is key, and for in-vessel systems, treatment of odorous air may be required.

A design BMP for low solids AD system is to include a receiving tank to provide mixing and blending of feedstocks, as well as equalization. Feedstock receiving BMPs are similar to those for compost systems. Operational controls include those for biogas conditioning such as treatment system to remove hydrogen sulfide, siloxanes and volatile organic compounds. Digestate BMPs are similar to the compost BMPs, presuming that the digestate will be composted.

All of the facilities require the preparation and implementation of the following plans and programs:

- Odor management plan.
- A log for odor and noise complaints.
- Daily materials management tracking plan.
- Operations and maintenance plan, including a contingency plan.

The complete composting best management report is included in Appendix J.

12.0 SCENARIO ANALYSIS OF COMPOSTING ALTERNATIVES

12.1 METHODOLOGY

In order to prepare the financial comparison of the composting alternatives the County is considering, we worked with County staff to obtain the necessary information, including: fund balances; historical and budgeted financial information; population served; tons accepted; multi-year capital improvement program; additional capital costs for transfer station improvements; and anticipated hiring. We also documented any current financial and debt policies affecting the solid waste operations. Discussions were held with staff regarding other assumptions and policies that would affect financial performance, such as trends in demands, population growth, capital funding sources, escalation rates for operating costs, and impacts of potential regulatory and legislative initiatives.

This information was input into our revenue sufficiency model. The model creates a multi-year projection of the current solid waste rates and other miscellaneous revenues to assess whether or not the County can meet its projected financial requirements throughout the projection period, through FY 2031. The model then calculates the level of revenue adjustments required for the County to meet its revenue requirements, if any.

After loading the revenue sufficiency model and calibrating it to the County's financial dynamics, we conducted an interactive meeting with staff to review the data provided. During the meeting, we walked County staff through the data, and discussed any questions that arose during our analysis. We also discussed the assumptions used in the preliminary analysis, and the details of the composting scenarios the County is considering.

Once we reviewed the model, we began to test the sensitivity of the model outcomes to each of the composting/collection scenarios. This was accomplished by incorporating costs of capital investment, projected staffing needs, collection/transportation costs, etc. For each scenario tested, we developed a corresponding financial management plan and series of annual revenue adjustments that would allow the County to meet its cost requirements, while attaining its strategic goals and financial performance objectives.

Based on the model outcomes, a number of the initial composting/collection scenarios were eliminated. The final scenarios considered were:

- Option 1: Windrow Composting with Two Drop-Off Sites; Commercial Collection using a new organics container.
- Option 2: In-Vessel Composting with Two Drop-Off Sites; Commercial Collection using a new organics container.
- Option 3: Windrow Composting with Collection Using Bags in the Collection Carts/Containers, using the existing residential organics cart; Commercial Collection using a new organics container.
- Option 4: Anaerobic Digestion with Collection Using Bags in the Collection Carts/Containers, using the existing residential organics cart; Commercial Collection using a new organics container.

12.2 SCENARIO ANALYSIS RESULTS

Based on the source data and input provided by the County, and the assumptions and policies described herein, the County's current plan of inflationary-like rate increases when needed will not be sufficient to fund its ongoing operating, capital, and working capital reserve targets throughout the projection period in any of the scenarios considered.

The recommended revenue adjustment plans for each scenario for the County to maintain its minimum working capital requirements in each year of the projection period are shown in Table 13. As indicated, the study concluded that revenue increases of 6.00% to 13.50% for 3 years would be required for the County to meet its financial requirements throughout the projection period, depending on the scenario considered.

It is important to note that these plans assume that the County will borrow about $2.0 million for a Windrow Composting system, $5.8 million for an In-Vessel system, and about $10.2 million for Anaerobic Digestion, which also requires a Windrow system. The loan is assumed to have a term of 10 years.

Table 13. Revenue Adjustment Plans for Collection/Processing Scenarios

Recommended 5-Year Plan

	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Option 1 - AD & Curbside	13.50%	13.50%	13.50%	3.00%	3.00%
Option 2 - In-Vessel & Drop Off	11.00%	11.00%	11.00%	3.00%	3.00%
Option 3 - Windrows & Curbside	7.50%	7.50%	7.50%	3.00%	3.00%
Option 4 - Windrows & Drop Off	6.00%	6.00%	6.00%	3.00%	3.00%

As indicated in Table 13, the results of the model indicated the most cost effective scenario is windrow composting using drop off sites for residential collection of the material, and commercial collection using new organics containers. Revenue increases of 6.00% will be required for three years, and following that, the County can return to a plan of inflationary-like annual increases of 3.00% for the remainder projection period. This scenario assumes the County will borrow $2.0 million for development of the windrow composting facility and drop off sites. The County could choose to move to curbside collection at a later date, and/or also could add AD in the future as the program matures, and the quantities of materials collected from residential and commercial customers increase.

The detailed schedules of the revenues, expenses, source data, assumptions, and cash flows are included in Appendix K.

13.0 CONCLUSIONS

This study included a comprehensive evaluation of the feasibility of developing a food waste composting program in Los Alamos County. The County's objective was to identify the most cost-effective location, composting technology and collection plan. The study also sought to identify the resources needed for implementation, including initial capital and recurring operational costs. The County will use the report as a guide to select and develop a proper and adequate food composting processing facility and collection plan.

The work conducted for this study included the identification and evaluation of a number of options for collection, processing technologies, and potential sites for the development and operation of a food waste processing facility. All of the initial options were thoroughly vetted using a screening, scoring, and ranking process. The results of the vetting process eliminated options from further consideration in the study.

The collection analysis evaluated various configurations of residential and commercial collection, and drop off sites. The scenarios encompassed eight different collection scenarios, including six for residential and two for commercial. Based on the cost analysis results, the scenarios were narrowed down to two final collection scenarios: Drop off sites at two locations, and collection using bags in residential carts and in new commercial organics containers.

For the processing technologies, two main types of technologies were considered: composting and anaerobic digestion. Within these, an initial list of six types of technologies were considered: four composting technologies and two types of anaerobic digestion. A scoring and ranking system was used to evaluate the technologies based on technological and financial criteria. The results of the technologies analysis ranked windrow composting the highest because of its lower capital and operating costs and as a proven technology. ASP/CASP and in-vessel composting scored similar to each other, but below windrow, primarily because of their higher capital and operating costs. Dry anaerobic digestion scored the lowest, due to its higher costs, less MSW operating experience, and reduced acceptable types of feedstock. The technologies were also evaluated based on their environmental impacts. The evaluation identified windrow and ASP/CASP composting with the lowest potential environmental impacts, and in-vessel composting and AD with higher environmental impacts.

The sites identified by the County for food waste processing included Bayo Canyon, Eco Station, and Overlook Park. The sites were evaluated for suitability based on criteria established for the study, including location and land use compatibility, access, site size, ownership, environmental controls and aesthetics. The analysis concluded Bayo Canyon was the most preferable for a food waste processing operation, due to its more remote location, minimal impacts to surrounding land use and aesthetics, and suitability for different types of processing technologies.

The scoring of the technologies, environmental impacts, and siting evaluations were combined to rank the scenarios using a numeric system. The results are shown in **Table 14**. As indicated, the Bayo Canyon site scored the highest in the combined scoring, and is suitable for development of any of the technologies. It is important to note the numeric scoring and ranking is meant to provide a comparision of the various technologies and sites to each other, and are not indicative of the superiority of one technology or site.

The analysis of the collection costs concluded that drop off sites were lower in cost than residential cart collection, specifically the use of two drop off sites. This analysis, combined with the siting,

technology, and environmental analysis, concludes the optimal scenario for the County is the siting of a windrow composting facility at Bayo Canyon, using two Drop Off sites for the collection of food scraps from residents, and commercial collection using new containers for organics. As the program matures, the County could choose to move to curbside collection, and/or could add AD in the future, as the quantities of materials collected from residential and commercial customers increase.

Table 14. Technology, Environmental and Siting Combined Scoring Matrix

	TECHNOLOGY				
CRITERIA	**WINDROW COMPOSTING**	**ASP COMPOSTING**	**CASP COMPOSTING**	**IN-VESSEL COMPOSTING**	**DRY ANAEROBIC DIGESTION**
TECHNOLOGICAL	54	55	58	63	53
FINANCIAL	29	23	19	13	9
ENVIRONMENTAL IMPACTS[1]	24	28	28	45	57
SUBTOTAL	*190*	*184*	*182*	*197*	*181*
	SITING				
ECO STATION[2]	0	0	0	42	42
BAYO CANYON	53	53	53	53	53
OVERLOOK PARK AREA 1[3]	0	0	0	0	0
OVERLOOK PARK AREA 2[4]	0	48	48	0	0
	COMBINED SCORES				
ECO STATION	**190**	**184**	**182**	**239**	**223**
BAYO CANYON	**243**	**237**	**235**	**250**	**234**
OVERLOOK PARK AREA 1	**190**	**184**	**182**	**197**	**181**
OVERLOOK PARK AREA 2	**190**	**232**	**230**	**197**	**181**

[1] The environmental impacts score in this matrix assign a higher number for reduced environmental impact
[2] Eco Station cannot be utilized for windrow, ASP, or CASP composting, therefore a score of zero is assigned for those technologies at that site.
[3] Overlook Park Area 1 is not suitable in size for any of the processing technologies, therefore a score of zero is assigned for those technologies at that site.
[4] Overlook Park Area 2 is not suitable in size for windrow, in-vessel, or AD processing, therefore a score of zero is assigned for those technologies at that site.

Appendix A

Organics Projections Spreadsheet

(See Attached)

Appendix B

Scoring and Ranking Matrix

(See Attached)

Appendix C

Organics Processing Technology Report

(See Attached)

Appendix D

Feedstock for Composting Technologies Report

(See Attached)

Appendix E

Environmental Impact Assessment Report

(See Attached)

Appendix F

Siting Report

(See Attached)

Appendix G

Permitting Report

(See Attached)

Appendix H

Food Waste Composting Programs Report

(See Attached)

Appendix I

Collections Model

(See Attached)

Appendix J

Composting Best Management Report

(See Attached)

Appendix K

Cost Model Schedules

(See Attached)

Appendix A

Organics Projections Spreadsheet

Annual Waste Generated in 2019

Los Alamos County Material	Annual Tons
Waste	
Residential Collection	5,622
Commercial Collection	2,416
Medical	121
Government	72
Education	68
All Other Categories	2,155
Transfer Station (Self Haul) TOTAL	6,442
Transfer Station Self Haul	4,801
Los Alamos National Labs Material	1,641
Subtotal	**14,481**
Separated Organics	
Residential Green Waste Collection	1,261
Transfer Station Green Waste (Self Haul) TOTAL	1,311
Transfer Station Self Haul	896
Los Alamos National Labs Material	415
Subtotal Separated Organics	**2,572**
Total Tons	**17,053**

Los Alamos National Labs Material*	Annual Tons
Waste	
Commercial Collection	1,641
Current Organics Tonnage	
Pallets Collection	106
Brush Collection	309
Total Tons	**415**

* Los Alamos Labs material is taken to the Transfer Station and is included in above numbers and is part of the SELF HAUL data

Organics in Disposed Waste

Percentage by Weight from County of Los Alamos Characterization (Except Yard Debris percentage from CalRecycle 2018 Waste Characterization Results Residential)
Percentage by Weight from CalRecycle 2018 Waste Characterization Results (Commercial)

Material Types	Percentage of total by Weight (Residential & Transfer Station Self Haul)	Percentage of total by Weight (Commercial)	Sector			Los Alamos National Labs
			Residential Collection	Commercial Collection	Transfer Station (Self Haul)	
Mixed Recycling	7%	18.7%	393.56	451.85	336.06	306.90
Cardboard	0%	9.4%	-	227.13	-	154.27
Food Waste	19%	20.0%	1,068.24	483.26	912.15	328.24
Green Waste	8%	5.3%	421.67	128.06	360.06	86.98
Glass	6%	1.7%	337.34	41.08	288.05	27.90
Scrap Metal	1%	4.6%	56.22	111.15	48.01	75.50
HHW	0%	0.3%	-	7.25	-	4.92
Trash	58%	39.4%	3,260.95	952.03	2,784.47	646.63
Electronics	0%	0.6%	-	14.50	-	9.85
Reusables	1%	0.0%	56.22	-	48.01	-
Totals	100%	100.0%	5,622.33	2,416.32	4,800.81	1,641.20
Total Organics	**Proportion of organics in Trash**		**27%**	**25%**	**27%**	**25%**
	Annual Estimated Organics Tons by Sector		**1,489.92**	**611.33**	**1,272.21**	**415.22**
	LOS ALAMOS COUNTY TOTAL ESTIMATED ORGANICS TONS				**3,373.46**	
	LOS ALAMOS COUNTY AND NATIONAL LAB TOTAL ESTIMATED ORGANICS TONS					**3,788.68**

Projected Organics in Disposed Waste and Current Organics Diverted

Los Alamos County Organic Material		Annual Tons
Projected Organics		
	Residential Collection	1,490
	Commercial Collection	611
	Medical	31
	Government	18
	Education	17
	All Other Categories	545
	Transfer Station (Self Haul)	1,272
	Los Alamos National Labs Material (see below)	415
	Total	**3,373**
Current Organics Diverted		
	Residential Green Waste Collection	1,261
	Transfer Station Green Waste (Self Haul)	1,311
	Los Alamos National Labs Material	415
	Total Transfer Station (Self Haul)	**1,726**
	Total	**2,572**
	TOTAL ESTIMATED ORGANICS TONS	**5,946**

Los Alamos National Labs Organic Material		Annual Tons
Projected Organics		
	Commercial Collection	415
Current Organics Diverted		
	Pallets Collection	106
	Brush Collection	309
	Total	**415**
	TOTAL ESTIMATED ORGANICS TONS	**830**

Los Alamos County Projected Organics Growth

Year	Los Alamos County Population	Population Growth*	Estimated Organics Disposed in Landfill (Tons)	Current Organics Diverted (Tons)	Total Estimated Organics (Tons)
2019	19,369		3,789	2,987	6,776
2020	19,853	2.50%	3,883	3,062	6,945
2021	20,350	2.50%	3,980	3,139	7,119
2022	20,858	2.50%	4,080	3,217	7,297
2023	21,380	2.50%	4,182	3,297	7,479
2024	21,914	2.50%	4,287	3,380	7,666
2025	22,462	2.50%	4,394	3,464	7,858

* Population growth estimates from County of Los Alamos. Expected growth due to increase in Los Alamos Lab employment increase

Organics Projections by Sector

Organics in Disposed Waste - RESIDENTIAL

Year	Los Alamos County Population	Population Growth*	Estimated Organics Remaining in Trash (Tons)	Current Organics Diverted (Tons)	Total Estimated Organics (Tons)
2019	19,369		1,490	1,261	2,751
2020	19,853	2.50%	1,527	1,293	2,820
2021	20,350	2.50%	1,565	1,325	2,890
2022	20,858	2.50%	1,604	1,358	2,962
2023	21,380	2.50%	1,645	1,392	3,036
2024	21,914	2.50%	1,686	1,427	3,112
2025	22,462	2.50%	1,728	1,462	3,190

Organics in Disposed Waste - COMMERCIAL

Year	Los Alamos County Population	Population Growth*	Estimated Organics Remaining in	Current Organics Diverted	Total Estimated Organics (Tons)
2019	19,369		611	0	611
2020	19,853	2.50%	627	0	627
2021	20,350	2.50%	642	0	642
2022	20,858	2.50%	658	0	658
2023	21,380	2.50%	675	0	675
2024	21,914	2.50%	692	0	692
2025	22,462	2.50%	709	0	709

Organics in Disposed Waste - TRANSFER STATION

Year	Los Alamos County Population	Population Growth*	Estimated Organics Remaining in Trash (Tons)	Current Organics Diverted (Tons)	Total Estimated Organics (Tons)
2019	19,369		1,272	1,311	2,583
2020	19,853	2.50%	1,304	1,344	2,648
2021	20,350	2.50%	1,337	1,378	2,714
2022	20,858	2.50%	1,370	1,412	2,782
2023	21,380	2.50%	1,404	1,447	2,852
2024	21,914	2.50%	1,439	1,484	2,923
2025	22,462	2.50%	1,475	1,521	2,996

Organics in Disposed Waste - Los Alamos Labs

Year	Los Alamos County Population	Population Growth*	Estimated Organics Remaining in Trash (Tons)	Current Organics Diverted (Tons)	Total Estimated Organics (Tons)
2019	19,369		415	415	830
2020	19,853	2.50%	426	425	851
2021	20,350	2.50%	436	436	872
2022	20,858	2.50%	447	447	894
2023	21,380	2.50%	458	458	916
2024	21,914	2.50%	470	470	939
2025	22,462	2.50%	482	481	963

Appendix B

Technologies Scoring and Ranking Matrix

Criteria	Weight	Scoring Details	Point Scale	Technology Score									
				WINDROW COMPOSTING		ASP COMPOSTING		CASP COMPOSTING		IN-VESSEL COMPOSTING		DRY ANAEROBIC	
				Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score
A. TECHNOLOGICAL CRITERIA					54		55		58		63		53
Status of technology	5	Commercial	2	2	10	2	10	2	10	2	10	2	10
		Demo/Pilot	1										
		None	0										
Space required for technology Windrow composting (4-5 acres), ASP/CASP (3.5 acres), in-vessel composting (4 acres), and AD (5.5 acres)	2	0-1	3	1	2	1	2	1	2	1	2	1	2
		1-3 acres	2										
		3 + acres	1										
Years of operating history	4	>5 years	2	2	8	2	8	2	8	2	8	1	4
		2-5 years	1										
		<2 years	0										
Feedstock Material	4	Food, Green, Paper and BPI certified	4	4	16	4	16	4	16	4	16	3	12
		Food, Green Material, Food Soiled Paper	3										
		Food and Green Material	2										
		Food Only	1										
		Other	0										
Manure accepted	1	Yes/No	1/0	1	1	1	1	1	1	1	1	1	1
Biosolids accepted	1	Yes/No	1/0	1	1	1	1	1	1	1	1	1	1
Quantity of water required	1	<100 gal/ton	2	2	2	2	2	2	2	2	2	2	2
		100-300 gallon	1										
		>300 gal/ton	0										
Power requirements	1	None	3	3	3	1	1	1	1	3	3	1	1
		Solar	2										
		Electricity	1										
		Natural Gas	0										
In compliance with Federal and State emission and other regulations	4	Yes	2	2	8	2	8	2	8	2	8	2	8
		No	0										
Potential to emit Odors	3	High	0	1	3	1	3	2	6	2	6	2	6
		Medium	1										
		Low	2										
Potential to attract Wild Life / Vector	3	High	0	0	0	1	3	1	3	2	6	2	6
		Medium	1										
		Low	2										
B. FINANCIAL CRITERIA					29		23		19		13		9
Capital costs (total including permitting, site improvements, equipment)	4	<$3 million	2	2	8	2	8	1	4	1	4	0	0
		$3-$6 million	1										
		>$6 million	0										
Unit operating cost	3	<$50/ton	2	2	6	1	3	1	3	0	0	0	0
		$50-75/ton	1										
		>$75/ton	0										
Tipping fee (based on reference facility(ies))	3	<$50/ton	2	2	6	1	3	1	3	0	0	0	0
		$50-$100/ton	1										
		>$100/ton	0										
By-Product revenue	3	>$20/CY	2	1	3	1	3	1	3	1	3	1	3
		$5-20/CY	1										
		<$5/CY	0										
Markets for By-Products	3	Local	2	2	6	2	6	2	6	2	6	2	6
		Regional	1										
TOTAL					83		78		77		76		62

Task 7: Organics Processing Technologies

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ATTACHMENT A

Table of Contents

Tables

Appendices

Appendix A	Table 1
Appendix B	Table 2
Appendix C	Table 3
Appendix D	Scoring and Ranking Matrix

1.0 INTRODUCTION

SCS Engineers is conducting a feasibility study for Los Alamos County for the development of a food waste composting or other organics processing facility. As part of the study, SCS researched different organics processing technologies (including potential supplier names), and evaluated the technologies using a consistent and equitable screening tool to identify those technologies that appear most suitable for further consideration.

The work performed by SCS included the following steps:

- Developed key criteria to guide decisions on the organics processing technologies to be considered.
- Once criteria were approved, developed a scoring and ranking methodology based on assigning a weight and point value to each criteria identified.
- Score and ranked each technology
- Developed recommendations based on the study results.

The technologies included in the study include:

- Windrow composting
- Aerated Static Pile (ASP)
- Covered Aerated Static Pile (CASP)
- In-vessel composting
- Anaerobic Digestion

The key findings of the study include:

- The highest ranking for an organics processing technology was windrow composting. This technology has the lowest capital costs, unit operating costs, and tip fees, and is a proven technology. However, it requires more area than the other organics processing technologies considered.
- Aerated Static Pile, Covered Aerated Static Pile), and in-vessel composting all scored relatively the same. These technologies are more capital intensive than windrow composting, but less capital intensive than dry anaerobic digestion. They scored higher on managing odor emissions and wildlife management.
- Dry anaerobic digestion ranked the lowest, due to the significant costs (capital costs, unit operating costs and tip fees), and scored lower on the number of operating years of experience, and the feedstock material accepted.

This report details the research and evaluation performed, and using the available information, provides recommendations regarding the types of organics processing technologies appropriate for Los Alamos County.

2.0 OVERVIEW OF ORGANICS PROCESSING TECHNOLOGIES

The organics processing technologies that are considered appropriate for the County's feedstock, criteria, and constraints can be broken down into two main types: composting and digestion. Within each, there are some sub-types.

Composting

- Windrow Composting (i.e., turned windrows)
- Aerated Static Pile (ASP) Composting
- Covered Aerated Static Pile (CASP) Composting
- Aerobic In-Vessel Composting

Digestion

- Dry Anaerobic Digestion
- Wet Anaerobic Digestion (SCS has included information on wet AD in this report to differentiate it from dry AD. However, it was not evaluated in the analysis because it is our understanding this technology is not would not be considered for implementation by the County.

A detailed comparison of the various processing technologies is provided in Tables 1, 2 and 3, included as Appendices A, B and C at the end of the document. The information provided in these tables has been gathered and condensed by SCS from a variety of sources, including SCS clients, experienced professionals within SCS, industry trade journal articles, presentations, review of vendor websites and technical information therein, and discussions with vendors.

3.0 TECHNOLOGY BACKGROUND INFORMATION AND OPERATING ASPECTS

3.1 COMPOSTING

All composting is an *aerobic* process, meaning air (oxygen) is introduced, either passively or actively using mechanical means, and the processing is conducted with air present. This is a basic distinction between composting and anaerobic digestion, which operates without the presence of oxygen.

Composting produces no net energy; however, the resulting product of the process is a nutrient-rich soil amendment that in some cases can be used as a fertilizer or fertilizer ingredient. Composting reduces the original volume of feedstock by up to approximately 75%.

3.1.1 Windrow Composting

Windrow composting is typically carried out on a pad constructed of asphalt, concrete, or a low permeability soil layer. Incoming food scraps are generally mixed with ground-up green waste (e.g., the bulking agent) and formed into long parallel piles up to 8 or 9 feet high spaced from 4 to 20 feet apart. The rows are periodically turned with a loader or a specialized turner, and moistened, at least once per week, over the course of several months. This promotes air transfer through the pile, reduces compaction, and assists in maintaining a consistent moisture level for biological activity to decompose the materials. Because the piles are exposed, fugitive odors can quickly become an issue if the pile parameters are not monitored closely.

A variation of this method uses a biological enzyme added to the piles that stimulates the existing bacteria. The piles are typically covered with an additional layer of mulch to activate the enzyme. The piles are only turned once or twice in this variation before they are moved to the final curing stage.

After the initial curing, the piles are moved to another area of the pad where they will be aggregated into larger stockpiles for final curing. These piles will typically not be turned, and will cure for a few additional months. The final product is typically put through a mechanical screen that separates out bulking material and pieces of compost that are larger than the desired size (e.g., anything over ½ inch). These pieces are then put back through the process. Upon completion of this phase, the compost is fully cured and ready to be marketed. The total processing time can vary from three to six months.

3.1.2 Aerated Static Pile

The aerated static pile method of composting method involves the active addition of air with a mechanical air pump. In this technology, the windrow piles are placed on a pad over parallel rows of piping that is perforated with small holes. A mechanical pump is used to either produce a slight vacuum in the piping which draws air through the piles, or the air pump can be used to draw in fresh air and pump it through the piping into the windrow piles.

The mechanical aeration reduces the time for curing, and ensures that a more uniform level of oxygen is maintained in the piles. Thus, a larger volume of material can be processed versus the basic windrow method. This method does not require the piles to be turned.

A CASP, would include a cover over the pile, specifically made of fabric. Odor management with this composting method is critical, and depending on the air flow direction, may use stand-alone filters consisting of a thick bed of wood chips through which the process air is blown, or special fabrics (i.e., GoreTex®) that covers the piles and assists in restricting odor migration. Total processing time varies from two to four months.

3.1.3 In-Vessel

In-vessel composting typically involves placing the feedstock into a large diameter structural tube, or in a series of concrete bunkers, tunnels, or enclosed containers, and subjecting the material to some mechanical processing. The tube configuration, known as rotary drum (RDR), consists of a long, downward sloping and insulated tube that is closed on both ends, sits on rollers, and is turned slowly with an electric motor. The tube usually contains fins inside the shell to flail and shred the material

as it slowly makes its way to the lower end of the tube by gravity and the turning action. Air is introduced into the lower end of the tube with an air pump and once it exits the tube is exhausted through a wood chip air filter. After several days of processing, the tube is stopped and the material removed and placed in open windrows and cured for several weeks. After that time, the material is fully cured and ready to be marketed.

In the bunker/ tunnel/container version, the feedstock is placed in long, parallel rectangular bunkers with a concrete floor and walls, or a long completely enclosed rectangular container. In the bunker/tunnel versions, the material remains static and is periodically turned in-place with a mechanical rotor/tiller that travels the length of the bunker on rails fixed atop the walls. Air is drawn through the pile to maintain the aerobic condition and is filtered similarly to the tube method. Total processing time varies from approximately 1 to 2-1/2 months. In the enclosed version, the material is mixed with an internal, slowly rotating blade or paddle, however, the material does not move from one end of the container to the other until new feedstock is introduced, and then material is pushed out the discharge end.

3.2 DIGESTION

Anaerobic digestion (AD) is a process conducted in a vessel or tank where air is *excluded* from the process and the process is actively heated to maintain a temperature ideal for the microorganisms, typically in the 50 to 55 degrees Celsius range. In an AD system, there is a net energy product. As the waste decomposes, it produces biogas, which typically has a methane content of approximately 50 to 80% depending on the process. The methane is an energy source that can be converted to provide electrical power, heat, or compressed natural gas.

3.2.1 Wet Digestion

The relatively high liquid content and relatively low solids content of sludge and manures have made them adaptable to digestion in tanks. The processing of municipal sludge has been conducted in liquid digester tanks for many decades and at municipal waste water treatment plants. In the past 10 to 15 years, manure has also been processed, mostly on farms, in tanks with and without sludge. Only in the last few years have food scraps been added to the feedstocks processed in tanks. The solid waste industry refers to these digesters as “wet” digesters, or the "low" solids process.

When food scraps are a feedstock, they are typically a secondary feedstock, and are ground-up initially to slurry, then pumped into a holding tank where they are mixed with other feedstock. This slurry then goes into a larger, heated digestion tank, where the bacteria decompose the slurry. The resulting biogas is captured, cleaned and used for energy. The by-product, some liquids and a fibrous solid, can be separated, and the solids composted and the liquid used as a soil amendment. This technology is not usually the technology of choice where only food scraps and green vegetation are the primary feedstocks.

3.2.2 Dry Digestion

Another variation of the basic anaerobic digestion process that has evolved to a reliable technology for processing food wastes in Europe in the last 20 years is known as the “dry” or "high solids" process. This same process has come to the U.S. in the last five years or so.

The dry digestion process can be conducted in a single stage, or in two stages. The latter provides digestion in two distinct stages: 1) a hydrolysis stage; and 2) a methanogenesis stage. The two-stage process is more complex and initially a higher cost, however, it has some definite advantages, including shorter processing time, greater throughput, higher methane concentration, better efficiency, and a lower cost per unit volume of waste processed.

In the single stage process, food scraps are placed directly into one of several parallel concrete or steel chambers where they form an elongated pile. The chamber door is sealed, a vacuum pump removes the remaining air and the digestion process starts. As the pile is decomposing, liquid leachate is collected and continually sprayed back over the pile to maintain correct moisture. Biogas is withdrawn and collected in a gas holder, usually sitting atop the chambers. After approximately 21 to 28 days, the decomposition is complete, and the resulting solid material (i.e., the digestate) is removed and taken for composting. The biogas is processed similarly as in the wet digestion process.

In the two-stage process, the food scraps are initially loaded into a chamber as in the single stage and are processed in a similar manner, however the process time is much shorter because the hydrolysis period is very short. The partially digested solids are mixed and discharged into another sealed vessel where the methane is formed. After approximately 14 days the decomposition is complete, and the resulting solid material (i.e., the digestate) is removed and taken for composting. The compost process takes from 50 to 60 days.

The biogas is processed similarly as in the wet digestion process. However, because of the higher methane content in the two-stage (approximately 65 to 80%) compared to 50 to 65% in the single-stage, the biogas clean-up is more efficient and less costly.

This technology is marketed by several firms, mostly originating in Europe where the technology has been in use for a few decades. An average net energy output for the dry digestion technology is approximately 200 kilowatt hours per ton (kwh/ton).

4.0 TECHNOLOGY PROVIDERS

A typical organics processing plant usually involves several major pieces of specialty equipment, which often are manufactured by different companies, combined with other basic features such as buildings and concrete pads that are provided by general contractors. However, the trend in the industry is for the end user (in this case Los Alamos County) to contract with a single entity for delivery of an entire plant. That contracting mechanism is discussed later in this section.

Some specialty companies that have developed the actual processing technology and/or manufacture/ or supply equipment that employs the technology are listed below. Many of the organics processing technologies were developed by companies based in Europe. Some of those companies have expanded operations to the U.S. We have limited the list to those companies that appear to have a U.S. base of operations. However, this does not necessarily mean the plant components from these vendors are currently manufactured in the U.S. SCS does not endorse any of the companies listed. The list included here is not exhaustive, and there are many more companies that can be considered once the County selects the technology.

4.1 COMPOSTING

4.1.1 Windrow Composting

This technology is very basic, and lends itself to applying standard best practices that have been developed over the years; examples of whichare available from many state and Federal agencies. The major pieces of equipment may include a mechanized windrow turner and product trommel screen. Companies providing this equipment include:

Turners

- Backhus (c/o Ecoverse Industries Ltd.), Avon, Ohio 440-937-3225
- Scarab International, White Deer, TX 806-883-7621
- Komptech USA, Inc., Westminster, CO 720-890-9090
- Power Screens, Dixon, CA 707-253-1874
- McCloskey International, California, 949-359-6949
- Vermeer Corporation, Southwest Albuquerque, NM 505-345-8787

4.1.2 Aerated Static Pile

- McGill Environmental Systems, New Hill, NC 919-362-1161
- W.L. Gore & Associates, www.gore.com Newark, De 800-523-4673
- Engineered Compost Systems, Inc., Seattle, WA 206-634-2625

4.1.3 In-Vessel

Two general types of technologies are prevalent, including the rotary drum (RDR) and the tunnel/ bunker or enclosed. Companies providing systems for this technology include:

Tunnel / Bunker

- Engineered Compost Systems, Inc., Seattle, WA 206-634-2625
- Hot Rot Organic Solutions (hybrid RDR and bunker), 902-452-9411
- Siemens Industry Inc., Hoffman Estates, IL, 847- 713-8477

Rotary Drum

- B W Organics, Sulphur Springs, TX 903-438-2525
- DT Environmental, Lynden, WA 800-701-3632
- Wright Environmental Management, Inc. Richmond Hill, ON Canada 905-881-3950

4.2 DIGESTION

4.2.1 Dry (High Solids) Digestion

Companies that have developed and/or refined the dry digestion process technology and specific equipment include the following.

- BIOFerm Energy (Viessmann technology), Madison, WI, 608-467-5523

- Hitachi Zosen, San Luis Obispo, CA, 678-987-2520
- Organic Waste Systems (OWS), 513-535-6760
- Thoni, Sunol, CA, 604-802-8068
- Zero Waste Energy (KOMPOFERM and SMARTFERM technology), Walnut Creek, CA, 415-265-1339

All of these vendors have facilities that have either started operation in the last several years or are under design/construction in the U.S.

4.2.2 Wet (Low Solids) Digestion

Companies that have developed and/or refined the wet digestion process technology and specific equipment include the following.

- Anaergia, Burlington, Canada, 408-580-6572
- Quasar Energy Group, Cleveland, OH, 216-986-9999
- Storm Fisher, London, Ontario, Canada, 628-222-6278

All of these vendors have facilities that have either started operation in the last several years or are under design/construction in the U.S.

5.0 EXISTING FACILITIES

An estimate of the number of commercial-scale operating plants in the U.S. using the technologies reviewed is provided in **Table 4**. These data were included in the 2017 survey information from BioCycle magazine[1] There are hundreds more operations using the various composting technologies than compared to those using digestion technologies for organics (i.e., food scrap) processing. Turned windrows account for the largest segment, followed by ASP, and then dry digestion.

[1] http://www.biocycle.net/17_10_06_1/0001/BioCycle_StateOfOrganicsUS.pdf

Table 4. Estimated Number of Organics Processing Facilities in the U.S.

Windrow Composting	Aerated Static Pile	In-Vessel	Wet Anaerobic Digestion (1)	Wet Anaerobic Digestion (2)	Dry Anaerobic Digestion (3)
1,135	170	81	18	94	133

(1) Utilizing food scraps only

(2) Utilizing other organic feedstock (i.e., manures, sludge, etc.) but including food scraps

(3) Possibly utilizing other organic feedstock (i.e., agricultural residual) but including food scraps

5.1 FACILITY CAPACITY

Table 5 summarizes the 2017 survey information from BioCycle magazine of the number and capacity (tons per year) of organics processing facilities in the U.S.

Table 5. Number and Capacity of Organics Processing Facilities

Capacity (tons per year)	<5,000	5,000 - <30,000	30,000+
Number of facilities	2,364	429	194

6.0 POTENTIAL BARRIERS TO TECHNOLOGY DEVELOPMENT

Organics processing technologies and their future development are not immune to changes in environmental laws, the economy, and the availability of markets. Potential barriers to the development of any technology are discussed below.

6.1 ENVIRONMENTAL MANDATES

Although there are no State or Federal mandates that require the processing of organic materials, the sustainability goals at the County, along with the desire of the community, make adding a food wasteprocessing facility an important endeavor. In order to establish a facility, the New Mexico Solid Waste Rules, 20.9.3.27 NMAC, will require the registration of a composting facility with the New Mexico Environment Department (NMED), Solid Waste Bureau. A permit is not required per 20.9.3.8 NMAC.

Composting facilities may also be regulated by other agencies in addition to the Solid Waste Bureau. The requirements of the following statutes, programs and agencies may apply, depending on the specific details of the facility. The applicability of these programs cannot be assessed until a site is selected and conceptual design details are prepared.

- **Groundwater discharge**: Notice of Intent to Discharge or Groundwater Discharge Permit. NMED Groundwater Quality Bureau

- **Surface runoff**: National Pollutant Discharge Elimination System, 40 CFR Part 121, includes requirements for Stormwater Pollution Prevention Plan (SWPPP). NMED Surface Water Quality Bureau.

- **Biosolids and septage**: 40 CFR Part 503 and 20.6.2 NMAC.

- **Compost sales**: NM Fertilizer Act, 76-11-1 to 76-11-20 New Mexico Statutes Annotated (NMSA), includes requirements for fertilizer / soil conditioner registration. NM Department of Agriculture.

- **Storage of combustible materials**: International Fire Code, Chapter 28 (2018)

6.2 ECONOMICS

Competing against "cheap" landfill space and low oil /natural gas prices may put some new organics energy conversion technologies out of the market. In regions where the price offered by power companies to purchase power generated from alternative energy producers is based on the cost of oil and natural gas may have the same effect. This can significantly impact the long term economics of power production projects.

6.3 AVAILABILITY OF MARKETS

Although composting has existed for decades, the widespread acceptance and use of the product has not been universal. Although the scientific case for the benefits to agriculture is clear, the agricultural market in some areas of the U.S. has not adopted this practice. Furthermore, some large agri-businesses need large, consistent quantities of compost, something that the private or municipal market has not been able to provide.

7.0 EVALUATING ORGANICS PROCESSING TECHNOLOGIES

The development of an organics processing system is a significant undertaking and therefore a feasibility study must evaluate the opportunities and risks associated with siting, designing, and operating such a facility. Using our experience conducting similar studies for solid waste facilities, SCS identified the potential constraints and benefits of the project, and developed a methodology and criteria critical to the evaluation and selection process for composting and AD technologies.

7.1 CRITERIA AND METHODOLOGY

SCS developed a scoring system based on assigning a weight and point value to each criteria identified during the constraints and criteria evaluation. Weighting factors were included for each criteria so the matrix could rank the potential technologies from highest to lowest score. The top ranked technology is not necessarily the best technology. The ranking only serves to provide the County a sense of which technology appears to have a system that best suits their criteria and goals. For the list of categories and their scoring and ranking, refer to **Appendix D**.

7.1.1 Criteria

The criteria was developed for use as a guide for decision-making regarding the organics processing technologies to be considered, and the parameters and constraints associated with each. These criteria include details related specifically to the technical and financial aspects of each technology, and to the County. The criteria were developed with input from, and approved by County staff. A description of the criteria is included below:

A. Technology Criteria
This category of criteria is used to evaluate the technical feasibility of the technology.

Status of Technology
Used to establish how the level of development of a vendor's technology, and gives greater weight to proven commercial technologies, versus technologies that are at the demonstration or pilot stage, or are new technologies with no existing locations. This criteria has a weight of 5.

Space Required for Technology

This category includes the size of the site, and the availability of space in relation to the potential layout and orientation of the facility. Factors to consider include ability to handle public use, areas for unloading, loading, mixing, processing, buffer space, and storage of products. The overall footprint of the facility will also be included in this category. For this study, windrow composting requires 4-5 acres, ASP/CASP requires 3.5 acres, in-vessel composting requires 4 acres, and AD requires 5.5 acres. The criteria has a weight of 2.

Years of Operating History
Technologies that have greater than five years of operating history are given a score of two, technoloiges with 2 to 5 years operating history are given a score of one, and technologies with less than two years receive no points in these criteria. This criteria has a weight of 4.

Feedstock Material
This criteria gives a higher score (2 points) for technologies that can accept mixed waste, one point for source separated organics, and no points for other material. This criteria has a weight of 4.

Quantity of Water Required
This criteria is used to evaluate the volume of water required to operate the technology, on a gallon per ton basis. This criteria has a weight of 1.

Power Requirements
This criteria is used to evaluate the power requirements of the technology, on a kWh per ton basis. This criteria has a weight of 1.

Compliance with Federal and State Emission and Other Regulations
This criteria reviews the different regulatory requirements for each of the technologies, to evaluate if the technology will comply with State and Federal regulations. This criteria has a weight of 4.

Potential to Emit Odors
The technology's processes will be assessed for the potential to emit odors that would potentially present adverse impacts to the operator and to the surrounding areas. This criteria has a weight of 3.

Potential to Attract Wildlife / Vectors
The need for vector, bird and other animal controls, in addition to fencing around the site will be evaluated. This criteria has a weight of 3.

B. Financial Criteria

This category of criteria is used to evaluate the financial viability of the technology

Capital Costs
This criteria is used to evaluate the technology's capital costs on a total basis including permitting, site improvements and equipment. Technologies with capital costs less than $3 million score 2 points, and technologies with capital costs greater than $6 million score 0 points. This criteria has a weight of 4.

Unit operating cost
This criteria is used to compare the unit operating costs on a dollar per ton basis. Technologies with unit operating costs of less than $50 per ton score 2 points, and those greater than $75 per ton receive 0 points. This criteria has a weight of 3.

Tipping fee
This criteria is used to evaluate the tip fees at the technology's referenced facilities, and can be used to compare with other local options. Tip fees of less than $55 per ton receive 2 points, and those over $100 per ton receive 0 points. This criteria has a weight of 3.

By-Product revenue
This would include revenues from the selling of compost. For the AD technologies, this criteria is used to evaluate the potential revenue of the technology by-products. Technologies were scored on information provided regarding existing sales, with higher scores for products with revenue greater than $80 per ton. This criteria has a weight of 3.

Markets for By-Products

For the AD technologies, this criteria is used to evaluate the marketability of the technology by-products. Technologies were scored on information provided regarding product specification(s) and markets, with higher scores for local markets. This criteria has a weight of 3

7.1.2 Methodology

The scoring system assigned a point value to each criteria, either 0, 1, or 2. A score of 2 would represent a favorable assessment, and 0 represents a much less favorable assessment or no suitability/compatibility. Scoring is a combination of the understanding of factual information and collective judgment. Therefore, the differences between a technology that receives a score of 2, versus one that receives a 1 may be for all practical purposes similar and for that criteria, one technology is not "better" than another.

The criteria are weighted because some criteria are more important, or could be considered more or less accommodating for a technology. The individual weighting factors range from 0 to 5. The actual assignment of a weighting factor for each of the criteria can be a relatively straightforward or more involved process. For the purposes of this assessment, SCS assigned weighting to each factor based

on our judgment and experience; however, as the County proceeds to the final technology selection stage, it may wish to refine the weighting factors to incorporate community input.

For each criteria, a weighted score was generated. The score is the product of the point assigned times the weight for that criteria. The scores for each potential technology was then summed to obtain a total score for the technology. Technologies scoring the highest were considered viable for consideration by the County.

8.0 RESULTS

The overall results from the analysis shows that windrow composting has the highest score with 83 points. It has lower capital capital and unit operating costs, and tip fees) and is a proven technology; however it requires more space than the other organics processing technologies.

ASP (78 points), CASP (77 points) and in-vessel composting (76 points) scored relatively close. These technologies have higher capital and operating costs than windrow composting, but lower costs than dry anaerobic digestion. They scored higher on odor management, and wildlife management.

Dry anaerobic digestion ranked the lowest at 62 points, due to the significant costs (capital costs, unit operating costs and tip fees), and scored lower on the number of operating years of experience and the feedstock material accepted.

Technological Criteria

The highest score under the technological criteria was for in-vessel composting (63 points), scoring high in relation to r power requirements, odor emissions and wildlife management. CASP (58 points), ASP (55 points) and windrow composting (54 points) all scored lower in this criteria in relation to power requirements, odor emissions, and potential wild life management. Dry anaerobic digestion scored the lowest at 53 points.

Financial Criteria

Windrow scored the highest with 29 points. ASP composting (23 points), CASP composting (19 points, in-vessel composting (13 points) and dry anaerobic digestion (9 points) scored much lower. **Table 5** highlights the total scores for each organics processing technology in relation to the established criteria. The entire matrix is included in **Appendix D**.

Table 5. Organics Processing Technology Criteria Scoring Results

Appendix A

Table 1

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
Type of Technology	• Windrows turned regularly for aeration by purpose-built machinery • Aerobic decomposition of organics	• Windrows are not turned • Can be open or covered • Aerated mechanically (via air pump) • Aerobic decomposition of organics	• Composting in a container or building (long tubes, and tunnels) • Aeration provided mechanically (via air pump) • Aerobic decomposition of organics • Supplemental windrow composting optional	• Organic feed in anoxic, enclosed tunnel/chamber • Leachate is captured and sprinkled over feed • Biogas is captured and for use/sell • Anaerobic decomposition of organics
Technology Provider (example vendors provided)	• Can be self-provided or contracted • Example compost turner providers: o Backhus o Scarab o Komptech	•Operation can be self-provided or contracted • Example aerated static pile (ASP) providers include o O2 Compost, o Engineered Compost Systems o Green Mountain	• Example providers include: o Christiaens Group o Rotocom o NaturTech Composting Systems o Engineered Compost Systems	• Example providers include o ZWED o BioFERM o Harvest Power o Eisenmann o Organic Waste Systems o Kompogas AG
Provider Background, Experience, and Resources	• Many vendors at locations nationwide • Widely practiced technology, allowing for large variety of providers and equipment • Most equipment information is readily available online	• Many vendors at locations nationwide • Relatively wide variety of vendors and equipment • Most equipment information is readily available online	• Vendors mostly from Europe or North America • Majority of vendors demonstrate at least 5 years experience • Several vendors demonstrate over a decade of experience	• Many projects in Europe • Larger vendors demonstrate at least a decade of experience • Example provider experience: o Organic Waste Systems (27 years) o Waste Recovery Systems (34 years) o Kompogas (20 years)

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
Vendor Contracting Mechanism (i.e., Design-Build-Own-Operate (DBOO), Licensing Only, etc.)	• Vendor can Own-Operate • County can Own-Operate	• Vendor can Own-Operate • County can Own-Operate	• Typically design-build-own-operate (DBOO)	• Typically DBOO • Some institutions Own-Operate
Basic Process and Plant Description	• For compost windrows up to (10'x10') • Turned regularly by machinery • Turning provides aerobic breakdown of waste	• Air is forced through the windrow with blowers and tubing • Aerobic decomposition of organics	• Compostable organics placed in a closed container o Continuous feed or batch feed • Container turned, agitated, or aerated to provide aeration • Aerobic decomposition of organics	• Organics are introduced either vertically or horizontally • Plug-flow process • Inoculation or mixing of initial feed may be required • Atmospheric air is evacuated from chamber and biogas reintroduced into chamber • Steam and process water may be used to dilute feed as needed • Residual solids can be pressed and dewatered for cake production
Stated Material and Energy Balance; and Volume Reduction	• Total volume reduction approximately 75%	• Total volume reduction approximately 75%	• Total volume reduction approximately 75%	• Biogas output: 170 - 250 kwh/ton • Digestate output: 0.85 ton/ton
Laboratory and Pilot Scale Plants	Yes.	Yes	Yes.	Yes.
Operating Commercial Plant(s) of Comparable Capacity	• Many nationwide	• Many nationwide	• LRI Landfill Compost Factory - Puyallup, WA (75,000 tpy)	• Zero Waste Energy Company - San Jose, CA operating since December 2013 • South San Francisco Scavenger (20 TPD)

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
				operating since 2016
Number and Location of Operating Facilities	• Hundreds in various location of the U.S. • Typically 5,000 tpy to 20,000 tpy	• A few dozen in various locations of the U.S.	• Several small facilities processing less than 5 tpd. • Two large plants in Cobb County, GA and Sevier County, TN.	• 33 AD (wet and dry) facilities identified in U.S. • Dozens operating throughout Europe o some large (i.e. greater than 150,000 TPY)

Appendix B

Table 2

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
Compatibility with Proposed Organic Material Stream(s)	• Typical feed compatible with the proposed waste stream • Food waste will likely require mixing with other organics to achieve design C:N ratio	• Typical feed compatible with the proposed waste stream • Waste stream will likely require mixing with other organics stream to achieve design C:N ratio	• Can process organics with higher composition of food residuals • Will likely require mixing with other organics stream to achieve design C:N ratio	• Continuous feed recommended for optimal microbial vitality • Will likely require mixing with other organics stream to achieve design C:N ratio
Compatibility with Proposed Organic Materials Volumes	• Typically less than 50,000 tpy • Capable of handling proposed volume with adequate acreage	• Capable of handling proposed waste stream volume • Demonstrated processing of greater than 100,000 tpy	• Capable of handling proposed waste stream volume • Demonstrated processing of greater than 100,000 tpy	• Capable of handling proposed waste stream volume • Typically 10,000 tpy to 100,000 tpy
Facility Footprint Required	• 10-12 acres for processing area only	8-12 acres for processing area only	• 8 acres for processing area only	• 8 acres for processing area only
Supporting Utilities	• Compatible with those present at the proposed site	• Compatible with those present at the proposed site	• Compatible with those present at the proposed site	• Compatible with those present at the proposed site
Labor requirements	• Approximately 3-4 personnel	• Approximately 3-4 personnel	• Approximately 3-4 personnel	• Approximately 5- 10 personnel
Primary Equipment and Structures	• Compost turner or loader • Compost screen • Impervious padding • Leachate control system	• Tubing • Blowers • Leachate control system • Concrete pad • Compost screen	• Composting vessel (vertical or horizontal) • Tunnel • Chamber • Drum • Agitated bed • Auger • Blowers • Piping for aeration	• Pre-screening pumps • Conveyors • Augers • Dry-digester vessel and gas collection apparatus • Blowers • Biogas filters • Dewatering screws/presses/centrifuges • Digestate collection piping • Pumps • Tanks

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
By-Products: Volume, Potential Markets, and Pricing	• Compost - fertilizer for agricultural crops • Average price: $21/yard	• Compost - fertilizer for agricultural crops • Average price $21/yard	• Compost - fertilizer for agricultural crops • Biogas for direct use, sale, or refinement to CNG	• Biogas for direct use, sale, or refinement to CNG • Residual solids (additional processing and addition of green waste creates Compost)
Net Energy/Biogas Production	• N/A	• N/A	• N/A	• Biogas output: 170 - 250 kwh/ton • 1- 3 scf biogas/lb wet weight • Estimated biogas energy production from 150 to 200 kwh/ton wet weight
Air and Wastewater Emissions Management	• Volatile emissions/odors/dust control • Dust suppression and control • Screening materials • Leachate and residue must be managed properly	• Volatile emissions/odors/dust controls • Dust suppression and control • Screening materials • Leachate and residue must be managed properly	• Air and leachate managed more easily • Biofilter systems used to clean air • Leachate collection systems used for leachate management	• Volatile emissions (i.e. Biogases) can be harvested • Liquid digestate recycled or disposed of • Dewatered cake can be further processed to be sold as compost
Safety Aspects	• Equipment training (compost turners)• Site security (fencing, cameras, etc.)• Robust fire control system is required	• Site security (fencing, cameras, etc.)• A number of fires have occurred at composting operations. Robust fire control system is required	• Site security (fencing, cameras, etc.)• Confined space entry• Machinery more complex than windrow composting operations • May require additional training for safe operations• A number of fires have been reported for composting operations. A robust fire control system is required	• Site security (fencing, cameras, etc.)• Confined space entry• Skilled plant operators with thorough understanding of AD processes are required for safe and optimal plant operation

Appendix C

Table 3

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
Potential Changes in Technology that May Impact the Organics Program.	• Potential change relatively low • Well established since 1970's • Fairly standardized • Research ongoing for harvesting of composting heat	• Potential change relatively low • Well established for several decades • Fairly standardized, though means of aeration may vary • Research ongoing for harvesting of composting heat	• Some potential for process change • Practiced for decades • Leachate and emissions collection methods refined • Research ongoing for harvesting of composting heat	• Newer technology than wet AD • The process is continually refined • Potential for improved technologies in future years, as demand increases
Potential Changes in Permitting Regulations that May Impact the Technology	• Management of volatile emissions (greenhouse gases) could become more stringent	• Management of volatile emissions (greenhouse gases) could become more stringent	• N/A - leachate and emissions can be readily handled	• If amended with biosolids, land application restrictions may apply for dewatered cake • Stricter wastewater regulations could also affect reuse of digestate
Facility Expansion Potential	• Expansion limited primarily by on-site acreage • Growth is possible if food collection is conducted effectively	• Expansion limited primarily by on-site acreage • Growth is possible if food collection is conducted effectively	• Can be expanded as space allows by adding additional modules • Growth is possible if food collection is conducted effectively	• Yes - expansion would be possible if tonnage increased.
Potential Collection Vehicle Fuel Application	• N/A - no biogas is captured during windrow composting	• N/A - no biogas is captured during ASP composting	• N/A - no biogas is captured during in-vessel composting	• Typically biogas from 1 ton organics produces energy equivalent of 60 L diesel fuel • Biogas output quantity likely insufficient to justify

CRITERIA	ORGANIC PROCESSING TECHNOLOGIES			
	WINDROW COMPOSTING	ASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC DIGESTION
				CNG vehicle fueling capital costs

Appendix D

Scoring and Ranking Matrix

Criteria	Weight	Scoring Details	Point Scale	Technology Score									
				WINDROW COMPOSTING		ASP COMPOSTING		CASP COMPOSTING		IN-VESSEL COMPOSTING		DRY ANAEROBIC	
				Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score
A. TECHNOLOGICAL CRITERIA					**54**		**55**		**58**		**63**		**53**
Status of technology	5	Commercial	2	2	10	2	10	2	10	2	10	2	10
		Demo/Pilot	1										
		None	0										
Space required for technology	2	0-1	3	1	2	1	2	1	2	1	2	1	2
		1-3 acres	2										
		3 + acres	1										
Years of operating history	4	>5 years	2	2	8	2	8	2	8	2	8	1	4
		2-5 years	1										
		<2 years	0										
Feedstock Material	4	Food, Green, Paper and BPI certified	4	4	16	4	16	4	16	4	16	3	12
		Food, Green Material, Food Soiled Paper	3										
		Food and Green Material	2										
		Food Only	1										
		Other	0										
Manure accepted	1	Yes/No	1/0	1	1	1	1	1	1	1	1	1	1
Biosolids accepted	1	Yes/No	1/0	1	1	1	1	1	1	1	1	1	1
Quantity of water required	1	<100 gal/ton	2	2	2	2	2	2	2	2	2	2	2
		100-300 gallon	1										
		>300 gal/ton	0										

Criteria	Weight	Scoring Details	Point Scale	Technology Score									
				WINDROW COMPOSTING		ASP COMPOSTING		CASP COMPOSTING		IN-VESSEL COMPOSTING		DRY ANAEROBIC	
				Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score	Points	Total Score
Power requirements	1	None	3	3	3	1	1	1	1	3	3	1	1
		Solar	2										
		Electricity	1										
		Natural Gas	0										
In compliance with Federal and State emission and other regulations	4	Yes	2	2	8	2	8	2	8	2	8	2	8
		No	0										
Potential to emit Odors	3	High	0	1	3	1	3	2	6	2	6	2	6
		Medium	1										
		Low	2										
Potential to attract Wild Life / Vector	3	High	0	0	0	1	3	1	3	2	6	2	6
		Medium	1										
		Low	2										
B. FINANCIAL CRITERIA					**29**		**23**		**19**		**13**		**9**
Capital costs (total including permitting, site improvements, equipment)	4	<$3 million	2	2	8	2	8	1	4	1	4	0	0
		$3-$6 million	1										
		>$6 million	0										
Unit operating cost	3	<$50/ton	2	2	6	1	3	1	3	0	0	0	0
		$50-75/ton	1										
		>$75/ton	0										
Tipping fee (based on reference facility(ies))	3	<$50/ton	2	2	6	1	3	1	3	0	0	0	0
		$50-$100/ton	1										
		>$100/ton	0										
By-Product revenue	3	>$20/CY	2	1	3	1	3	1	3	1	3	1	3
		$5-20/CY	1										
		<$5/CY	0										
Markets for By-Products	3	Local	2	2	6	2	6	2	6	2	6	2	6
		Regional	1										
TOTAL					**83**		**78**		**77**		**76**		**62**

ATTACHMENT A

Task 2: Feedstock for Composting and Anaerobic Digestion Technologies

County of Los Alamos
1000 Central Ave, Suite 350
Los Alamos, New Mexico 87544

SCS ENGINEERS

01221112.00 | February 9, 2022

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ATTACHMENT A

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1.0 INTRODUCTION

SCS Engineers is conducting a feasibility study for Los Alamos County for the development of a food waste composting/organics processing facility. As part of the study, SCS identified potential feedstocks and markets for the by-products generated by the technologies being evaluated. Coker Composting & Consulting (CC&C) assisted SCS with this project work.

SCS compiled information on potential waste feedstocks generated in the region. We considered and evaluated projected volumes, availability, cost, chemical characteristics, fuel value, and regulatory considerations for materials from residential yard waste programs, wastewater treatment (biosolids), livestock and agricultural production, and certain industrial manufacturing operations (pulp).

The assessment included identification of feedstocks and their sources that would be appropriate for the proposed composting sites: Bayo Canyon; Eco Station; and Overlook Park, under State, Federal and local regulations. This assessment presents feedstock "recipes" that are compatible with the various technologies and regulatory requirements in terms of optimizing the composting process for throughput, product quality, odor management, revenue potential from tipping fees, avoided cost, and product sales.

Additionally, we assessed the potential market in the region for by-product streams generated by the organics processing technologies under consideration. This assessment included: identification of by-product markets, local and regional; downstream preparation needs; and estimated final product volume and chemical characteristics.

2.0 POTENTIAL WASTE FEEDSTOCKS GENERATED

SCS performed web-based research on the surrounding counties to understand the potential feedstocks available to Los Alamos County. We performed research on biosolids from wastewater treatment facilities, compost facilities, livestock and agricultural production, and industrial/manufacturing operations. **Table 1** shows the results of this research.

Table 1. Potential Organics Feedstocks by Facility

Type of Facility	Number of Facilities	Number in Each County	Distance Range to Los Alamos County
Wastewater Treatment Facility (Biosolids)	10	Bernalillo (1), Lea (1), Los Alamos (2), Quay (1), Rio Arriba (1), Sandoval (1), Santa Fe (1), Socorro (1), Valencia (1)	Between 18.3 and 321 miles, the average is 106 miles
Compost Facilities	29	Bernalillo (6), Dona Ana (5), Lincoln (1), Los Alamos (3), Quay (1), Rio Arriba (2), Sandoval (3), Santa Fe (5), Taos (1), Torrance (2)	Between 20.9 and 348 miles, the average is 119 miles
Livestock Agricultural Production	10	Los Alamos (1), Santa Fe (8), Valencia (1)	Between 4.5 and 113 miles, the average is 43 miles
Industrial Manufacturing	6	Los Alamos (2), Santa Fe (2), Rio Arriba (2)	Between 0 and 21.8 miles, the average is 19 miles

Additional research was performed on the Data Axle website[1] identifying appropriate NAICS codes for businesses that would generate potential organic feedstock. There are potential capturable feedstocks outside of Los Alamos County, particularly food processing residuals and animal manures. The NAICS codes we researched are outlined below:

Industry segments searched:
3111 Animal Food Manufacturing
3112 Grain & Oilseed Milling
3113 Sugar & Confectionery Product

Manufacturing
3114 Fruit & Vegetable Preserving & Specialty Food Manufacturing

Specialty Food Manufacturing
3115 Dairy Product Manufacturing
3116 Animal Slaughtering & Processing
3117 Seafood Product Preparation & Packaging

Packaging
3118 Bakeries & Tortilla Manufacturing
3119 Other Food Manufacturing
3121 Beverage Manufacturing
3122 Tobacco Manufacturing

Reviewing feedstocks associated with the NAICS codes, the results appear to be small sources of organic materials generated, therefore the cost of collection would be high due to travel times (Figure 1 highlights the area that is one hour drive time from downtown Los Alamos). **Table 2** summarizes the NAICS code research, and the number of food processing businesses with more than 50 employees. Most of these appear to be relatively small sources of compostable food waste.

Table 2. Food Processing Businesses

County	Number of Businesses (all NAICS Codes Included)	Those Greater than 50 Employees
Los Alamos	3	0
Rio Arriba	11	0
Sandoval	25	1
Santa Fe	60	1

Additionally, our team investigated animal manures based on the 2017 USDA National Agricultural Statistics Survey (a new report will be available in 2022). The results from this report, summarized in **Table 3**, identify the number of animals in the surrounding counties. As with food processing residuals in Table 2, manure also appears to be a number of small sources.

[1] www.dataaxleuse.com

Table 3. Number of Animals in Each County

County	# Cattle	# Swine	# Sheep	# Goats	# Equine	# Poultry	# Bison	# Elk (in captivity)
Los Alamos	0	0	0	N.D.	N.D.	N.D.	0	0
Rio Arriba	16,973	74	5,091	1,257	1,543	6,502	133	2,400
Sandoval	12,159	214	2,262	655	1,804	2,789	0	0
Santa Fe	14,965	260	863	745	2,278	3,182	N.D.	0

N.D. = data not reported for proprietary reasons

The main constraint in procuring feedstocks outside the County is travel time. It is generally accepted in the organics recycling industry that one-hour travel time is a limitation on cost-effectiveness, both for procuring wastes and for delivering product(s) to markets. The road network in north-central New Mexico is the physical limitation as shown in **Figure 1** (this shows a one-hour travel time boundary from Los Alamos[2]).

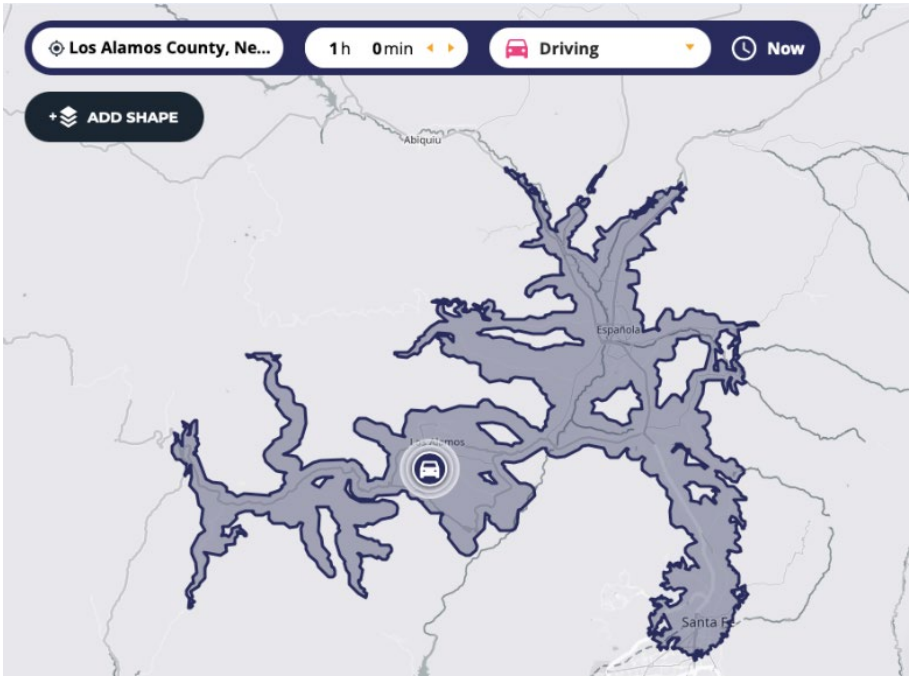


Figure 1. One Hour Drive Time from Los Alamos County

2.1 RESULTS

Few facilities have large volumes of organic feedstock that are in close proximity to Los Alamos County. The one exception may be casinos. Before SCS contacted these facilities, SCS wanted to confirm what feedstock was needed to create a balanced compost product. Section 3 highlights

[2] https://app.traveltime.com

what feedstocks would be required, according to the organic material that is currently captured in Los Alamos County.

3.0 FEEDSTOCK RECIPES AND FOOTPRINT

3.1 FEEDSTOCK RECIPES

The feedstocks used to develop the proposed mass-based recipe in this section were based on the data shown in Table 4, which included estimates of the organics currently diverted and potentially divertible within Los Alamos County. The Year 2025 estimates were used for the analysis.

Table 4. Projected Organics Tonnage

Material Type	2019	2020	2021	2022	2023	2024	2025
Green Waste	3,878	3,975	4,074	4,176	4,281	4,388	4,497
Pallets	106	109	111	114	117	120	123
Food	2,792	2,862	2,933	3,007	3,082	3,159	3,238
Total Organics	**6,776**	**6,945**	**7,119**	**7,297**	**7,479**	**7,666**	**7,858**

Note: this includes the 700 tons/year of yard trimmings used by Public Utilities for sludge composting

Table 4 tonnages include approximately 700 tons per year of greenwaste currently used by the Dept. of Public Utilities as a carbon/bulking agent amendment for the biosolids they compost at the wastewater treatment plant. If that program continues, that carbonaceous feedstock will not be available to support food waste composting initiatives.

The following information outlines a proposed composting recipe (in-vessel, Aerated Static Pile or Covered Aerated Static Pile), and presents the footprint (area) needs for each processing option.

Coker Composting & Consulting (CC&C) developed a Compost Recipe Model, which is an Excel spreadsheet that models and balances four important composting process design parameters: carbon-to-nitrogen ratio; moisture content; volatile solids content; and predicted free air space (predicted based on bulk density). For each feedstock in the recipe, input data are: percent total carbon; percent total nitrogen; percent moisture; bulk density (in pounds per cubic yard); and percent volatile solids. Laboratory analysis of a representative sample of each feedstock is used if available; if not, then data from other CC&C projects is used.

Model variables include tonnage or volume estimates of each feedstock, which are adjusted up or down until the four-process design parameters fall within the target range for each criterion. If a specific quantity of one particular feedstock is required, that tonnage or volume is held constant and the quantities of other feedstocks are adjusted.

The carbon content used in the model is the biodegradable carbon percentage of total carbon. This is calculated using an equation that adjusts the carbon percent for the lignin content of wood. Lignin is bacterially resistant to decay; it is decomposed by fungi in curing. Table 5 summarizes the Year 2025 recipe. The detailed spreadsheet is included in Appendix A.

Table 5. Organics Material Recipe for Compost Facility

Parameter	Targets	Recipe
Average Annual Compostables – food scraps (CY/yr.)		5,568
Average Annual Compostables – yard trimmings (CY/yr.)		14,089
Average Annual Compostables – LANL pallets (CY/yr.)		703
Compost recycle - inoculant (CY/yr.)		1,689
Oversize wood from screening (CY/yr.)		8,423
Carbon:Nitrogen Ratio	> 25:1	19
Moisture Content	50%-65%	55%
Volatile Solids	> 80%	84%
Predicted Free Air Space	40% - 60%	63%

This is a marginally successful recipe from a process design perspective, in that the C:N ratio is a bit low due to limitations on available carbon. Carbon provides both an energy source and the basic building block making up about 50 percent of the mass of microbial cells. Nitrogen is a crucial component of the proteins, nucleic acids, amino acids, enzymes and co-enzymes necessary for bacterial cell growth and function. This recipe removes the 700 tons or 2,597 CY/yr. of yard trimmings produced in the County that are being diverted to the Department of Public Utilities for their use in composting biosolids, This recipe becomes even more carbon-limited. Options for procuring more carbon-based amendment could include:

- Sourcing a starch-rich or sugar-rich food processing residual feedstock (The most likely sources of starch- and sugar-rich food wastes would be the Food Service sector. The Los Alamos Chamber of Commerce lists several on its website (http://losalamoschamber.chambermaster.com/list/ql/restaurants-food-beverages-22). Wastes from breweries are both starch- and sugar-rich.)

- Increasing the number of households with yard trimmings diversion carts to more than 72%[3]

- Developing a public education and outreach program about the County's composting efforts to increase the yard waste cart set-out rates each week

- Implementing a clean wood diversion program for construction projects in the County and at Los Alamos National Laboratory (LANL)

[3] November 3, 2021 email from Angelica Gurule at Los Alamos County

- Consider reducing the amount of food scraps collected to begin with, while looking for additional yard trimmings to expand the compost program.

Note that this recipe presumes capture of all Year 2025 compostables; in reality, not everyone will participate in an expanded organics diversion program unless mandated (which greatly increases contamination rates) but participation rates will grow over time with robust advocacy by the County. In addition, not all participants will set out their organics carts, or drop off organics at designated drop-off sites every week. This suggests that any new organics diversion infrastructure be very scalable to grow cost-effectively over time.

Compostable service ware and bags are an acceptable feedstock to composting provided: a) all compostable items are certified by the Biodegradable Products Institute (www.bpiworld.org), and b) no compost is to be sold to organic agriculture customers (this service ware feedstock is not approved for use in organic agriculture). The County may wish to engage the Compost Manufacturing Alliance (https://compostmanufacturingalliance.com) for testing and certification of any compostable service ware or bags that the County might wish to accept from food waste generators. It is recommended that the County not start accepting compostable plastics initially. As the program matures, and the general public get more experience and education on what is expected, the County could re-consider acceptance of compostable plastics. Bioplastics are not recommended because of the level of contamination that can be seen in the compost due to confusion by residents mistaking bio plastics for regular plastic, as well as it can change the market for the compost sold.

3.2 FOOTPRINT ANALYSES

Composting (and anaerobic digestion, or AD) are biological manufacturing facilities wherein feedstocks are converted microbially into products (compost, biogas, digestate) and byproducts (heat, biogenic carbon dioxide, water vapor, gases, etc.). These manufacturing processes require that volumes of mixed feedstock materials flow through multiple materials handling steps as shown in **Figure 2** (this image refers to composting, but AD is similarly configured).

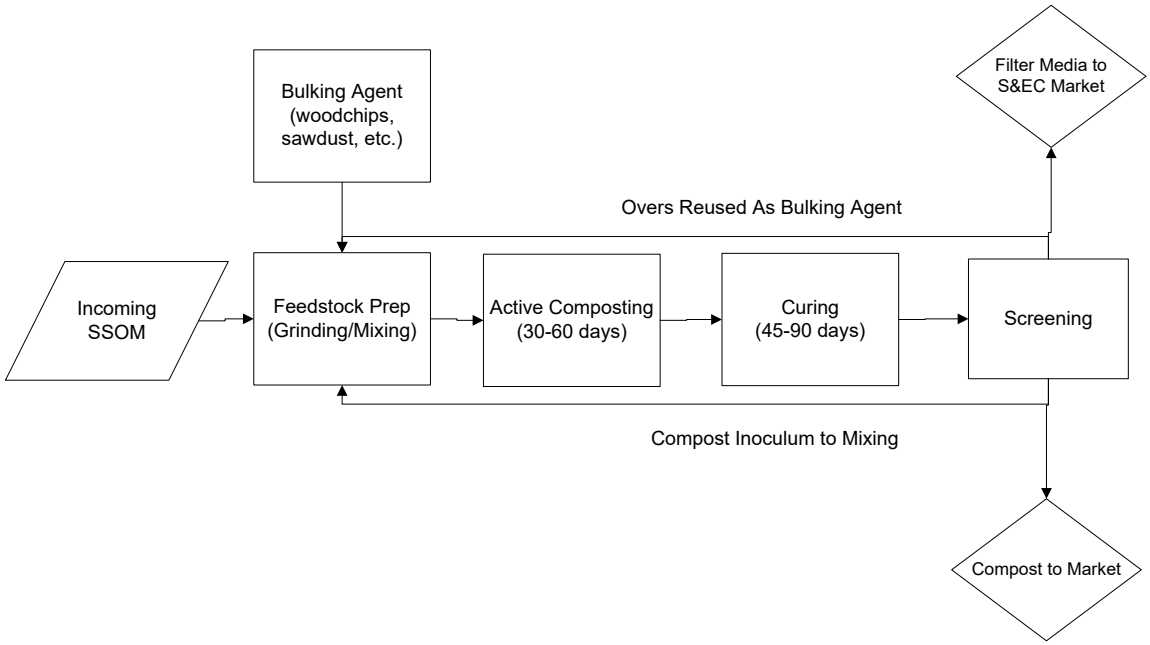


Figure 2. Typical Materials Handling Steps for Composting

In order to understand how much property is needed for a proposed organics recycling facility, a footprint analysis is conducted. The CC&C Compost Footprint Model is an Excel spreadsheet that takes data from the CC&C Compost Recipe Model to simulate the production footprint needed for processing defined quantities of feedstocks into compost using one of several composting methods. Steps in the compost manufacturing process that are included in the model are feedstock receipt, feedstock storage, feedstock mixing, active composting, curing, product screening, product storage and product sales/load-out. Residence times in composting and curing, and percentage volume losses due to consolidation in each step can be varied.

The footprint model takes the feedstock volumes from the recipe model and modifies them into average daily equivalent volumes. These average volumes are used to calculate the amount of space needed for a particular step in the process, with an example shown in Table 6.

Table 6. Compost Feedstock Footprint Model

Feedstocks Receipt			
Assume yard waste delivery once/week			
Assume food waste delivery daily			
Size receipts area for 1.5x average weekly volume	=	795	CY/day
to allow equipment to move feedstocks into storage	=	21,467	CF/day
Assumed pile height	=	6	ft.
Pile footprint	=	3578	SF
Plus equipment access/movement	=	1789	SF
Receipt area needed	=	5367	SF
Proposed dimensions	=	50	ft. W
		110	ft. L

Each step in the process is analyzed similarly, although for feedstocks with significant volume variations during the year (e.g. leaves), the peak volumes are used for sizing. Feedstock storage is based on either enclosed concrete bunkers or open trapezoidal piles.

Composting approaches that can be modeled include turned windrows (turned with loader, pull-behind turner, or straddle turner), aerated static pile (single- or multi-stage and positive, negative or reversible aeration), or in-vessel systems of any configuration. AD systems that can be modeled include dry fermentation systems (traditional liquid AD system footprints are dependent to a large degree on the AD system vendor). Curing approaches that can be modeled include turned pile curing and mass bed curing. Screening yields can be varied. Product storage is modeled in trapezoidal piles. Each step is summed at the end to indicate the likely minimum footprint needed for processing the required volumes of feedstocks.

For the Los Alamos County project, several composting/AD approaches were evaluated. Manufacturing steps common to all approaches included:

- Feedstock receipt area
- Short-term feedstock storage areas for food scraps, yard trimmings and screened overs
- Screening area
- Product storage area
- Product load-out

The composting/AD approaches modeled included:

- Turned windrow composting with a straddle turner (photo on left below)

- Covered aerated static pile (ASP) composting with positive aeration (photo on right below)

- In-vessel composting using rotary drum, based on a configuration similar to the municipal solid waste rotary drum composting operations in Tennessee and Massachusetts (Figure 3).

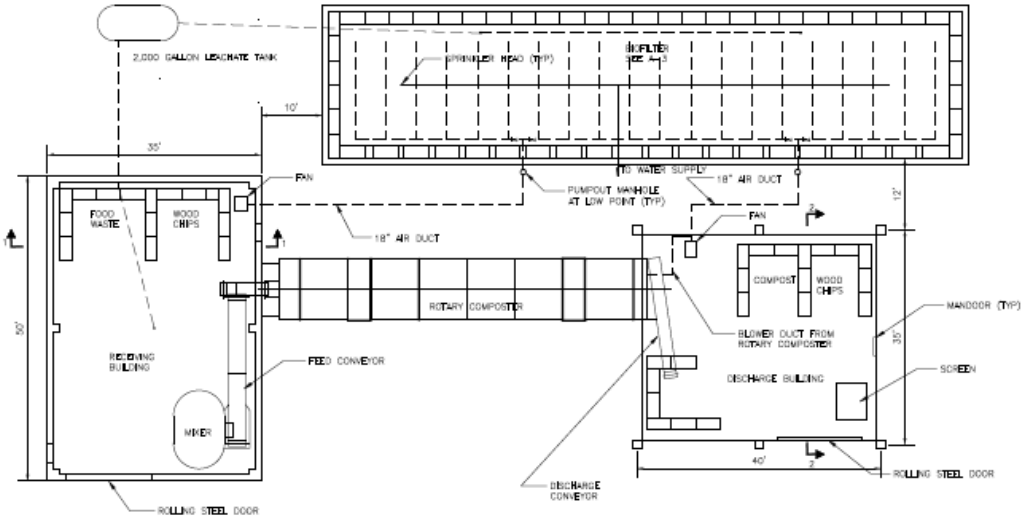


Figure 3. In-Vessel Composting Configuration

- Anaerobic digestion using dry fermentation AD similar to existing facilities in California and Wisconsin; see **Figure 4** below.

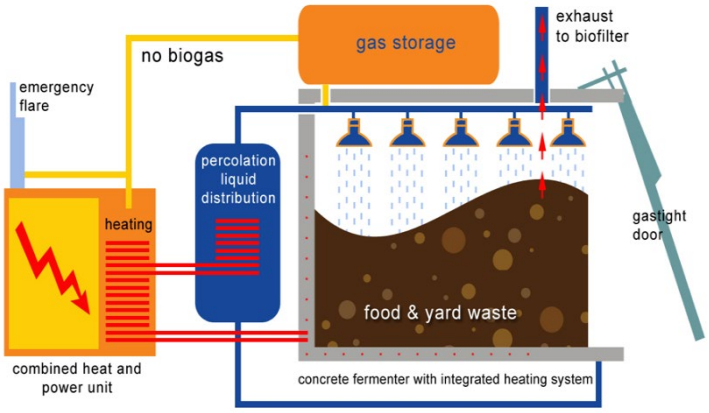


Figure 4. Dry Fermentation Anaerobic Digestion

It should be noted that AD systems normally operate in temperature regimes that do not ensure pathogen destruction (i.e., temperatures > 131°F. for a prolonged period), so some method of pathogen inactivation is recommended prior to digestate use. While there are no regulations in New Mexico requiring pathogen kill in food scraps composting or digestion, it is a recommended best management practice for recycled organics entering the soil amendment product value chain. For this evaluation, it was assumed that the digestate from a dry fermentation AD system would be composted with fresh yard trimmings (to replace volatile solids lost in the AD reactor), but, as noted earlier, available carbon-based amendments are relatively scarce in New Mexico.

Other methods of composting /digestion were not evaluated in this effort. Turned windrow composting can be done with a tractor-pulled turner or with a front-end loader, but that will have a much larger footprint. ASP systems provided by technology vendors are often reversible positive-negative aeration systems, using biofiltration for odor control (when operating in negative aeration mode) that can have significant footprints. In-vessel systems come in a wide variety of configurations, but they all share one characteristic: they are machines of fixed capacity and not very suitable to scalability. AD systems are often liquid-based systems, meaning food scraps must be slurried for pumpability, or they are higher solids-based plug-flow systems. The liquid and plug-flow systems were not modeled, as they are highly vendor-specific, and not very suitable for scalability.

The detailed footprint analyses are presented in the Appendix B, C, D and E, and summarized in Table 7.

Table 7. Feedstock Footprint Analysis

	Turned Windrow	ASP/CASP	In-Vessel	AD
		(dimensions in square feet)		
Feedstock Receipt		1,118		
Feedstocks Storage		8,115		
Composting/AD Area	43,273	20,088	22,140[1]	52,697[2]
Curing Area	57,697	38,225	60,775	75,900
Screening Area		5,428		
Product Storage Area		42,750		
Product Load-Out Area		6,138		
Allow for equipment movement at 25%	44,140	30,475	34,308	48,046
Totals (SF)	205,699	152,377	171,539	240,232
Totals (Ac.)	4.7	3.5	3.9	5.5

[1] *Feedstock receipt and mixing are included in the enclosed rotary-drum composting complex*
[2] *Includes separate mixing area (3,847 SF), biogas storage (15,800 SF) and percolate tankage (22,500 SF)*

3.3 RESULTS FOR SITING

As the preferred site (Bayo Canyon) is about 10 acres in size, all of these footprint alternatives would fit within the site. The second-ranked site, Overlook Park Area 2, is only 3.5 acres so only the ASP/CASP alternative would fit on that site.

4.0 POTENTIAL MARKETS

The SCS team reviewed potential compost markets and their outputs. The following sections present the results of this research.

4.1 COMPOST

The primary markets for high-quality finished composts are in landscaping and agriculture, with secondary markets in vegetated stormwater management systems, sediment and erosion control, and in green infrastructure development[4], which includes measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. Compost quality from food wastes is generally quite good, although there are some concerns about the presence of per- and polyfluoroalkyl substances (PFAS).

Research at Purdue University detected all 17 of the PFAS chemicals for which they analyzed, including PFOA and PFOS, in 18 commercially available fertilizers (of which 11 were biosolids-based

[4] https://www.epa.gov/green-infrastructure/what-green-infrastructure

and five were composted biosolids) and 10 solid waste-derived composts[5]. Composted biosolids had concentrations of PFAS ranging from 20 to 85 micrograms per kilogram (µg/kg, ppb), while composts made from various combinations of food scraps, compostable serving ware and yard trimmings had PFAS concentrations between 22 and 52 µg/kg. Pure yard trimmings compost registered concentrations of 2 to 5 µg/kg.

The landscaping market for composts are strongest in owner-occupied single-family dwelling unit households, primarily for use in ornamental beds and in turf grass maintenance. In 2019, there were 5,543 of these households in the County[6]. Assuming each household has a 300 SF ornamentals bed and 1,500 SF of turf grass, and that 30% of households agree to use compost, that market could absorb about 4,800 CY of compost annually, or about 33% of full-scale Year 2025 production. Without the 700 tons/year of greenwaste diverted by DPU, annual compost production is estimated at 11,500 cubic yards (CY) per year, of which about 33% (≈ 4,800 CY) could be absorbed by the residential and commercial landscaping sectors in the County (with minimal marketing outreach by the County).

The County may have to consider programs to encourage the use of compost, or to require minimum soil organic matter contents to reduce demand for irrigation water[7].

Agriculture may not be a very robust market for Los Alamos County-produced compost as there is only one farm in the County and only 15,812 acres of harvested cropland in Santa Fe County[8]. It is not known if any of the 286 farms in Santa Fe County are within one hour of Los Alamos.

The use of compost as an erosion prevention mechanism through use of compost "blankets" and as a sediment filtration/capture system through the use of compost filter berms and filled permeable filter socks is growing in popularity due to the improved performance of these methods relative to conventional methods of sediment and erosion control.

4.2 BIOGAS – ELECTRICITY

A dry fermentation-style AD system can be expected to produce about 2,000 cubic feet (ft^3) of biogas per ton of feedstock digested. For the AD system modeled in this effort, an estimated 15.1 million ft^3/year of a 60% methane biogas could be produced. This biogas could be combusted, as is, in a combined heat-and-power electrical generation system. This could potentially produce in excess of 1.5 million kilowatt-hours per year (kWh/year) or 1500 MWh/year with recovered heat of about 3,474 million BTUs (MMBTU) per year. If this organics recycling processing option is preferred, the County Department of Public Utilities should be consulted to determine if they are interested in this power and recovered heat.

[5] Lee, L., "PFAS -More Than You Ever Wanted to Know and Then Some", Michigan Water Environment Association 2019 Biosolids Conference, March 2019.
[6] Los Alamos Housing Needs Analysis, December 2019 at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_6435726/File/Government/Departments/Community%20Development/Housing/Los%20Alamos%20County%20Housing%20Analysis%20Final%2012-10-2019.pdf
[7] Coker, C., "Soil Organic Matter Mandates", *BioCycle,* July 2021 at https://www.biocycle.net/soil-organic-matter-mandates/
[8] USDA, National Agricultural Statistics Survey, 2017 at https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/New_Mexico/st35_2_0009_0009.pdf

4.3 BIOGAS – RNG

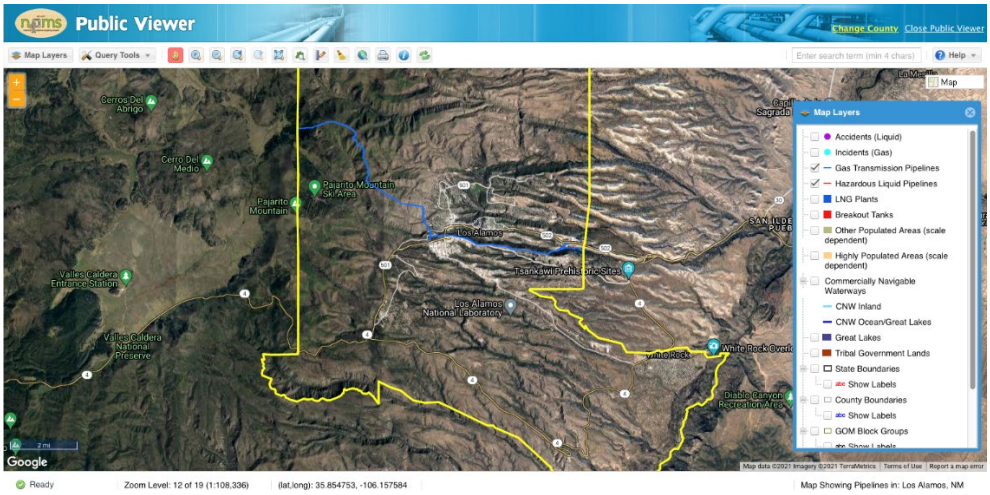
A growing number of AD installations are processing the biogas to make renewable natural gas (RNG), either for vehicle fuel or for pipeline injection. Making RNG requires removing the carbon dioxide, hydrogen sulfide and other contaminants from the biogas. Production of RNG for vehicle fuel benefits from a partner with a vehicle fleet (school buses, trash trucks, taxicabs) willing to convert vehicles to natural gas engines. However, this appears to be a bit of a "chicken-and-egg" problem; fleet owners are not willing to make the investments in conversion without a reliable source of RNG and adequate numbers or refueling stations and RNG producers are reluctant to build refueling infrastructure without vehicles to refuel.

Pipeline injection is increasingly popular in the U.S., due, in part, to California's Low-Carbon Fuel Standard, which is a market-based program that focuses specifically on reducing carbon intensity (CI) of fuels used within California. Low-carbon fuels in the California fuel pool can generate credits based on emissions reduced compared to the established CI baseline. These credits incentivize developers to bring more clean fuel options to California.

Generally, RNG has to be injected into a transmission pipeline network (rather than a distribution pipeline network) as all gas pipelines flow full, so enough downstream gas demand has to exist to offset the amount of RNG to be injected. Fortunately, there is a transmission main in Los Alamos County[9] as seen in Figure 5. However, the quantity of biogas projected to be produced is not enough to justify the capital and operating costs of an RNG facility.

SCS used an RNG calculator which suggests about 11 million cubic feet of RNG per year based on the Los Alamos feedstocks, with 700 TPY diverted by DPU to biosolids composting.

Figure 5. Map with RNG Injection Lines



4.4 DIGESTATE

Digestate (the liquid or solid residual from AD) has a high moisture content and is expensive to haul long distances to farmlands. Given the limited number of close-in harvested crop fields, direct land

[9] https://pvnpms.phmsa.dot.gov/PublicViewer/

application to cropland could be infeasible, although direct land application to disturbed lands needing remediation might have potential. Another alternative would be to compost the digestate with a volatile solids-rich amendment (like yard trimmings), but, as noted above, there are limits on the supply of yard trimmings.

Appendix A

Recipe

2186 Mountain Pass Rd
Troutville, VA 24175 USA
+1 (540) 874-5168
ccoker@cokercompost.com
www.cokercompost.com

Project	Composting Facility Process Design	**Proj. No.**	21-1307
Client	SCS - Los Alamos County	**Date**	02.07.22
Analysis	Year 2025 Compost Recipe/Materials Flow - w/ DPU YW		rev. 2

Assumptions:

Input cell

Output cell

Feedstock tonnages provided by SCS Engineers

Composting facility open 6 days/week (312 days/yr)

Compost recycle added at 5% by volume

MIX RATIO CALCULATIONS- AVERAGE ANNUAL CONDITIONS

INGREDIENTS	Yard Trimmings	Food Scraps	LANL Pallets	Compost Recycle	Overs from Screen	TOTAL MIX	TARGET
BIODEGRABLE C (% DWB)	24.1	38.9	36.0	34.0	18.7		
N (% DWB)	1.5	2.5	0.66	1.7	0.29		
MOISTURE%	40.5	70.2	23.4	47.5	61.6		
UNITS IN MIX BY WGT (T)	3,797	3,238	123	1,000	2,527	10,685	
UNITS IN MIX BY WGT (LB)	7,594,000	6,476,000	246,000	2,000,000	5,054,000	21,370,000	
UNITS IN MIX BY VOL (CY)	14,089	5,568	703	1,689	8,423	30,473	
DENSITY (LBS/CY)	539	1163	350	1184	600	701.3	
POUNDS OF CARBON	1,830,154	2,519,164	88,560	680,000	945,098	6,062,976	
POUNDS OF NITROGEN	113,910	161,900	1,624	34,000	14,657	326,090	
BIODEGRADABLE C:N RATIO	16	16	55	20	64	**19**	20 TO 30
POUNDS OF MOISTURE	3,075,570	4,546,152	57,613	950,000	3,113,264	11,742,599	
POUNDS OF UNITS	7,594,000	6,476,000	246,000	2,000,000	5,054,000	21,370,000	
PERCENT MOISTURE						**55**	50 TO 65%
VOLATILE SOLIDS (%, DWB)	84.3	98.7	97.4	57.1	75		
VOLATILE SOLIDS (LBS)	6,401,742	6,391,812	239,604	1,142,000	3,790,500	17,965,658	
NUMBER OF UNITS	7,594,000	6,476,000	246,000	2,000,000	5,054,000	21,370,000	
MIX VS (%)						**84**	> 80%
DENSITY (LBS/CY)	539	1163	350	1184	600		
DENSITY (KG/M^3)	319.8	690.0	207.6	702.4	356.0		
% AIR SPACE	71.22	37.90	81.31	36.78	67.96		
FEEDSTOCK VOLUME (CY)	14,089	5,568	703	1,689	8,423	30,473	
AIR VOLUME (CY)	10,034	2,111	572	621	5,725	19,062	
PREDICTED FREE AIR SPACE						**63%**	40-60%

Data Sources:

Yard trimmings - May 2019 lab analysis of yard trimmings, Scott County, MN

Food scraps - Jan. 2019 lab analysis of source-separated food wastes, Hennepin Co, MN

Pallets - data from private company, Dona Ana, NM, 2013

Compost recycle - April 2017 analysis of 3/8" screened yard waste compost, Prince William Co., VA

Overs C,N, Moisture - Jan. 2014 lab analysis from Royal Oak Farm in VA; other from literature

Predicted Free Air Space equation from Alburquerque, J.A., *et. al.* , "Air Space in Composting Research: A Literature Review" *Compost Science and Utilization* , Vol. 16, No. 3, 2008, p. 159-170

Adjusting for Biodegradable Carbon:

Biodegradable Fraction (B.F.) = 0.83 – (0.028) x Lignin Content of Volatile Solids ($L.C._{VS}$)

Biodegradable-C = Total C x B.F. x Volatile Solids (VS)

Feedstock	Carbon (%)	Lignin Content (%)	Biodegradable Fraction (B.F.)	Volatile Solids (%)	Biodegradable Carbon (%)

Example: Yard Trimmings	*49.2%*	*4.1%*	*82.89%*	*98.3%*	*40.1%*
Yard trimmings	34.5%	4.1%	82.89%	84.3%	24.1%
Food scraps	47.5%	0.4%	82.99%	98.7%	38.9%
Pallets	46.4%	24.0%	82.33%	98.5%	37.6%
Cleaned overs	30.3%	24.0%	82.33%	75.0%	18.7%

Biodegradable Fraction & Carbon equations from Chandler, J.A., et.al., "Predicting Methane Fermentation Biodegradability", *Biotechnology and Bioengineering Symposium*, 10,93, 1980

Lignin content data sources:

Yard trimmings - Das, K.C., "Odor Related Issues in Commercial Composting", University of Georgia, 2000

Food scraps - Das, K.C., "Odor Related Issues in Commercial Composting", University of Georgia, 2000

Pallets - USDA, "The Chemical Composition of Wood", Chapter 2, American Chemical Society, 1984, p. 78

Cleaned overs - assumed the same as wood

Composting Materials Flows

Residence times for windrow composting (wintertime conditions)

Composting		Curing		Total	
30	days	60	days	90	days

Volumes going to composting

Average daily volumes of mixed feedstocks = 98 CY/day

Volume of material in Primary Composting

Residence Days	Mixed feedstocks	
30	2,930	CY

Volumes going to curing (assume 30% volume shrink in composting)

Average daily volumes of composted feedstocks = 68 CY/day

Volume of material in Curing:

	Residence Days	Composted Feedstocks	
Windrow	60	4,102	CY

Volumes going to screening (assume 10% volume shrink in curing):

Average daily volumes of cured feedstocks = 62 CY/day

Screening

a. Assume approx. 60% finished compost capture rate and 40% going to overs

b. Finished compost production:

Average daily volumes of screened compost = 37 CY/day

Average daily volumes of overs = 25 CY/day

d. Finished compost production (annually, based on 312-day year)

Average annual volume of screened compost = 11,519 CY/year

Appendix B

Footprint – Turned Windrow

COKER
COMPOSTING AND CONSULTING

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Project	Composting Facility Process Design	**Proj. No.**	21-1307
Client	SCS - Los Alamos County	**Date**	12.10.21
Analysis	Year 2025 composting footprint - turned windrows		rev. 1

Assumptions

Facility is open 6 days/week (312 days/year)

Facility will use open-air turned windrows turned with straddle turner

Yard waste is ground to 2" particle size by others

Waste Volumes (in cubic yards)	Annual Vol (CY)	Avg. Daily Volume (CY)
Yard trimmings	16,686	53
Food scraps	5,568	18
LANL pallets	703	2
Compost recycle	1,689	5
Overs from screening	8,423	27
Total	33,070	106

Composting Materials Flows

Residence times for windrow composting (wintertime conditions)

	Composting		Curing		Total	
Windrow	30	days	60	days	90	days

Daily Volumes going to composting

Daily volumes of mixed feedstocks = 106 CY/day

Volume of material in Primary Composting

	Residence Days	Mixed feedstocks
Windrow	30	3,180 CY

Daily Volumes going to curing (assume 30% volume shrink in composting)

Daily volumes of composted feedstocks = 74 CY/day

Volume of material in Curing:

	Residence Days	Composted Feedstocks
Windrow	60	4,452 CY

Daily Volumes going to screening (assume 10% volume shrink in curing):

Daily volumes of cured feedstocks = 67 CY/day

Screening

a. Assume approx. 60% finished compost capture rate and 40% going to overs

b. Finished compost production (daily):

Daily volumes of screened compost = 40 CY/day

c. Daily volumes of overs = 27 CY/day

d. Finished compost production (annually, based on 312-day year)

Annual volume of screened compost = 12,501 CY/year

Feedstocks Receipt

Assume yard trimmings/carbon delivery once/week

Assume food wastes delivery daily

Size receipts area for 0.5x average daily volume	=	110.4	CY/day
to allow room for inspecting feedstocks for contamination	=	2,980	CF/day
Assumed pile height of delivered feedstocks	=	4	ft
Pile footprint	=	745	SF
Plus equipment access/movement	=	373	SF
Receipt area needed	=	1118	SF
Proposed dimensions	=	33	ft. W
		33	ft. L

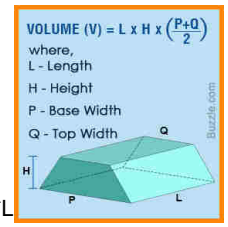
Feedstocks Storage

Assume storage of food wastes in rectangular concrete block bunkers, rest in open piles

Food Wastes

Food wastes in recipe daily	=	18	CY
Assume a maximum storage period prior to use	=	3	days
Storage volume needed for food wastes	=	60	CY
	=	1,620	CF
Assume bunker depth	=	4	ft
Bunker footprint	=	405	SF
Proposed dimensions	=	20	ft W
	=	20	ft L

Yard waste Assume stored in trapezoidal piles outdoors



Yard waste in recipe daily (on average)	=	53	CY/day
Assume a storage period prior to use	=	30	days
Storage volume needed for yard waste	=	1,610	CY
	=	43,470	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L	=	7.41	CY/LF
Total linear footage of storage piles needed	=	220	LF
Assume pile length	=	50	ft.
Number of storage piles needed	=	4	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	6,775	SF
Proposed dimensions	=	82	ft L
	=	82	ft W

Overs from screening Assume stored in trapezoidal piles outdoors

Screen overs in recipe daily (on average)	=	27	CY/day
Assume a storage period prior to use	=	7	days
Storage volume needed for screen overs	=	190	CY
	=	5,130	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	7.41	CY/LF
Total linear footage of storage piles needed	=	30	LF
Assume pile length	=	20	ft.
Number of storage piles needed	=	2	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	975	SF
Proposed dimensions	=	31	ft L
	=	31	ft W

Feedstock Mixing

Assume all feedstock mixing done by windrow turner on pad

Active Composting

Assume use of a straddle turner with a 6' x 12' tunnel

Assume trapezoidal windrow shape			
a. Volume per linear foot of windrow:			
A = (H x (B-H)), where H = height, B = width at base			
Height	=	6	ft
Base	=	12	ft
Cross-sectional area per linear foot	=	36	SF
Volume per linear foot	=	1.3	CY/ LF
Average linear footage of new windrows daily			
Daily volume from mixing / volume per linear foot	=	79.5	LF / day
Total volume of material in windrows during 30-day active composting	=	3,180	CY
Total linear footage of material in windrows	=	2,385	LF
Total area occupied by windrows	=	28,618	SF
Assume each windrow holds 3 days worth of mixed material / 2 built per week			
79.5 LF / day x 3 days	=	238	LF
Volume of material in each windrow	=	318	CY
Number of windrows in active composting	=	10	windrows
Assume 3' spacing between windrows and 25' turning radius at each end			
Each windrow is			
Length 238 ft + 25 ft + 25 ft	=	288	ft
Width 12 ft + 3 ft	=	15	ft
Area of each windrow (gross)	=	4,327	SF
Area of all windrows (gross)	=	43,273	SF
Assume pad length is equal to gross windrow length	=	288	ft. L
Pad width is 10 windrows @ 15' ea	=	150	ft. W
Proposed dimensions		288	ft. L
		150	ft. W

Curing

Assume same size windrows as in active composting			
Assume 30% volume shrink during composting			
Avg. daily volume to composting	=	106	CY/day
Avg. daily volume to curing	=	74	CY/day
Average linear footage of new windrows daily			
Avg. daily volume from composting / volume per linear foot	=	56	LF / day
Total volume of material in windrows during 60-day curing period	=	4,452	CY
Total linear footage of material in windrows	=	3,339	LF
Total area occupied by windrows	=	40,066	SF
Assume each curing windrow holds 1.5 composting windrows			
1.5 x 318 CY/windrow x 30% shrinkage	=	334	CY
Number of windrows in curing	=	13	windrows
Length of each windrow (make equal to composting windrows)	=	238	ft
Assume 3' spacing between windrows and 25' turning radius at each end			
Each windrow is			
Length 238 ft + 25 ft + 25 ft	=	288	ft
Width 12 ft + 3 ft	=	15	ft
Area of each windrow (gross)	=	4,327	SF
Area of all windrows (gross)	=	57,697	SF
Assume pad length is equal to gross windrow length	=	288	ft
Pad width is	=	200	ft
Proposed dimensions		288	ft. L
		200	ft. W

Screening

Assume use of trommel screener with 3/8" screen
Assume approximately 60% / 40% fines/overs split
Plan on four months finished compost storage

Daily volume going to screening	=	67	CY/day
Daily volume of compost going to storage	=	40	CY/day
Daily volume of overs recycled as inoculant/bulking agent	=	27	CY/day
Screen size (based on McCloskey 512A)	Length	42	ft
	Width	9	ft

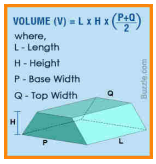
Allow 25 ft all sides for equipment movement

Proposed dimensions		92	ft. L
		59	ft. W

Product Storage

Assume winter storage period of four (4) months
Total volume in product storage pile

Daily volume x 6 days/week operation x 4 months capacity		3,846	CY
	=	103,851	CF
Assume maximum storage pile height	=	8	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	6.52	CY/LF
Total linear footage of storage piles needed		600	LF
Assume pile length		225	ft.
Number of storage piles needed	=	3	
Space allowance between piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	18,150	SF



Assume open storage pile with 30' access in front for equipment/trucks

Width (depth) of storage area	=	190	ft
Length of storage pile	=	225	ft
Proposed dimensions		190	ft. W
		225	ft. L

Product Load-Out Area

Assume 90% of production goes out in transfer trailers, 10% is small truck retail sales
Truck loading area:

Dump trailer dimensions with 30' on either side for loading:	=	68.5	ft W
		53	ft L

Retail sales:

Pick up truck dimensions with 30' on either side for loading:	=	64	ft W
		20	ft L
Area needed	=	4,911	SF
Add another 25% for vehicle queuing	=	1,228	SF
	Total	6,138	SF
Dimensions:	=	78	ft. W
	=	78	ft. L

Area Summary	Width	Length		Area	Area
	(ft.)	(ft.)		(sq. ft.)	(acres)
Feedstock Receipt	33	33		1,118	0.03
Feedstocks Storage					
Food scraps	20	20		405	0.01
Yard waste	82	82		6,775	0.16
Overs from screen	31	31		975	0.02
Composting Pad	150	288		43,273	0.99
Curing Pad	200	288		57,697	1.32
Screening Area	59	92		5,428	0.12
Product Storage Area	190	225		42,750	0.98
Product Load-Out Area	78	78		6,138	0.14
				164,559	3.78
Allowance for equipment storage, movement, etc. @ 25%			Totals	205,699	4.72

Appendix C

Footprint – ASP/CASP

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Project	Composting Facility Process Design	**Proj. No.**	21-1307
Client	SCS - Los Alamos County	**Date**	12.10.21
Analysis	Year 2025 composting footprint - ASP/CASP		rev. 1

Assumptions

Facility is open 6 days/week (312 days/year)

Facility will use open-air aerated static pile (ASP) or covered ASP (CASP)

Yard waste is ground to 2" particle size by others

Waste Volumes (in cubic yards)	Annual Vol (CY)	Avg. Daily Volume (CY)
Yard trimmings	16,686	53
Food scraps	5,568	18
LANL pallets	703	2
Compost recycle	1,689	5
Overs from screening	8,423	27
Total	33,070	106

Composting Materials Flows

Residence times for windrow composting (wintertime conditions)

	Composting		Curing		Total	
ASP/CASP	30	days	60	days	90	days

Daily Volumes going to composting

Daily volumes of mixed feedstocks = 106 CY/day

Volume of material in Primary Composting

	Residence Days	Mixed feedstocks
ASP/CASP	30	3,180 CY

Daily Volumes going to curing (assume 30% volume shrink in composting)

Daily volumes of composted feedstocks = 74 CY/day

Volume of material in Curing:

	Residence Days	Composted Feedstocks
Mass Bed	60	4,452 CY

Daily Volumes going to screening (assume 10% volume shrink in curing):

Daily volumes of cured feedstocks = 67 CY/day

Screening

a. Assume approx. 60% finished compost capture rate and 40% going to overs

b. Finished compost production (daily):

Daily volumes of screened compost = 40 CY/day

c. Daily volumes of overs = 27 CY/day

d. Finished compost production (annually, based on 312-day year)

Annual volume of screened compost = 12,501 CY/year

Feedstocks Receipt

Assume yard trimmings/carbon delivery once/week

Assume food wastes delivery daily

Size receipts area for 0.5x average daily volume	=	110.4	CY/day
to allow room for inspecting feedstocks for contamination	=	2,980	CF/day
Assumed pile height of delivered feedstocks	=	4	ft
Pile footprint	=	745	SF
Plus equipment access/movement	=	373	SF
Receipt area needed	=	1118	SF
Proposed dimensions	=	33	ft. W
		33	ft. L

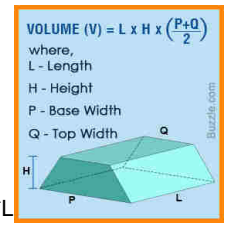
Feedstocks Storage

Assume storage of food wastes in rectangular concrete block bunkers, rest in open piles

Food Wastes

Food wastes in recipe daily	=	18	CY
Assume a maximum storage period prior to use	=	3	days
Storage volume needed for food wastes	=	60	CY
	=	1,620	CF
Assume bunker depth	=	4	ft
Bunker footprint	=	405	SF
Proposed dimensions	=	20	ft W
	=	20	ft L

Yard waste Assume stored in trapezoidal piles outdoors



Yard waste in recipe daily (on average)	=	53	CY/day
Assume a storage period prior to use	=	30	days
Storage volume needed for yard waste	=	1,610	CY
	=	43,470	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L	=	7.41	CY/LF
Total linear footage of storage piles needed	=	220	LF
Assume pile length	=	50	ft.
Number of storage piles needed	=	4	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	6775	SF
Proposed dimensions	=	82	ft L
	=	82	ft W

Overs from screening Assume stored in trapezoidal piles outdoors

Screen overs in recipe daily (on average)	=	27	CY/day
Assume a storage period prior to use	=	7	days
Storage volume needed for screen overs	=	190	CY
	=	5,130	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	7.41	CY/LF
Total linear footage of storage piles needed	=	30	LF
Assume pile length	=	20	ft.
Number of storage piles needed	=	2	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	975	SF
Proposed dimensions	=	31	ft L
	=	31	ft W

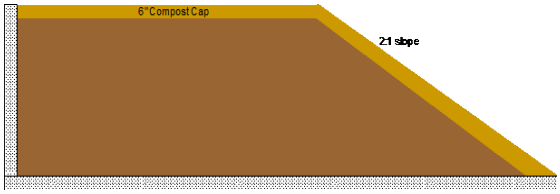
Feedstock Mixing

Assume all feedstock mixing done by bucket blending with front-end loader

Active Composting

Assume composting in poured concrete bunkers with open fronts

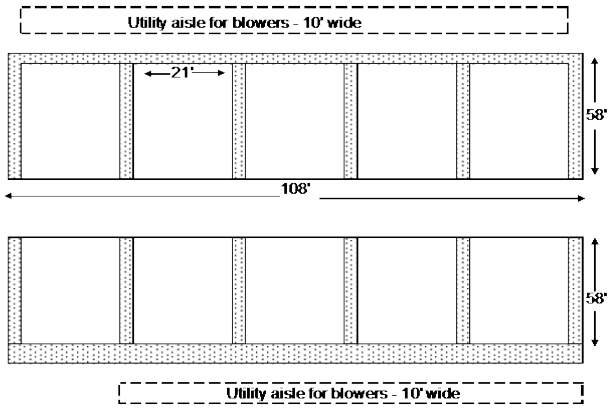
Composting residence time	=	30	days
Volume of material in composting per cycle	=	3,180	CY/cycle
	=	85,855	ft^3/cycle
Assume one ASP built every 3 days			
Volume needed per ASP (2 per week)	=	318	CY/ASP
	=	8,586	ft^3 / ASP



Assume ASP pile height (without 0.5' biocover)	=	8	ft H
Footprint of each ASP	=	1,073	SF
Assume ASP internal pile width	=	21	ft W
Internal ASP pile length	=	58	ft L
Volume of each bunker	=	9,072	ft^3
Does volume of each bunker meet volume needed?		Y	
Number of ASP piles in each cycle	=	9	bunkers

Assume bunkers made of 6" thick concrete walls

Assume arranged in two rows of 5 bunkers/bins with 50' access aisle in front of bunkers and 10' utility aisle behind



Proposed dimensions (assumes 6" thick concrete walls)	=	186	ft L
	=	108	ft W

Composting Aeration System

Volume of each bunker/bin	=	336	CY/bunker
Aeration rate (peak aeration demand)	=	5	CFM/CY
Aeration needed for each bunker/bin	=	1,680	CFM
Assume one blower for each ASP			
Maximum Air Flow @ 8" W.C.	=	1,700	CFM

Leachate Tank

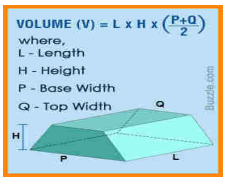
Leachate generation rate	=	45	gal/ton
Tons of food scraps per year	=	3,238	tons
Number of ASP cycles per year	=	12	cycles/year
Tons of food wastes per cycle	=	270	tons/cycle
Leachate storage tank capacity needed	=	12,143	gallons/cycle
Add some capacity for rainwater entering leachate drain			
Tank capacity	=	12,500	gallons
Assume underground storage tank like Dura-Cast Vertical Water Tank			
Underground tank diameter	=	12.0	ft
Underground tank length	=	17.0	ft

Curing

Assume curing is mass bed turned with front end loader

Assume 30% volume shrink during composting

Total volume of material in curing during 60-day curing period	=	4,452	CY/cycle
	=	120,197	ft^3/cycle
Assume maximum curing pile height	=	10	ft
Assume pile base width	=	32	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	8.15	CY/LF
Total linear footage of storage piles needed	=	550	LF
Assume pile length	=	225	ft.
Number of curing piles needed	=	2	
Space allowance around piles for equipment, etc.	=	25	ft
Curing area needed (including empty 225' x 32' space to turn pile into)	=	44,175	SF
Proposed dimensions		275	ft. L
		139	ft. W



Screening

Assume use of trommel screener with 3/8" screen

Assume approximately 60% / 40% fines/overs split

Plan on four months finished compost storage

Daily volume going to screening	=	67	CY/day
Daily volume of compost going to storage	=	40	CY/day
Daily volume of overs recycled as inoculant/bulking agent	=	27	CY/day
Screen size (based on McCloskey 512A)	Length	42	ft
	Width	9	ft

Allow 25 ft all sides for equipment movement

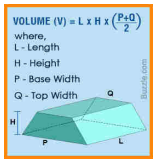
Proposed dimensions		92	ft. L
		59	ft. W

Product Storage

Assume winter storage period of four (4) months

Total volume in product storage pile

Daily volume x 6 days/week operation x 4 months capacity		3,846	CY
	=	103,851	CF
Assume maximum storage pile height	=	8	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	6.52	CY/LF
Total linear footage of storage piles needed		600	LF
Assume pile length		225	ft.
Number of storage piles needed	=	3	
Space allowance between piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	18,150	SF



Assume open storage pile with 30' access in front for equipment/trucks

Width (depth) of storage area	=	190	ft
Length of storage pile	=	225	ft
Proposed dimensions		190	ft. W
		225	ft. L

Product Load-Out Area

Assume 90% of production goes out in transfer trailers, 10% is small truck retail sales

Truck loading area:

Dump trailer dimensions with 30' on either side for loading:	=	68.5	ft W
		53	ft L

Retail sales:

Pick up truck dimensions with 30' on either side for loading:	=	64	ft W
		20	ft L

Area needed	=	4,911	SF
Add another 25% for vehicle queuing	=	1,228	SF
	Total	6,138	SF
Dimensions:	=	78	ft. W
	=	78	ft. L

Area Summary	Width (ft.)	Length (ft.)		Area (sq. ft.)	Area (acres)
Feedstock Receipt	33	33		1,118	0.03
Feedstocks Storage					
Food scraps	20	20		405	0.01
Yard waste	82	82		6,775	0.16
Overs from screen	31	31		975	0.02
Composting Pad	108	186		20,088	0.46
Curing Pad	139	275		38,225	0.88
Screening Area	59	92		5,428	0.12
Product Storage Area	190	225		42,750	0.98
Product Load-Out Area	78	78		6,138	0.14
				121,902	2.80
Allowance for equipment storage, movement, etc. @ 25%			Totals	152,377	3.50

Appendix D

Footprint – In-Vessel

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Project	Composting Facility Process Design	**Proj. No.**	21-1307
Client	SCS - Los Alamos County	**Date**	12.10.21
Analysis	Year 2025 composting footprint - In-Vessel Option		rev. 1

Assumptions

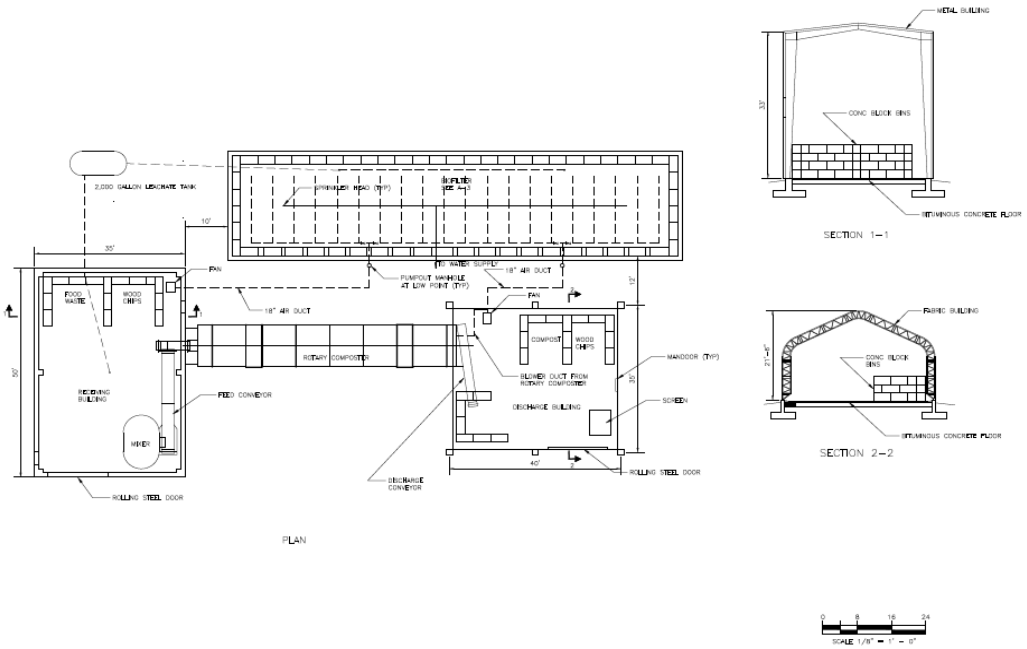
Facility is open 6 days/week (312 days/year)

Facility will use rotary drum for primary composting and mass bed for finishing/curing

Yard waste is ground to 2" particle size by others

Basis of Concept Plan

Based on Bedminister rotary drum system similar to Sevierville TN (this sketch from a 6K tpy system on Martha's Vineyard)



Waste Volumes (in cubic yards)	Annual Vol (CY)	Avg. Daily Volume (CY)
Yard trimmings	16,686	53
Food scraps	5,568	18
LANL pallets	703	2
Compost recycle	1,689	5
Overs from screening	8,423	27
Total	33,070	106

Composting Materials Flows

Residence times for windrow composting (wintertime conditions)

	Composting		Curing		Total
Rotary Drum	5	days	85	days	90 days

Daily Volumes going to composting

Daily volumes of mixed feedstocks = 106 CY/day

Volume of material in Primary Composting

	Residence Days	Mixed feedstocks
Rotary Drum	5	530 CY

Daily Volumes going to curing (assume 30% volume shrink in composting)

Daily volumes of composted feedstocks = 74 CY/day

Volume of material in Curing:

	Residence Days	Composted Feedstocks
Mass Bed	85	6,307 CY

Daily Volumes going to screening (assume 10% volume shrink in curing):

Daily volumes of cured feedstocks = 67 CY/day

Screening

a. Assume approx. 60% finished compost capture rate and 40% going to overs

b. Finished compost production (daily):

Daily volumes of screened compost = 40 CY/day

c. Daily volumes of overs = 27 CY/day

d. Finished compost production (annually, based on 312-day year)

Annual volume of screened compost = 12,501 CY/year

Feedstocks Receipt

Assume yard trimmings/carbon delivery once/week

Assume food wastes delivery daily

Size receipts area for 0.5x average daily volume	=	110.4	CY/day
to allow room for inspecting feedstocks for contamination	=	2,980	CF/day
Assumed pile height of delivered feedstocks	=	4	ft
Pile footprint	=	745	SF
Plus equipment access/movement	=	373	SF
Receipt area needed	=	1118	SF
Proposed dimensions	=	33	ft. W
		33	ft. L

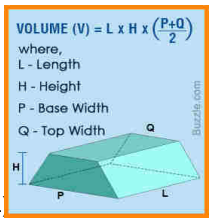
Feedstocks Storage

Assume storage of food wastes in rectangular concrete block bunkers, rest in open piles

Food Wastes

Food wastes in recipe daily	=	18	CY
Assume a maximum storage period prior to use	=	3	days
Storage volume needed for food wastes	=	60	CY
	=	1,620	CF
Assume bunker depth	=	4	ft
Bunker footprint	=	405	SF
Proposed dimensions	=	20	ft W
	=	20	ft L

Yard waste Assume stored in trapezoidal piles outdoors



Yard waste in recipe daily (on average)	=	53	CY/day
Assume a storage period prior to use	=	30	days
Storage volume needed for yard waste	=	1,610	CY
	=	43,470	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L	=	7.41	CY/LF
Total linear footage of storage piles needed	=	220	LF
Assume pile length	=	50	ft.
Number of storage piles needed	=	4	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	6775	SF
Proposed dimensions	=	82	ft L
	=	82	ft W

Overs from screening	Assume stored in trapezoidal piles outdoors		
Screen overs in recipe daily (on average)		=	27 CY/day
Assume a storage period prior to use		=	7 days
Storage volume needed for screen overs		=	190 CY
		=	5,130 CF
Assume maximum storage pile height		=	10 ft
Assume pile base width		=	30 ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)		=	7.41 CY/LF
Total linear footage of storage piles needed		=	30 LF
Assume pile length		=	20 ft.
Number of storage piles needed		=	2
Space allowance around piles for equipment, etc.		=	25 ft
Needed storage area footprint		=	975 SF
Proposed dimensions		=	31 ft L
		=	31 ft W

Feedstock Mixing

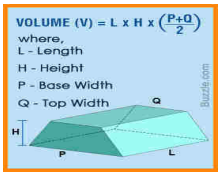
Assume all feedstock mixing done by bucket blending with front-end loader

Active Composting

Assume drum is outside under pavilion roof structure			
Assumed dimensions of rotary drum		=	12 ft diameter
	Assume CITIC drum ≈ Bedminister	=	165 ft long
Volume of drum at 80% full (V= π x r^2 x L)		=	14,929 CF
		=	553 CY
Assumed residence time in drum		=	5 days
Total volume to be composted during residence time		=	530 CY
Number of drums needed		=	1
Dimensions of drum		=	12 ft. W
		=	165 ft. L
Mixing building (per layout)	50' x 35'		
Discharge building (per layout)	35' x 40'		
Biofilter (per layout)	35' x 110'		
Proposed dimensions			270 ft. W
			82 ft. L

Curing

Assume curing is mass bed turned with front end loader			
Assume 30% volume shrink during composting			
Total volume of material in curing during 85-day finishing/curing period		=	6,307 CY/cycle
		=	170,280 ft^3/cycle
Assume maximum curing pile height		=	10 ft
Assume pile base width		=	32 ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)		=	8.15 CY/LF
Total linear footage of storage piles needed		=	780 LF
Assume pile length		=	225 ft.
Number of curing piles needed		=	3
Space allowance around piles for equipment, etc.		=	25 ft
Curing area needed (including empty 225' x 32' space to turn pile into)		=	56,805 SF
Proposed dimensions			275 ft. L
			221 ft. W



Screening

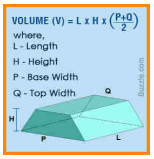
Assume use of trommel screener with 3/8" screen
Assume approximately 60% / 40% fines/overs split
Plan on four months finished compost storage

Daily volume going to screening	=	67	CY/day
Daily volume of compost going to storage	=	40	CY/day
Daily volume of overs recycled as inoculant/bulking agent	=	27	CY/day
Screen size (based on McCloskey 512A)	Length	42	ft
	Width	9	ft
Allow 25 ft all sides for equipment movement			
Proposed dimensions		92	ft. L
		59	ft. W

Product Storage

Assume winter storage period of four (4) months
Total volume in product storage pile

Daily volume x 6 days/week operation x 4 months capacity		3,846	CY
	=	103,851	CF
Assume maximum storage pile height	=	8	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	6.52	CY/LF
Total linear footage of storage piles needed		600	LF
Assume pile length		225	ft.
Number of storage piles needed	=	3	
Space allowance between piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	18,150	SF
Assume open storage pile with 30' access in front for equipment/trucks			
Width (depth) of storage area	=	190	ft
Length of storage pile	=	225	ft
Proposed dimensions		190	ft. W
		225	ft. L



Product Load-Out Area

Assume 90% of production goes out in transfer trailers, 10% is small truck retail sales

Truck loading area: Dump trailer dimensions with 30' on either side for loading:	=	68.5	ft W
		53	ft L
Retail sales: Pick up truck dimensions with 30' on either side for loading:	=	64	ft W
		20	ft L
Area needed	=	4,911	SF
Add another 25% for vehicle queuing	=	1,228	SF
	Total	6,138	SF
Dimensions:	=	78	ft. W
	=	78	ft. L

Area Summary	Width (ft.)	Length (ft.)		Area (sq. ft.)	Area (acres)
Composting Complex	270	82		22,140	0.51
Curing Pad	221	275		60,775	1.40
Screening Area	59	92		5,428	0.12
Product Storage Area	190	225		42,750	0.98
Product Load-Out Area	78	78		6,138	0.14
				137,231	3.15
Allowance for equipment storage, movement, etc. @ 25%			Totals	171,539	3.94

Appendix E

Footprint – Dry Fermentation AD

2186 Mountain Pass Rd
Troutville, VA 24175 USA
+1 (540) 874-5168
ccoker@cokercompost.com
www.cokercompost.com

Project	Composting Facility Process Design	**Proj. No.**	21-1307
Client	SCS - Los Alamos County	**Date**	12.10.21
Analysis	Year 2025 composting footprint - Dry AD		rev. 1

Assumptions

Facility is open 6 days/week (312 days/year)

Facility will use dry anaerobic digestion technology (e.g. Bekon, Aikan, BioFerm, ZWE, etc.)

As dry AD doesn't meet 40 CFR Part 503 PFRP, will need to compost digestate with fresh yard waste

Yard waste is ground to 2" particle size by others

Waste Volumes (in cubic yards)	Annual Vol (CY)	Avg. Daily Volume (CY)	
Yard trimmings	16,686	53	(doesn't include post-AD composting)
Food scraps	5,568	18	
LANL pallets	703	2	
Compost recycle	1,689	5	
Overs from screening	8,423	27	
Total	33,070	106	

Composting Materials Flows

Residence times for dry AD with mass bed curing (wintertime conditions)

	Digestion		Curing		Total	
Dry fermentation	30	days	80	days	110	days

Daily Volumes going to composting

Daily volumes of mixed feedstocks = 106 CY/day

Volume of material in anaerobic digestion

	Residence Days	Mixed feedstocks	
Dry fermentation	30	3,180	CY

Daily Volumes going to curing (assume 10% volume shrink in AD)

Daily volumes of digested feedstocks = 95 CY/day

Volume of material in Curing:

	Residence Days	Composted Feedstocks	
Mass Bed	80	7,632	CY

Daily Volumes going to screening (assume 30% volume shrink in curing):

Daily volumes of cured feedstocks = 67 CY/day

Screening

a. Assume approx. 60% finished compost capture rate and 40% going to overs

b. Finished compost production (daily):

Daily volumes of screened compost = 40 CY/day

c. Daily volumes of overs = 27 CY/day

d. Finished compost production (annually, based on 312-day year)

Annual volume of screened compost = 12,501 CY/year

Feedstocks Receipt

Assume yard trimmings/carbon delivery once/week

Assume food wastes delivery daily

Size receipts area for 0.5x average daily volume	=	110.4	CY/day
to allow room for inspecting feedstocks for contamination	=	2,980	CF/day
Assumed pile height of delivered feedstocks	=	4	ft
Pile footprint	=	745	SF
Plus equipment access/movement	=	373	SF
Receipt area needed	=	1118	SF
Proposed dimensions	=	33	ft. W
		33	ft. L

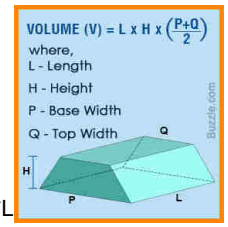
Feedstocks Storage

Assume storage of food wastes in rectangular concrete block bunkers, rest in open piles

Food Wastes

Food wastes in recipe daily	=	18	CY
Assume a maximum storage period prior to use	=	3	days
Storage volume needed for food wastes	=	60	CY
	=	1,620	CF
Assume bunker depth	=	4	ft
Bunker footprint	=	405	SF
Proposed dimensions	=	20	ft W
	=	20	ft L

Yard waste Assume stored in trapezoidal piles outdoors



Yard waste in recipe daily (on average)	=	53	CY/day
Assume a storage period prior to use	=	30	days
Storage volume needed for yard waste	=	1,610	CY
	=	43,470	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L	=	7.41	CY/LF
Total linear footage of storage piles needed	=	220	LF
Assume pile length	=	50	ft.
Number of storage piles needed	=	4	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	6775	SF
Proposed dimensions	=	82	ft L
	=	82	ft W

Overs from screening Assume stored in trapezoidal piles outdoors

Screen overs in recipe daily (on average)	=	27	CY/day
Assume a storage period prior to use	=	7	days
Storage volume needed for screen overs	=	190	CY
	=	5,130	CF
Assume maximum storage pile height	=	10	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	7.41	CY/LF
Total linear footage of storage piles needed	=	30	LF
Assume pile length	=	20	ft.
Number of storage piles needed	=	2	
Space allowance around piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	975	SF
Proposed dimensions	=	31	ft L
	=	31	ft W

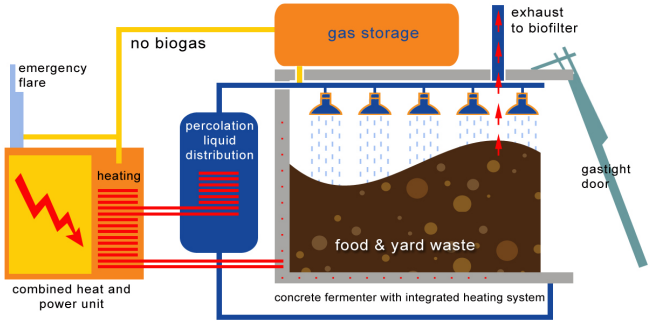
Feedstock Mixing

Assume all feedstock mixing done by stationary mechanical mixer inside building

Average daily volume to be mixed	=	106	CY/day
Assume use of Rotamix 1670 horizontal twin auger mixer	=	16.7	CY/load
Number of mixing loads daily	=	6	loads/day
Mixer dimensions (stationary unit) 15.2' L x 8.9' W			
Allow 25' all sides for equipment access	=	65	ft. L
		59	ft. W

Anaerobic Digestion

Assume AD in tunnel-reactor style units

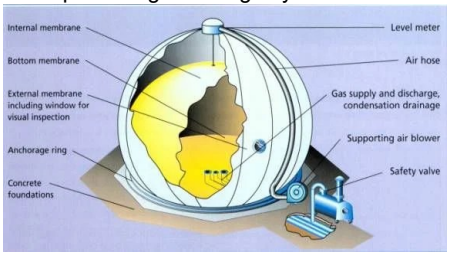


Assumed dimensions of each reactor	=	80	ft. L
	=	18	ft. W
Stacking height	=	8.5	ft. H
Volume of each reactor	=	12,240	ft^3
Volume of feedstocks going to AD	=	85,855	ft^3
Number of reactors needed	=	7	
Footprint of all reactors (assume 6" thick concrete walls)	=	10,547	SF
Proposed dimensions	=	81	ft. L
		130	ft. W

Biogas Storage/Processing

Assumed biogas generation rate	=	2,000	CF/ton
Tonnage of food scraps, yard trimmings	=	7,735	tons/year
Annual biogas generation estimate	=	15,470,000	CF/year
Assume 30-day gas storage period	=	1,289,167	CF/month

Assume spherical gas storage system



Diameter =H120^(1/3)	=	109	ft
Footprint	=	9,303	SF
Add for foundation, etc. (+25%)	=	11,629	SF
Proposed dimensions	=	108	ft. L
		108	ft. W

Assume genset for electrical production in rectangular building	=	12	ft W
		24	ft L

Percolate Storage Tank (note: could be underground)

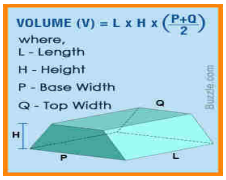
Predicted free air space in reactors	FAS x Reactors volume	=	54,291	ft^3
Gallons needed to completely saturate biomass		=	406,098	gallons
Assumed storage tank capacity		=	500,000	gallons
Assume cylindrical storage tank				
Tank volume formula	$V= 0.7854D^2L$	=		
Height (L)		=	30	ft
Diameter	$D^2 = V/0.7854L$	=	146	ft
Footprint			16,667	SF
Add for foundation, etc. (+25%)			20,833	SF
Proposed dimensions			150	ft. L
			150	ft. W

Curing

Assume reactor digestate blended with yard waste by loader bucket blending in curing area footprint

Assume curing is mass bed turned with front end loader			
Assume 30% volume shrink during composting			
Total volume of material in curing during 60-day curing period	=	7,632	CY/cycle
	=	206,053	ft^3/cycle
Assume maximum curing pile height	=	10	ft

Assume pile base width	=	32	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	8.15	CY/LF
Total linear footage of storage piles needed	=	940	LF
Assume pile length	=	250	ft.
Number of curing piles needed	=	4	
Space allowance around piles for equipment, etc.	=	25	ft
Curing area needed (including empty 250' x 32' space to turn pile into)	=	66,870	SF
Proposed dimensions		300	ft. L
		253	ft. W



Screening

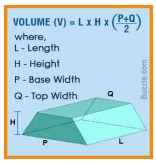
Assume use of trommel screener with 3/8" screen
Assume approximately 60% / 40% fines/overs split
Plan on four months finished compost storage

Daily volume going to screening	=	67	CY/day
Daily volume of compost going to storage	=	40	CY/day
Daily volume of overs recycled as inoculant/bulking agent	=	27	CY/day
Screen size (based on McCloskey 512A)	Length	42	ft
	Width	9	ft
Allow 25 ft all sides for equipment movement			
Proposed dimensions		92	ft. L
		59	ft. W

Product Storage

Assume winter storage period of four (4) months
Total volume in product storage pile

Daily volume x 6 days/week operation x 4 months capacity		3,846	CY
	=	103,851	CF
Assume maximum storage pile height	=	8	ft
Assume pile base width	=	30	ft
Volume per linear foot (trapezoidal - V=1/2(B1+B2)*H*L)	=	6.52	CY/LF
Total linear footage of storage piles needed		600	LF
Assume pile length		225	ft.
Number of storage piles needed	=	3	
Space allowance between piles for equipment, etc.	=	25	ft
Needed storage area footprint	=	18,150	SF
Assume open storage pile with 30' access in front for equipment/trucks			
Width (depth) of storage area	=	190	ft
Length of storage pile	=	225	ft
Proposed dimensions		190	ft. W
		225	ft. L



Product Load-Out Area

Assume 90% of production goes out in transfer trailers, 10% is small truck retail sales
Truck loading area:

Dump trailer dimensions with 30' on either side for loading:	=	68.5	ft W
		53	ft L

Retail sales:

Pick up truck dimensions with 30' on either side for loading:	=	64	ft W
		20	ft L

Area needed	=	4,911	SF
Add another 25% for vehicle queuing	=	1,228	SF
	Total	6,138	SF
Dimensions:	=	78	ft. W
	=	78	ft. L

Area Summary	Width (ft.)	Length (ft.)		Area (sq. ft.)	Area (acres)
Feedstock Receipt	33	33		1,118	0.03
Feedstocks Storage					
Food scraps	20	20		405	0.01
Yard waste	82	82		6,775	0.16
Overs from screen	31	31		975	0.02
Feedstock Mixing	59	65		3,847	0.09
Dry fermentation AD	130	81		10,551	0.24
Gas storage/processing	120	132		15,799	0.36
Percolate tank	150	150		22,500	0.52
Curing Pad	253	300		75,900	1.74
Screening Area	59	92		5,428	0.12
Product Storage Area	190	225		42,750	0.98
Product Load-Out Area	78	78		6,138	0.14
				192,186	4.41
Allowance for equipment storage, movement, etc. @ 25%			Totals	240,232	5.51

February 9, 2022
File No. 01221112.00

MEMORANDUM

TO: Angelica Gurule, County of Los Alamos

FROM: Tracie Bills, SCS Engineers

SUBJECT: Task 9-Summary of Environmental Impact Rating

This memorandum summarizes the results of the Environmental Impact Assessment and Utility Usage Carbon Footprint analysis performed by SCS Engineers (SCS). The analysis was conducted to assist the County of Los Alamos (County) to evaluate options for organics processing technologies and their environmental impacts associated. SCS used our expertise coupled with online research to compare select organics processing technologies based on their environmental impacts.

1.0 SUMMARY

SCS is conducting a feasibility study for Los Alamos County for the development of a food waste composting or other organics processing facility. As part of the study, SCS researched the environmental impacts of the different organics processing technologies, and evaluated the environmental impacts using a consistent and equitable screening tool to identify which organics processing technologies have the greatest environmental impacts.

The work performed by SCS included the following steps:

- Developed key criteria regarding the environmental impacts of organics processing technologies.
- Developed a scoring and ranking methodology based on assigning a weight and point value to each criteria.
- Score and ranked the environmental impacts of each technology.
- Developed recommendations based on the study results.

The organics processing technologies in the study include:

- Windrow composting
- Aerated Static Pile (ASP)
- Covered Aerated Static Pile (CASP)
- In-vessel composting
- Anaerobic Digestion

The key findings of the study include:

- Windrow composting has the greatest environmental impacts.
- Enclosed composting systems (i.e. in-vessel, AD) have the least environmental impact.
- Windrow, ASP/CASP and In-vessel composting can have a greater impact on pathogen generation. The odor and environmental impacts may have less environmental impact depending on the location.
- By composting 6,776 tons of organics (all yard trimmings and food), emissions go from 1,214 MTCO2E[1] to (-536) for a change of 1,750 MTCO2E annually.
- By composting 2,792 tons of food waste instead of landfilling the material, emissions are reduced from 1,552 MTCO2E to (-323) MTCO2E, thereby avoiding approximately 1,875 MTCO2E annually.
- By processing 2,792 tons of food waste in an anaerobic digester and 3,984 tons of yard trimmings in a composting facility, emissions go from 1,214 MTCO2E to (-330) for a change of 1,544 MTCO2E annually.
- By processing 2,792 tons of food waste in an anaerobic digester (instead of landfilling the material), emissions are reduced from 1,552 MTCO2E to (-116) MTCO2E, thereby avoiding approximately 1,668 MTCO2E annually.

This memorandum details the research and evaluation performed, and using the available information, provides insight regarding the environmental impacts associated with each organics processing technology.

2.0 CRITERIA AND SCORING

SCS developed a scoring system based on assigning a weight and point value to each criteria identified during the constraints and criteria evaluation. Weighting factors were included for each criteria so the matrix could rank the organics processing technology from highest to lowest score. The higher the point value, the greater the organics processing technology's impact on the environment. The low ranked environmental impact is not necessarily the best technology. The ranking only serves to provide the County a sense of which technology has more of an environmental impact than others do. For the list of categories and their scoring and ranking, refer to **Appendix A**.

The scoring system assigned a point value to each criteria, either 0, 1, or 2. A score of 0 would represent a favorable assessment, and 2 represents a much less favorable assessment or greater environmental impact. Scoring is a combination of the understanding of factual information and collective judgment. Therefore, the differences between an organics processing technology that receives a score of 0, versus one that receives a 1 may be for all practical purposes similar and for that criteria, one technology is not "better" than another.

The criteria are weighted because some criteria are more important, or could be considered more or less accommodating for a technology. The individual weighting factors range from 0 to 5. The actual

[1] MMCO2E or million metric tons carbon dioxide equivalent is a unit of measurement that represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit of mass of carbon dioxide based on the gas's (i.e. methane) global warming potential.

assignment of a weighting factor for each of the criteria can be a relatively straightforward or more involved process. For the purposes of this assessment, SCS assigned weighting to each factor based on our judgment and experience; however, as the County proceeds to the final organics processing technology selection stage, it may wish to refine the weighting factors to incorporate community input.

For each criteria, a weighted score was generated. The score is the product of the point assigned times the weight for that criteria. The scores for each potential organics processing technology was then summed to obtain a total score for the technology. Technologies scoring the lowest were considered having less of an environmental impact.

2.1.1 Criteria

The criteria was developed for use as a guide for decision-making regarding the organics processing technologies that have a more significant environmental impact, and the parameters and constraints associated with each. These criteria include details related specifically to the adverse impacts to the environment and subsequently public health of each technology, and to the County. The criteria were developed with input from, and approved by County staff.

SCS identified 10 potential environmental impacts that organics processing technologies can have on the environment and public health. The potential for composting systems to impact the environment may reduce some of the environmental benefits of composting organic materials versus disposal. SCS notes that properly operated and managed organics processing technologies can have little to no impact on the environment. Another characteristic of each composting technology that influences their potential impact on the environment is whether or not the system is contained in an enclosed structure. In general, closed composting systems such as in-vessel and dry anaerobic digestion that are contained in buildings or structures have additional aspects to protect the environment, compared to open, outdoor systems such as windrow composting. All of the studied technologies divert organic waste from landfilling, where the materials would otherwise decompose and generate methane.

The potential environmental impacts identified include:

1) **Odors –** Potential to emit odors during the delivery, pre-processing, processing, and curing phases of the composting operation. This criteria has a weight of 4.

2) **Sensitive Receptors** – Impacts of organics processing operations on communities where occupants are often more susceptible and sensitive to adverse effects of exposure to chemicals or pollutants. Examples of sensitive receptors include schools, hospitals, daycare facilities, and elderly housing. This criteria has a weight of 4.

3) **Attraction of Wildlife and/or Vectors –** Potential to attract wildlife and/vectors that are undesirable, such as birds, rats, etc. This criteria has a weight of 3.

4) **Pathogen Generation –** Refers to the ability of the organics processing operation to facilitate the generation of microorganisms that cause diseases and illnesses. This criteria has a weight of 3.

5) **Water Consumption** – Need for the addition of water into the technology to aid in the organics processing. This criteria has a weight of 4.

6) **Surface Run-off** – Potential generation of liquids, due to rain or snowmelt, that create excess run-off from the organics processing technology to the surrounding area. This criteria has a weight of 3.

7) **Air Quality / Dust Control** – The potential for an increase in air emissions and/or dust from the organics processing technology. This criteria has a weight of 3.

8) **Greenhouse Gas Emissions Reduction** –Potential to reduce greenhouse gas emissions. A high number equals low adverse environmental impact. This criteria has a weight of 3.

9) **Energy Consumption** – The potential for the organics processing technology to have an increase in energy consumption. This criteria has a weight of 3.

10) **Noise** – The potential for an increase in noise generated from the organics processing technology. This criteria has a weight of 3.

3.0 RESULTS

The results of the analysis indicates windrow composting has the highest potential for significant environmental impacts. Overall, closed composting systems scored the lowest for potential environmental impact. However, odor and environmental impacts may have less environmental impact depending on the location.

Odors can be a problem with all organics processing. Windrow composting has the highest opportunity for odor issues; ASP/CASP can also have issues however, with the cover and aeration, helps minimize odors. In-vessel composting and AD both have low impact with odors. There are several technologies available for odor control in aerobic composting, including:

- Improved aeration and mixing.
- Biofiltration using compost and/or soil.
- Activated carbon absorption.
- Wet scrubbing with acid solutions, hydrogen peroxide, or various proprietary scrubbing solutions.
- Dilution with excess exhaust air.
- Dispersion with tall stacks.

All organics processing technologies reduce greenhouse gas emissions and can reduce greenhouse gas emissions as a result of diverting the materials from landfill disposal. The Environmental Protection Agency (EPA) Waste Reduction Model (WARM) was used to understand the emissions generated by composting and AD. The following resulted from the calculations:

- WARM only allows emission calculations for composting and AD, and does not specifically delineate emissions by composting types (i.e. windrow, ASP, etc.).
- By composting 6,776 tons of organics (all yard trimmings and food), emissions go from 1,214 MTCO2E to (-536) for a change of 1,750 MTCO2E annually.

- By processing 2,792 tons of food waste in an anaerobic digester and 3,984 tons of yard trimmings in a composting facility, emissions go from 1,170 MTCO2E to (-330) for a change of 1,500 MTCO2E annually.

Emissions from transportation are included in the model. Based on information provided by the County, a distance of 90 miles was used from material collection at the curb to delivery at the Rio Rancho Landfill

The amount of greenhouse gas emissions avoided by diverting food from the landfill were calculated in the WARM model with the results highlighted below.

- By composting 2,792 tons of food waste instead of landfilling the material, emissions are reduced from 1,552 MTCO2E to (-323) MTCO2E, thereby avoiding approximately 1,875 MTCO2E annually.
- By processing 2,792 tons of food waste in an anaerobic digester (instead of landfilling the material), emissions are reduced from 1,520 MTCO2E to (-116) MTCO2E, thereby avoiding approximately 1,636 MTCO2E annually.

Windrow, ASP/CASP and In-vessel composting have greater potential to generate pathogens. Due to the high temperatures in AD, they have low impact for pathogen generation. Pathogens can be controlled by two methods: high temperatures, and reduction in moisture content. Because the aerobic composting process is exothermic, maintaining high temperatures for pathogen destruction is relatively easy. Further pathogen destruction can be achieved by drying the compost to reduce its moisture content below 25%.

The results of the environmental impacts scoring is summarized in **Table 1** below. Appendix B has the scoring matrix with all details.

Table 1. Environmental Impacts Scoring Results

CRITERIA	Point Scale (0 - 2) [1, 2]	Weight	COMPOSTING TECHNOLOGY			
			WINDROW COMPOSTING	ASP / CASP COMPOSTING	IN-VESSEL COMPOSTING	DRY ANAEROBIC
POTENTIAL ENVIRONMENTAL IMPACTS			Total Score (points x weight)	Total Score (points x weight)	Total Score (points x weight)	Total Score (points x weight)
Odors	2 1 0	4	8	4	0	0
Sensitive Receptors (e.g., residents, schools, hospitals)	2 1 0	4	8	8	4	4
Attraction of Wildlife and/or Vectors	2 1 0	3	6	3	0	0
Pathogen Generation	2 1 0	3	3	3	3	0
Water Consumption	2 1 0	3	3	3	3	0
Surface Run-Off	2 1 0	3	6	6	3	0
Air Quality/Dust Control	2 1 0	3	3	0	0	0
Greenhouse Gas (GHG) Emissions Reductions Using U.S. EPA WARM (high emission reductions = low adverse environmental impact)	2 1 0	3	0	0	0	0
Est. Quantity of GHG Emission Reductions from Diverting Food Waste (MTCO2E) [3]	-	-	1,875	1,875	1,875	1,636
Est. Quantity of GHG Emission Reductions from Diverting Yard Trimmings (MTCO2E) [3]	-	-	125	125	125	136
Energy Consumption	2 1 0	3	0	6	6	3
Noise	2 1 0	3	3	3	0	0
TOTAL SCORE			**40**	**36**	**19**	**7**

1. The higher the score the increased potential for adverse environmental impacts.
2. Properly managed and operated composting systems, regardless of what technology is used, should have minimal impact on the environment. Similarly, poorly managed systems will have significant environmental impacts. Scoring is based on the "potential" of each technology to impact the environment.
3. GHG emission reductions based on calculations using U.S. EPA's Waste Reduction Model (WARM) Version 15, November 2020.

Appendix A

Ranking

Criteria POTENTIAL ENVIRONMENTAL IMPACTS	Rating Scale (potential level of adverse environmental impact)	Point Scale (0 - 2) [1, 2]	Weight
Odors	High	2	4
	Medium	1	
	Low	0	
Sensitive Receptors (e.g., residents, schools, hospitals)	High	2	4
	Medium	1	
	Low	0	
Attraction of Wildlife and/or Vectors	High	2	3
	Medium	1	
	Low	0	
Pathogen Generation	High	2	3
	Medium	1	
	Low	0	
Water Consumption	High	2	3
	Medium	1	
	Low	0	
Surface Run-Off	High	2	3
	Medium	1	
	Low	0	
Air Quality/Dust Control	High	2	3
	Medium	1	
	Low	0	
Greenhouse Gas Emissions Reductions Using U.S. EPA WARM (high emission reductions = low adverse environmental impact)	High	2	3
	Medium	1	
	Low	0	
Energy Consumption	High	2	3
	Medium	1	
	Low	0	
Noise	High	2	3
	Medium	1	
	Low	0	

Appendix B

Scoring Matrix

(See spreadsheet)

February 1, 2022
File No. 01221112.00

MEMORANDUM

TO: Angelica Gurule, County of Los Alamos

FROM: Michelle Leonard and Tracie Bills, SCS Engineers

SUBJECT: Facility Siting

An important aspect of the Los Alamos County food waste composting project is to review potential compost siting locations. SCS has reviewed the potential site locations suggested by the County, and provides our evaluation, conclusions and recommendations regarding the most appropriate site for development of a food waste composting facility in Los Alamos County in this memo.

1.0 EXECUTIVE SUMMARY

The successful siting of a food waste composting facility includes a number of key factors, including: availability of land in relation to site requirements; traffic and access issues; proximity to sensitive receptors; air and water quality issues; land use, solid waste facility and other agency permitting; public understanding and acceptance; and additional local and regional issues (e.g., bears, odor control, etc.). All of these factors were taken into consideration when evaluating the potential to site a facility in Los Alamos County.

Based on input from the County, SCS evaluated the potential to locate a facility at four locations:

1. Bayo Canyon
2. Eco Station
3. Overlook Park - Area 1
4. Overlook Park – Area 2

SCS reviewed available data on the sites, such as County-provided site maps showing utilities, and current on-site uses. Information was also reviewed regarding property ownership or lease, and planning/zoning information. In addition, a site visit was conducted at each site. A site evaluation scoring matrix was developed to score each site based on criteria established for the study. The criteria included the following factors:

1. Land use and location: compatible with existing and surrounding land uses
2. Access: Accessible by existing road network
3. Access: Does existing road network require improvement?
4. Located in proximity to Eco Station Transfer Station (<12 miles)
5. Distance/proximity from residential community
6. Distance/proximity from commercial development
7. Adequate space for proposed operations
8. Property Owned by Agency
9. Need for Vector, Bird, and Animal Control
10. Aesthetics: Potential for negative impacts to views and vistas

Some of the criteria were weighted more heavily than others, as those criteria were identified as more critical to the successful siting of the facility. A copy of the completed site evaluation scoring matrix is included as Exhibit 1.

The results of the study indicate the Bayo Canyon site is the most suitable site for locating a food waste composting facility in the County. Overlook Park, Area 2 was ranked closely behind Bayo Canyon location, however the only organics processing technology that could be accommodated at the site is ASP/CASP composting. This type of processing would require utilizing 100% of the space. There for no other recommended locations at this time. Bayo Canyon scored higher in terms of proximity to residential areas (it is not located near residences) and aesthetics (it is in a remote location). Further in-depth analysis of both these sites in relation to environmental impacts, permitting, and costs for the development of the composting facility will be needed to determine the most optimal site for location a food waste composting facility in Los Alamos County.

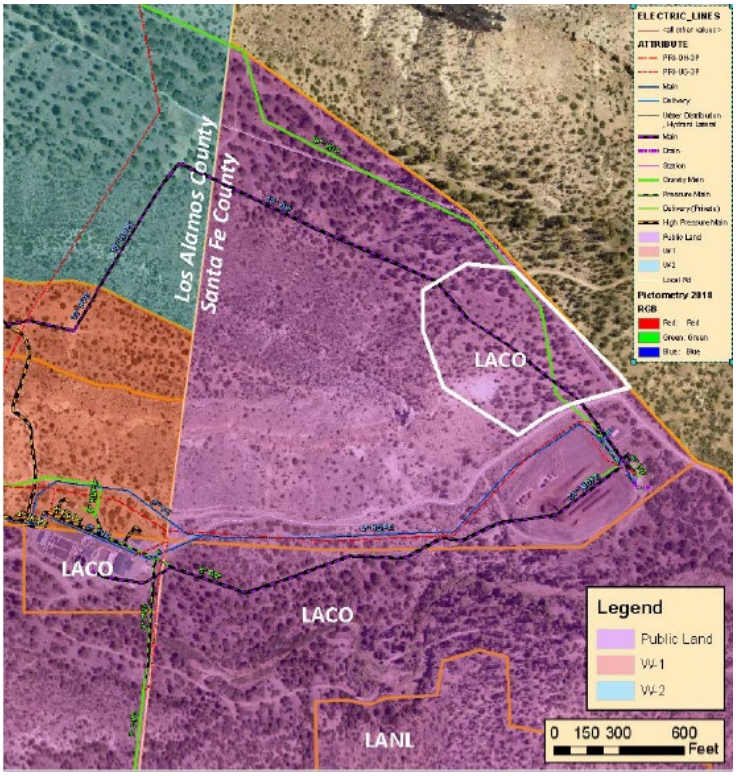
2.0 POTENTIAL SITE LOCATIONS

This report provides an overview of each potential site that was evaluated in the study.

2.1 BAYO CANYON

The Bayo Canyon site is located approximately 3 ½ miles from downtown Los Alamos. An approximate 10 acre site is owned by Los Alamos County, located in Santa Fe County. The County operates a wastewater treatment plant and biosolids composting in this area. The area under consideration for the composting facility is circled in white, labeled LACO (**Figure 1**).

Figure 1. Bayo Canyon Site Location



The areas designated as W-1 and W-2 are wildland overlays for zoning. Parcels with W-1 and W-2 are all county-owned and have restrictions on what can and can't be done. It is more restrictive than just the P-L zone which is public lands and county-owned. A project in those areas would require either rezoning that parcel to remove the W restriction, or processing of a waiver.

The US Government used the area in the 1940s through 1960s to test nuclear explosives. Studies have been conducted to determine areas of this land not to be used, and areas of the land that may be used, but not excavated. According to the Department of Energy, the entire 350 acres have been cleared for recreational and construction use, given the lower-than-threshold levels of applicable chemicals.

Access to the site is from Route 502 and a dirt road. Throughout the canyon, the slopes from the top of the canyon to the bottom are between a 10-30% grade. Also, there is a stream that runs intermittently throughout the year down the center of the canyon. The soil is poorly developed and well-draining; it is generally between 2 and 4 inches thick. Vegetation is a mix of grass, sagebrush, chamisa, and pine. A frequently used trail system exists in the canyon bottom and along the cliffs above Bayo Canyon, and a dirt road runs adjacent to and along the streambed. The general conditions of the site are shown in **Figure 2**.

Figure 2. Bayo Canyon Site General Conditions

As seen in **Figure 3**, a sewer main line extends from the current aerated windrow composting facility. In the same area, there is a gas main line that extends from the eastern side of the currently operating windrow facility to the processing facility nearby. There is a gas meter at the processing facility that is connected to the operating windrows. There is an electrical meter on the eastern side of the compost facility. The closest electrical utility is located by the current bio solids facility. It is 480volts, 3 –phase. There is a water line and hydrant. There is a sewer line in the area and the non-potable booster station. See Figure 3 for information and a map of these facilities.

This site could be considered for open windrow or aerated static pile composting due to its remote location. However, the area is native, and will require clearing and most likely some grading to create a level area for composting. Although located off of a dirt road, the road is improved and able

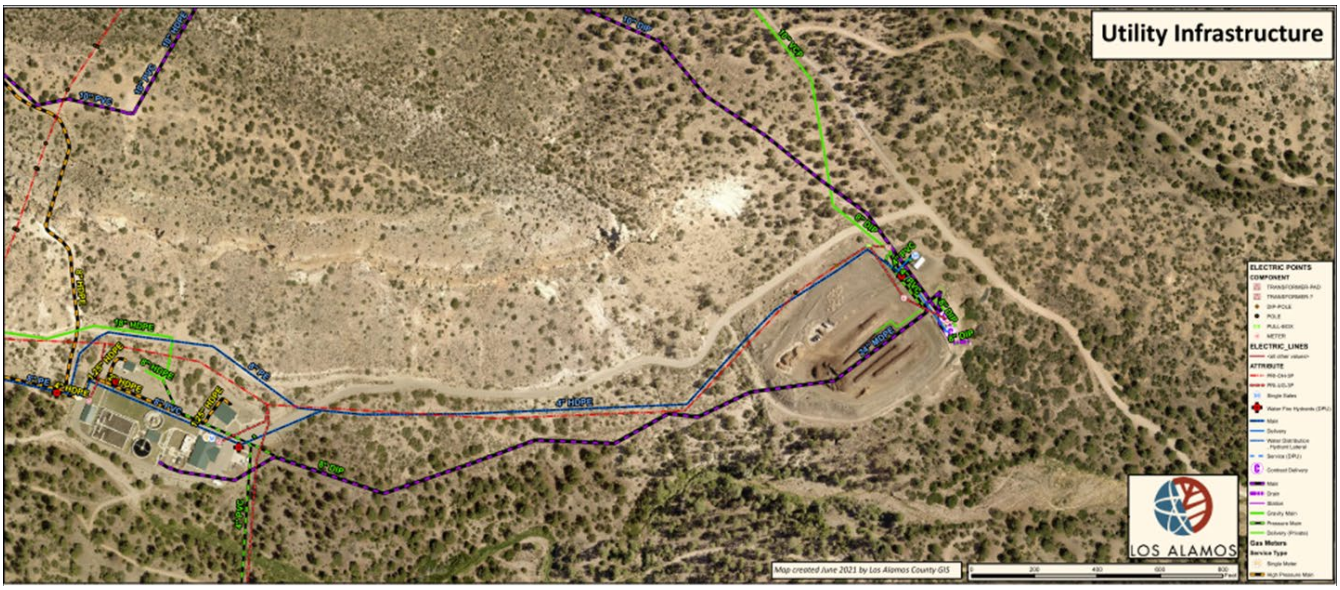
to handle truck traffic. Due to its remote location, there is little potential for impacts to sensitive receptors or aesthetics. Compost from this location may need to be transported to Los Alamos (Eco Station or other location) for distribution to the public. The site consists of approximately 10 acres which is adequate for windrow composting, which requires approximately 4-5 acres, aerated static pile/covered aerated static pile (ASP/CASP), which requires approximately 3.5 acres, in-vessel composting, which requires approximately 4 acres, and anaerobic digestion (AD), which requires approximately 5.5 acres.

Site improvement cost estimate for adding the following technologies to the site:

- Windrow - $811,000
- ASP / CASP - $1.48 million
- In-Vessel - $1.6 million
- AD - $2.5 million

There may be additional costs for this area due to rezoning requirements (to remove the W restriction) and any major clearing or grading to create a level area for composting. There is a 15% contingency fee included in the cost estimate.

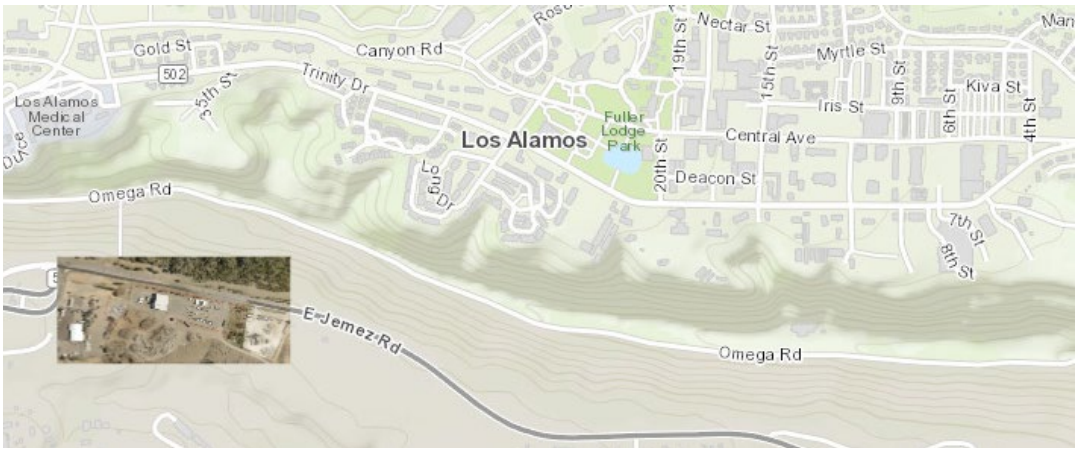
Figure 3. Bayo Canyon Site Utilities



2.2 ECO STATION

The Eco Station is located at 3701 E Jemez Rd, Los Alamos, NM 87544 (**Figure 4**). The site is located approximately 2 ½ miles from the center of Los Alamos. The site is owned by the US Department of Energy, National Nuclear Security Administration, and leased to Los Alamos County for operation of the Eco Station and a utility scale solar photovoltaic and battery storage system. The existing lease was signed in 2011 for a 25 year term. The lease can be renewed at the County's option for an additional 25-year term.

Figure 4. Eco Station Site Location



Access to the site is provided via a single point off of E. Jemez Road, which is on the northeastern portion of the site. The Eco Station began operation in 2008 after the closing of the Los Alamos County landfill. It was built to be a transfer station to handle the majority of the solid waste generated in Los Alamos. It is a designated transfer station, regulated under Solid Waste Rules 20.9.2-20.9.19 NMAC. Residents can drop off their waste at the Eco Station, and take home landscaping materials for free that they can load into their trucks themselves, or request the County load the material for $3 per yard. The materials offered include compost and yard trimming mulch. The location is convenient for residents in the Los Alamos area for dropping off and picking up compost materials.

Previously the County operated a composting operation at the site, however there were complaints regarding odors from the facility impacting the traffic into Los Alamos National Laboratory (LANL), so the operation was required to be shut down. The current lease only allows containerized composting operation at the Eco Station site with approval from the property owner. The lease allows the County to bring fully composted material to the site for distribution to County residents.

There are two parcels the County identified as potential locations for a composting operation at the Eco Station. These are shown on **Figure 5**. The eastern parcel is 8.81 acres and the western parcel is 2.78 acres. They are approximately half a mile apart. After initial evaluation, the western parcel was eliminaed from further consideration, due to its small size and existing use for equipment and product storage. The eastern parcel has the appropriate space to accommodate in-vessel composting and AD, which are the only two technologies that are allowed at the site, due to the above-described lease restrictions. In-vessel composting requires approximately 4 acres and anaerobic digestion (AD) requires approximately 5.5 acres.

Figure 5. Eco Station Potential Composting Areas

The eastern area is adjacent to the existing solar photovoltaic array. This area is vacant, undeveloped land, and is a former, capped and closed municipal solid waste landfill (**Figure 6**). The general conditions of this parcel are shown in **Figure 7**.

Figure 6. Eco Station Eastern Parcel

Figure 7. Eco Station Eastern Parcel General Conditions

The utility infrastructure at the site is shown in **Figure 8**. There are electric lines lining the northern edges of the eastern and western sites (along E. Jemez Road). There is a short sewer line that extends from the electrical line on the eastern site to the start of the property. The gas mainline goes along E. Jemez Rd, but across the street from the Eco Station. There is one other line that goes directly into the Eco Station main building (3701 E. Jemez Rd) where there is a monitoring station. There are no gas lines that go directly into the site, however, the main water and electrical lines run alongside of E. Jemez Road, as seen in Figure 8.

Site improvement cost estimate for adding the following technologies to the site:

- In-Vessel - $1.6 million
- AD - $2.5 million

There may be additional costs for this area due to adding a gas line (AD) or connections to the main water and electrical lines. There is a 15% contingency fee included in the cost estimate.

Figure 8. Eco Station Site Utilities

2.3 OVERLOOK PARK

The Overlook Park site is located at 580 Overlook Rd., White Rock. The site is located approximately 9.5 miles from Los Alamos. Overlook Park currently is home to a dog park, playground, sports complex, nearby hiking trailheads, picnic areas, and the White Rock Overlook Collection Center /Trash Convenience Center. The Park is located in close proximity to the community of White Rock, an unincorporated area within Los Alamos County **(Figure 9)**. White Rock is comprised of a small downtown area, shopping center, and residences, with a population of approximately 5,700 people.

Figure 9. Overlook Park Site Location

Los Alamos County operates the White Rock Overlook Collection Center/Trash Convenience Center at this location. The facility is used by residents to drop off waste, including yard trimmings, trash, mixed recyclables, cardboard, glass, and metal. The facility is open Monday, Tuesday and Friday from 8:00 am to 4:15 pm, and Saturday and Sunday from 9:00 am to 4:15 pm **(Figure 10)**. The Collection Center permit requires a reapplication/renewal every five years. The permit was revised and accepted in May of 2020, and will require a renewal in 2025. This permit is only viable for 240 cubic yards of waste per day on a monthly average, and if the amount increases to more than that, then a transfer station permit must be applied for and approved. On site composting operations may be authorized under this registration with the following conditions:

1. Compostable materials must be source separated
2. Compostable materials utilized must not include any special waste (e.g. municipal waste water treatment plant sludge)
3. No more than 25 tons per day annual average of compostable materials can be accepted at the facility.

Figure 10. Overlook Park Collection/Convenience Center

Overlook Park has an unusual donut-zoning restriction as shown on **Figure 11**. It is the only case of a zone not being based on a parcel, and is outlined in County Ordinance 85-191. This ordinance assigns W-2 overlays to a 300 foot buffer inside the edge of Overlook Park.

There are two areas considered for the development of a composting facility at the Overlook Park location:

Overlook Area 1: Wastewater Treatment Plant

This area is located north east of the existing wastewater treatment plant (**Figure 11**). It is county-owned property, zoned P-L, with a portion of it subject to the donut ordinance described above. It is used by public works and community services as a staging/storage area for gravel, stone, dirt, and construction supplies for County operations. As indicated on Figure 11, the donut zoning (red hash) takes almost all of this area, and would limit development. The area outlined in yellow would leave an area for spoils storage and staging, but would require a waiver from or rezoning. This area is about 2.5 acres. This area would most likely not be suitable for food waste composting, due to the zoning restrictions and small size of the available area. The technologies that were analyzed require approximately 3.5 – 5.5 acres. The general conditions of Area 1 are shown in **Figure 12.**

Figure 11. Overlook Park Area 1

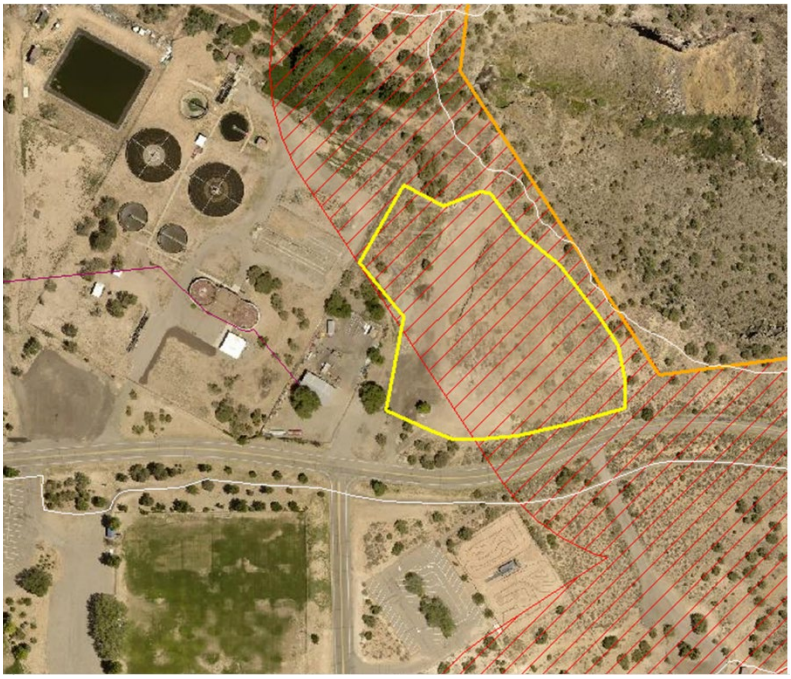


Figure 12. Overlook Park Area 1: General Conditions

Overlook Park Area 2

Overlook Park Area 2 is located adjacent to the existing collection/convenience center (Figure 13). The area outlined in Figure 12 is open space. It is approximately 3 ½ acres. It has a few established trails, and a number of unofficial trails, and is very flat. The general conditions of Area 2 are shown in Figure 14. It has no zoning restrictions as it is zoned P-L. It has a developed road and a gate, and electric utilities are nearby. As the adjacent area is presently used for the collection/convenience center, siting the composting facility in this area may be easier than in Area 1. The site may be able to accommodate ASP/CASP composting (requires approximately 3.5 acres) however, this type of processing would require utilizing 100% of the space. Windrow composting (requires approximately

4-5 acres), in-vessel composting (requires approximately 4 acres), and AD (requires 5.5 acres), all require more area than what is available at this site.

Figure 13. Overlook Park Area 2: Collection/Convenience Center

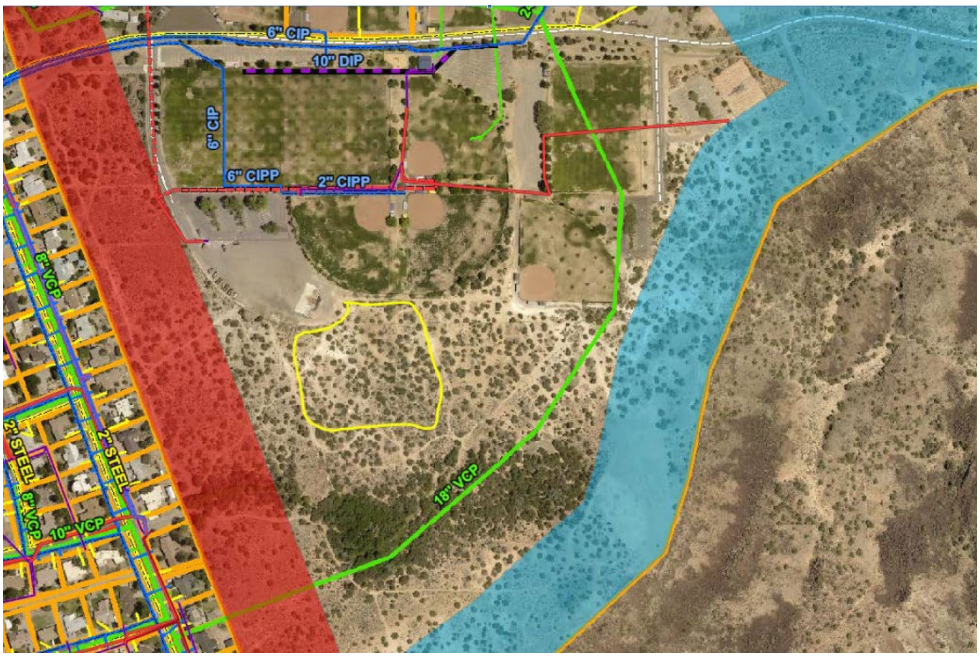


Figure 14. Overlook Park Area 2 General Conditions

The Overlook Park site utilities are shown on **Figure 15**. For Area 2, there is electricity nearby, but there are no other utilities directly onsite. So other utilities would need to be extended over to this area. The nearest gas meter is on Overlook Road, on the other side of the park from the Convenience Center. There is a water line (in blue) that runs parallel to the electrical line alongside the parking lot, but then moves northward before reaching the access road that leads to the Convenience Center. There is also a gas line (purple) that runs parallel to the water and electric lines, but does not extend as far as the other two lines.

Overlook Park Area 2 could be used for the development of a food waste composting facility. It's location in proximity to the existing convenience center, as well as relatively flat, undeveloped area affords it consideration for this project. The site is located the furthest from downtown Los Alamos; therefore, materials transferred to and from this site to the County center would have a greater impact. There is the potential for odor impacts to the nearby residential areas, as well as to visitors to the Park. Water utilities would need to be extended to the area as well.

Site improvement cost estimate for adding the following technologies to the site:

- ASP / CASP - $1.48 million

There may be additional costs for this area due to adding water or electrical lines. There is a 15% contingency fee included in the cost estimate.

Figure 15. Overlook Park Utilities

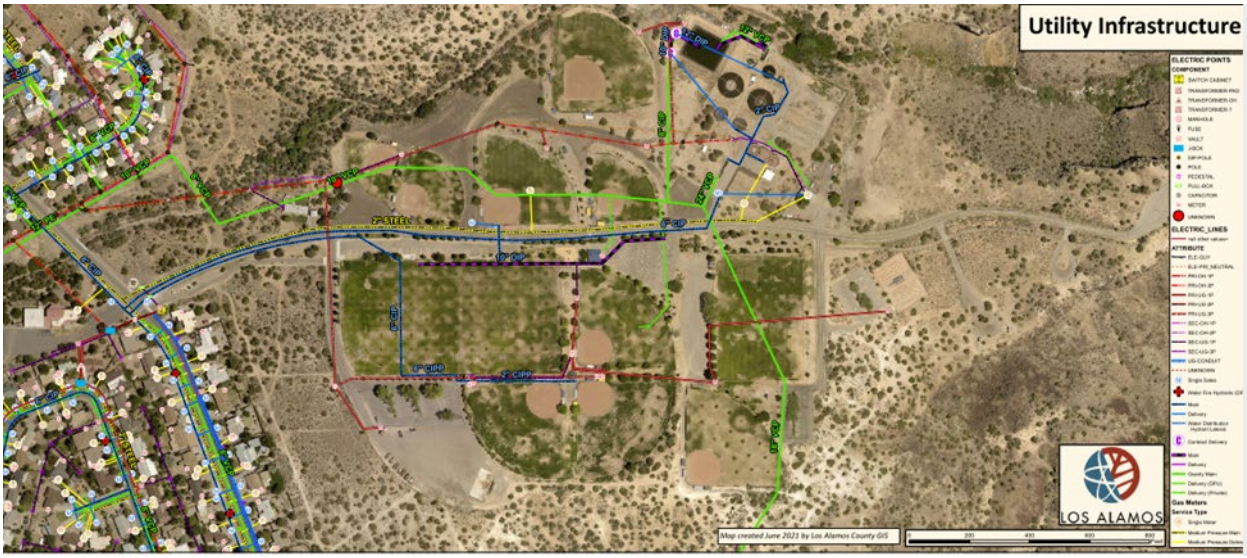


Exhibit 1. Site Evaluation Scoring Matrix

Criteria	Weight	Scoring Details	Point Scale	SITE EVALUATION SCORING							
				A. Eco Station (8.81 acres)		B. Bayo Canyon (10 acres)		C. Overlook Park - Area 1 (NE of Waste Water Treatment Plant - 2.5 acres)		D. Overlook Park - Area 2 (South of Convenience Center - 3.5 acres)	
				Points Scored	Total Score (Points x Weight)	Points Scored	Total Score (Points x Weight)	Points Scored	Total Score (Points x Weight)	Points Scored	Total Score (Points x Weight)
FACILITY LOCATION CRITERIA											
Land use and location: compatible with existing and surrounding land uses	4	Yes	2	1	4	2	8	1	4	2	8
		No	1								
Access: Accessible by existing road network	3	Yes	2	2	6	2	6	2	6	2	6
		No	1								
Access: Does existing road network require improvement?	3	Yes	1	2	6	2	6	2	6	2	6
		No	2								
Located in proximity to Eco Station Transfer Station (<12 miles)	2	Yes	2	2	4	2	4	2	4	2	4
		No	1								
Distance/proximity from residential community	2	(>1,000 feet)	2	1	2	2	4	1	2	1	2
		(<1,000 feet)	1								
Distance/proximity from commercial development	2	(>1,000 feet)	2	1	2	2	4	2	4	2	4
		(<1,000 feet)	1								
Adequate space for proposed operations Windrow composting (4-5 acres), ASP/CASP (3.5 acres), in-vessel composting (4 acres), and AD (5.5 acres)	3	Yes	2	2	6	2	6	1	3	2	6
		No	1								
Property Owned by Agency	3	Yes	2	1	3	2	6	2	6	2	6
		No	1								
Need for Vector, Bird, and Animal Control	3	Yes	1	1	3	1	3	1	3	1	3
		No	2								
Aesthetics: Potential for negative impacts to views and vistas	3	Yes	1	2	6	2	6	1	3	1	3
		No	2								
TOTAL					**42**		**53**		**41**		**48**

March 8, 2022
File No. 01221112.00

MEMORANDUM

TO: Angelica Gurule, County of Los Alamos

FROM: Michelle Leonard, Greg McCarron, Tracie Bills and Michelle Hoffmann, SCS Engineers

SUBJECT: **Task 8:** Permitting Requirements for Compost Facilities and Collection Centers

INTRODUCTION

SCS performed national, state and local research and spoke with the County of Los Alamos (County) Planning Department to identify the permit requirements and regulations, permitting documents, fees, and timelines for Compost Facilities and Collection Centers. Permitting requirements are dictated by the types and quantities of feedstock that are accepted at each facility.

The regulatory definitions of each facility are as follows:

- "Collection center" means a facility managed for the collection and accumulation of solid waste with an operational rate of less than 240 cubic yards per day monthly average and that serves the general public.

- "Composting facility" means a facility, other than a transformation facility, that is capable of providing biological stabilization of organic material.

The following information highlights our findings.

PERMITTING REQUIREMENTS

For purposes of this Memorandum, we presume a County-operated composting facility will accept only source-separated compostable materials at a rate of 25 tons per day (annual average) or less. A County-operated collection center is presumed to accept solid waste at a rate of less than 240 cubic yards per day (monthly average). As such, the New Mexico Solid Waste Rules, 20.9.3.27 NMAC[1] (see **Appendix A**), will require the registration of both types of facilities (i.e., composting facility and collection center) with the New Mexico Environment Department (NMED), Solid Waste Bureau. A permit is not required per 20.9.3.8 NMAC (see **Appendix A**). There are no fees associated with registration as long as collection does not exceed 240 cu yds. per day (i.e. only a collection center/composting facility is being proposed). A Nuisance Abatement Plan will not be needed if the facility does not exceed 25 tons per day. The timeline for NMED – SWB to review the registration application is approximately 30 days.

Composting facilities may also be regulated by other agencies in addition to the Solid Waste Bureau. The requirements of the following statutes, programs and agencies may apply, depending on the specific details of the facility. **The applicability of these programs cannot be assessed until a site is**

[1] https://www.env.nm.gov/regulatory-resources/

selected and conceptual design details are prepared. Additionally, a timeline and assessment of fees will depend on the organics processing technology selected.

- **Groundwater discharge**: Notice of Intent to Discharge or Groundwater Discharge Permit.[2] NMED Groundwater Quality Bureau[3]. The review period for NMED – GWB for a Notice of Intent to Discharge is approximately two weeks. There are no review fees associated with the Notice of Intent. If a discharge permit is required, the permit review process is long (approximately 6 months) and associated fees vary by a number of factors (see 20.6.2.3114). It is believed that a discharge permit may not be needed for a food waste composting facility, but filing a notice of intent will enable the Bureau to issue a letter stating no discharge permit is required.

- **Surface runoff**: National Pollutant Discharge Elimination System, 40 CFR Part 121,[4] includes requirements for Stormwater Pollution Prevention Plan (SWPPP). NMED Surface Water Quality Bureau.[5] It is uncertain whether a Multi-Sector General Permit (MSGP) SWPPP would be required for food waste composting. Most likely it will not, but once a technology is selected, a better determination of whether a SWPPP must be prepared can be advised. Once the technology has been selected, the MSGP will need to be reviewed to determine if the process falls into one of the sectors as outlined in the MSGP. There are no fees associated with EPA or NMED – Surface Water Bureau to file the Notice of Intent and/or SWPPP or Notice of No Exposure. Review of the SWPPP timeline by EPA is unknown, but usually the Notice of Intent is issued by EPA within 30-60 days. A Construction General permit may be required if the construction of the site is greater than one acre. Fees and timelines associated with the Construction General Permit are determined by the construction contractor.

- **An Air Quality Permit is not required.**

- **Los Alamos County Planning Department** requires an application from the construction contractor. Once the application is received by the County, the review process is approximately three days. The fees associated with the project are based on the attached table located in **Appendix B**. It is recommended that an interview between the County Planning Department and the Project Manager be conducted before an application is submitted.

- **Biosolids and septage**: 40 CFR Part 503[6] and 20.6.2 NMAC (**Appendix E**). This issue will need further research once a specific technology is selected.

[2] Permits: https://www.epa.gov/npdes-permits/new-mexico-npdes-permits, Application: https://www.epa.gov/npdes/npdes-application-forms
[3] https://www.env.nm.gov/gwqb/
[4] https://www.epa.gov/sites/default/files/2015-09/documents/pwm_chapt_02.pdf
[5] https://www.env.nm.gov/surface-water-quality/
[6] https://www.govinfo.gov/content/pkg/CFR-2018-title40-vol32/xml/CFR-2018-title40-vol32-part503.xml

- **Compost sales**: NM Fertilizer Act[7], 76-11-1 to 76-11-20 New Mexico Statutes Annotated (NMSA),[8] includes requirements for fertilizer / soil conditioner registration. NM Department of Agriculture.

- **Storage of combustible materials**: International Fire Code, Chapter 28 (2018)[9]

SOLID WASTE BUREAU

Based on the proposed throughput of the composting facility and collection center, registrations for each facility must be obtained as opposed to a permit. The process is the same whether windrow, aerated static pile, or anaerobic digestion is selected. The owner or operator of the proposed composting facility and collection center must apply for a registration at least 30 days prior to any operations and every five years thereafter. This registration must be updated whenever operations change. No fee is required for a compost facility registration. An application form must be completed and submitted to the Solid Waste Bureau (see **Appendix C and D** for registration forms for each facility).

Key information that must be completed and/or included with the composting facility submittal is as follows:

1. Written contingency plan
2. Compost Facility Operator certificate(s)
3. List of heavy equipment
4. Feedstock information
5. Processing and composting methods
6. Area map
7. Site plan
8. Groundwater Quality Bureau Notice of Intent to Discharge, or a letter confirming no discharge permit is needed.
9. Compliance plan to meet 40 CFR 503 and 20.6.2 NMAC requirements (see **Appendix E**), or written confirmation that the facility will not accept biosolids or septage.

The County may need to include correspondence from the NMED Surface Water Quality Bureau, confirming permitting is not needed.

Key information that must be completed and/or included with the collection center submittal is as follows:

1. Area map
2. Site plan
3. Operations plan
4. List of equipment and storage containers

[7] https://www.nmda.nmsu.edu/wp-content/uploads/2013/10/New-Mexico-Fertilizer-Act.pdf
[8] https://codes.findlaw.com/nm/chapter-76-agriculture/nm-st-sect-76-11-1.html
[9] https://codes.iccsafe.org/content/IFC2018/chapter-28-lumber-yards-and-agro-industrial-solid-biomass-and-woodworking-facilities

Appendix A

20.9.3 NMAC of the New Mexico Solid Waste Rules

(see attached pdf)

This rule was filed as 20 NMAC 6.1.

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 3 VOLUNTARY REMEDIATION

20.6.3.1 ISSUING AGENCY: New Mexico Environment Department.
[7/15/99; 20.6.3.1 NMAC - Rn, 20 NMAC 6.3.I.101, Recompiled 11/27/01]

20.6.3.2 SCOPE: This Part provides for the expeditious, voluntary cleanup of contaminated properties in New Mexico in a manner that is protective of human health and the environment, and the promotion of their redevelopment and productive use.
[7/15/99; 20.6.3.2 NMAC - Rn, 20 NMAC 6.3.I.102, Recompiled 11/27/01]

20.6.3.3 STATUTORY AUTHORITY: These regulations are promulgated pursuant to the provisions of the Voluntary Remediation Act, NMSA 1978, Sections 74-4G-1 et seq.
[7/15/99; 20.6.3.3 NMAC - Rn, 20 NMAC 6.3.I.103, Recompiled 11/27/01]

20.6.3.4 DURATION: Permanent.
[7/15/99; 20.6.3.4 NMAC - Rn, 20 NMAC 6.3.I.104, Recompiled 11/27/01]

20.6.3.5 EFFECTIVE DATE: These regulations are effective as of July 15, 1999 unless a later date is cited at the end of a Section or Paragraph.
[7/15/99; 20.6.3.5 NMAC - Rn, 20 NMAC 6.3.I.105, Recompiled 11/27/01]

20.6.3.6 OBJECTIVE: The objective of Part 3 of Chapter 6 is:

A. to implement the Voluntary Remediation Act, NMSA 1978, Sections 74-4G-1 et seq.;

B. to provide incentives for the voluntary assessment and remediation of contaminated property, with state oversight; and

C. to remove future liability of lenders and landowners.

[7/15/99; 20.6.3.6 NMAC - Rn, 20 NMAC.6.3.I.106, Recompiled 11/27/01]

20.6.3.7 DEFINITIONS: The words and phrases used in this Part have the same meaning as in The Voluntary Remediation Act, NMSA 1978, Sections 74-4G-1 et seq. As used in this Part:

A. "Act" means the Voluntary Remediation Act, NMSA 1978, Sections 74-4G-1 et seq.

B. "background" means, for purposes of the voluntary remediation program only and for no other purposes in this Part and any other regulations, including but not limited to surface water standards, the amount of contaminants naturally occurring from undisturbed geologic sources or contaminants which the participant establishes are occurring solely from a source other than the participant's facility. This definition does not apply to any other program area in the department, nor shall this definition be interpreted as applicable to any other program area, and this definition shall not prevent the secretary from requiring remediation of commingled plumes of pollution, shall not prevent participants from seeking contribution or other legal or equitable relief from other persons, and shall not preclude the secretary from exercising enforcement authority under any applicable statute, regulation or common law.

C. "facility" means any structure, installation, operation, storage tank, transmission line, motor vehicle, rolling stock, or activity of any kind, whether stationary or mobile;

D. "notice of violation" means a notice that alleges one or more violations of law and describes actions that should or must be taken to avoid an enforcement action;

E. "owner" means the person or persons who own a facility, or part of a facility;

F. "operator" means the person or persons responsible for the overall operations of a facility;

G. "secretary" means the Secretary of the New Mexico Environment Department or his or her designee;

[7/15/99; 20.6.3.7 NMAC - Rn, 20 NMAC.6.3.I.107, Recompiled 11/27/01]

20.6.3.8 COMPLIANCE WITH OTHER LAW: Compliance with this Part does not relieve a person from the obligation to comply with other applicable federal, state and local law.
[7/15/99; 20.6.3.8 NMAC - Rn, 20 NMAC 6.3.I.108, Recompiled 11/27/01]

20.6.3.9 VOLUNTARY REMEDIATION ACTIVITIES: Voluntary remediation activities may include, but are not limited to:

A. research to establish the history of ownership, release(s), contaminant use, storage, and management, and environmental permits and compliance;

B. research and subsurface investigations, including intrusive and non-intrusive techniques, to assess the site's hydrogeologic characteristics;

C. the collection and analysis of soil, sediment, surface water, ground water, soil gas, atmospheric, indoor air, and/or biological samples;

D. assessment of the nature and extent, migration pathways, and environmental fate and transport of contaminants;

E. performance of a human health and ecological risk assessment;

F. installation of waste or product recovery and water treatment systems;

G. installation of soil vapor extraction or other vadose zone remediation systems;

H. removal and on- or off-site treatment, recycling, or reuse of contaminated media;

I. removal of the contents of, or removal of, drums, barrels, tanks, or other bulk containers which contain or may contain contaminants;

J. capping or covering of contaminated media;

K. other measures to mitigate human health and ecological receptors' potential exposures and risks;

L. post-remediation verification sampling and/or monitoring; and

M. any other remediation action consistent with the purpose of achieving the performance standard of Subpart I, Section 110 of this Part.

[7/15/99; 20.6.3.9 NMAC - Rn, 20 NMAC 6.3.I.109, Recompiled 11/27/01]

20.6.3.10 PERFORMANCE STANDARD AND ASSOCIATED REQUIREMENTS:

A. Activities performed pursuant to the Act shall be designed to collect, develop, and evaluate sufficient information to support proposed conclusions regarding:

(1) the source, nature and extent, migration pathways, and environmental fate and transport of contaminants in all environmental media present at the site (i.e., soil, ground water, surface water, sediment, and/or air);

(2) the risk of harm posed by the site to human health, safety, and the environment;

(3) the need to conduct remedial actions at the site to safeguard against such risks; and

(4) the remedial action selection and design, if appropriate.

B. If applicable standards are prescribed by law or regulation, voluntary remediation activities shall achieve applicable standards. Where applicable standards are not prescribed by law or regulation,voluntary remediation activities shall be performed in order to achieve a final site condition such that no contaminant will present a significant risk of harm to human health,safety, or the environment during any foreseeable period of time. Such level of cleanup shall be attained by reducing the risk from exposure to individual carcinogens or suspected carcinogens to an individual lifetime cancer risk of less than one cancer incident in 100,000 exposed persons (1 X 10 E-5); and by reducing the risk from exposure to individual noncarcinogenic contaminants to a hazard quotient of less than 1. In order to achieve this performance standard, the applicant may evaluate the risk of harm posed by the site to human health, safety, or the environment by employing one of three general methods:

(1) Method 1: Comparison of site concentrations to site-specific background concentrations; or

(2) Method 2: Comparison of site concentrations to applicable water quality standards and soil guidelines approved by the Department, including but not limited to:

(a) risk-based soil remediation guidelines developed by the department;

(b) standards for water, as listed in the most recent version of the New Mexico Water Quality Control Commission (WQCC) Regulations, 20 NMAC 6.1 [20.6.1 NMAC] and 20 NMAC 6.2 [20.6.2 NMAC], or other more stringent applicable standards, as appropriate; and

(c) other applicable standards. Where more than one applicable standard exists, the most stringent applicable standard will be applied; or

(3) Method 3: Performance of a detailed, site-specific human health and, if applicable, environmental risk assessment. Such a Method 3 evaluation will be required to employ a cumulative exposure approach. In no case shall a Method 3 evaluation propose voluntary remediation activities that are not designed to meet all applicable standards.

C. Any risk assessment conducted under this Section shall be based on reasonable and conservative assumptions about exposures and pathways, shall take into consideration exposure of sensitive subgroups to contaminants and the possibility of future changes in land use, and shall incorporate an adequate margin of safety.

D. The selection of voluntary remediation activities that will achieve a permanent solution shall be required, unless the participant demonstrates and the secretary concurs that implementation of voluntary remediation activities to achieve a permanent solution would be infeasible or impracticable.

E. An environmental risk assessment shall be required only when ecological receptors are present at or in the near vicinity of a site. Such an environmental risk assessment shall be a Method 3 site-specific assessment, and may be combined with a Method 1, 2, or 3 evaluation of human health risks.

F. The department may approve voluntary remediation activities that do not achieve residential health-based levels in all environmental media of concern only if the participant provides an affirmation of future non-residential land use, or an easement or other legal document binding on successors in interest to the site, in a form satisfactory to the department.

G. The department, in its discretion, may require an easement or other legal document binding on successors in interest to the site where voluntary remediation activities include post-completion monitoring, maintenance of engineering controls, remediation systems, or post-closure care.

[7/15/99; 20.6.3.10 - Rn, 20 NMAC 6.3.I.110, Recompiled 11/27/01]

20.6.3.11 to 20.6.3.199 [RESERVED]

20.6.3.200 APPLICATION FOR DETERMINATION OF ELIGIBILITY, AND FEE:

A. Eligibility:

(1) To be eligible for a voluntary remediation agreement an applicant must:

(a) own the site;

(b) operate a facility located on the site;

(c) be a prospective owner of the site; or

(d) be a prospective operator of a facility at the site.

(2) Multiple applicants may apply for a voluntary remediation agreement; however, a primary applicant who will serve as the department's point of contact must be designated.

(3) The secretary shall reject an application for a voluntary remediation agreement if the secretary determines that one or more of the grounds for rejection specified in 74-4G-5(D), N.M.S.A., exist.

(4) The secretary may reject an application for a voluntary remediation agreement if:

(a) the applicant has, within ten (10) years immediately preceding the date of the application, knowingly misrepresented a material fact in an application for a permit or plan submitted pursuant to federal or local environmental law or environmental law of a state other than New Mexico;

(b) a predecessor, successor, assign, parent, subsidiary, affiliate, officer, director, partner, managing agent or employee of the applicant has within ten (10) years immediately preceding the date of submission of the application engaged in conduct described in N.M.S.A. 74-4G-5(D)(7)(a)-(c) or Paragraph 1 of this subsection, or had an environmental permit revoked or suspended as described in N.M.S.A. 74-4G-5(D)(7)(d);

(c) a permit that addresses a contaminant described in the application was required for the site or facility under any state or federal law but the site or facility did not obtain the required permit; or

(d) a notice of violation that addresses a contaminant at the site or facility described in the application has been issued by any federal, state or local agency, and action has not been taken to remedy the

alleged violations to the issuing agency's satisfaction.

(5) If the department determines that an application is incomplete or inaccurate, the secretary shall deny the application or notify the applicant in writing of the alleged incompleteness or inaccuracy and require the applicant to remedy the incompleteness or inaccuracies. If the secretary requires the applicant to remedy the incompleteness or inaccuracies, and the applicant does not remedy the alleged incompleteness or inaccuracies within thirty (30) days of receipt of written notice of such requirement, the secretary shall deny the application.

(6) Applicants having sites where remedial actions were completed under another state or federal program, or without any state or federal oversight, may be allowed to enter into a voluntary remediation agreement, at the discretion of the secretary. However, all other application requirements and eligibility criteria described in this Section must be met in order for such an application to be considered. In cases where an applicant has completed remedial action prior to the effective date of these regulations under another state or federal program and received agency approval, the applicant may be required to complete additional work in order to obtain a certificate of completion as described in Subpart V of this Part [20.6.3.500 NMAC] if:

(a) the remediation did not address all contaminants or contaminated media within the site;

(b) regulatory requirements have changed since the date of completion of remediation; or

(c) the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC] is not met.

(7) The secretary shall, on a first come, first-served basis or within thirty (30) calendar days of receipt of a complete application, conditionally determine whether the applicant is eligible to participate in a voluntary remediation agreement pursuant to the provisions of Subpart III of this Part [20.6.3.300 NMAC] The secretary shall notify the applicant in writing as to its decision, and the reasons for an applicant's ineligibility, if applicable. The final eligibility determination will be made by the secretary no later than fifteen (15) calendar days after the close of the public comment period, or if a public meeting is held, within fifteen (15) calendar days of the public meeting, as described in Subpart III, Section 305 of this Part [Subsection E of 20.6.3.300 NMAC]

B. Application Process: An applicant may request to enter into a voluntary remediation agreement with the department by completing the "application for determination of eligibility" form provided by the department. The application shall include:

(1) general information disclosing:

(a) the name of the applicant;

(b) the site, its location, and past and current ownership, operator and use history;

(c) information for the ten (10) years preceding the date of submission of the application on past, present, and pending regulatory permits in New Mexico, and on administrative and judicial enforcement actions, permit revocations and suspensions, and approved remediation plans in New Mexico and other states; and

(d) other general information requested by the department.

(2) the following written "Declaration of Ability and Intent" signed by the applicant: "I attest under the pains and penalties of perjury that:

(a) I am the applicant [or title of office held, general partner, or similar responsible representative of applicant], and I am fully authorized to make this attestation on behalf of and to legally bind, the applicant;

(b) I have personally examined and am familiar with the requirements of the Voluntary Remediation Act, NMSA 1978 Sections 74-4G-1, et seq. and Voluntary Remediation Regulations, 20 NMAC 6.3 [20.6.3 NMAC];

(c) Based upon my inquiry of the person(s) employed or engaged to perform work pursuant to this application, and my/that person's(s') or entity's (ies') understanding as to the estimated costs of the proposed voluntary remediation actions, that the applicant has the technical, financial, and legal ability and intent to proceed with the proposed voluntary remediation actions in accordance with the Voluntary Remediation Act and 20 NMAC 6.3 [20.6.3 NMAC], and other applicable requirements; and

(d) The applicant will notify the department upon becoming aware of an inability to proceed with the proposed voluntary remediation actions because such actions are beyond the applicant's technical, financial, or legal ability to perform them."

(3) A Phase I environmental assessment of the site which generally conforms with the American Society for Testing and Materials (ASTM) Standard Practice E 1527, as amended, if available, or its equivalent, which at minimum includes:

(a) the legal description of the site, including a site map;

(b) the description of the physical, hydrological, and geological characteristics of the site, including the location of nearest water supply wells and surface water bodies;

(c) information of which the applicant is aware concerning the source(s), nature and extent of all contaminants or releases at the site and immediately contiguous to the site; and

(d) relevant information of which the applicant is aware concerning the potential for human or other exposure to contamination originating at the site, including but not limited to current land use, depth to groundwater, location of utilities, and potential human health and ecological receptors.

(4) a preliminary work plan describing the proposed voluntary remediation activities as they are currently envisioned as being submitted in a final voluntary remediation work plan, as described in Subpart IV of this part [20.6.3.400 NMAC].

(5) written consent by the property owner, if different from the applicant, supporting the proposed voluntary remediation activities, including any restrictions on property use.

C. Application Fee: An applicant shall pay at the time of submitting the application, a non-refundable application fee of $1,000 per application that will pay for the department's costs of processing the application.

[7/15/99; 20.6.3.200, - Rn, 20 NMAC 6.3.II.200 to 203, Recompiled 11/27/01]

20.6.3.201 to 20.6.3.299 [RESERVED]

20.6.3.300 VOLUNTARY REMEDIATION AGREEMENT:

A. Agreement Provisions:

(1) After the secretary determines that an applicant is eligible, the secretary may enter into a voluntary remediation agreement with the applicant. Such an agreement shall be made final after receipt and incorporation of public comments, as described in Section 304 of this Subpart [Subsection D of 20.6.3.300 NMAC].

(2) The voluntary remediation agreement shall be set forth on a standard form developed by the department, and shall include:

(a) A provision for the Department's oversight, including:

(i) access to the site;

(ii) on-site collection of samples and inspection and copying of site and facility records;

(iii) compensation for oversight costs in accordance with the fee structure specified in Section 310 of this Part [Subsection J of 20.6.3.300 NMAC];

(b) a reference to applicable statutes, regulations, standards, and guidance that must be complied with;

(c) a provision requiring the site to be remediated to applicable standards such that the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC] will be achieved;

(d) a preliminary work plan, describing the proposed voluntary remediation activities as they are currently envisioned as being submitted in a final voluntary remediation work plan, as described in Subpart IV of this Part [20.6.3.400 NMAC];

(e) identification of items to be submitted for department review and approval, including a work plan, quarterly status reports or status reports to be submitted at a different frequency, as determined by the department, and a final completion report that provides all information necessary to verify that all work contemplated by the voluntary remediation agreement has been completed, and that the applicable standards have been met;

(f) a provision requiring the applicant to obtain all applicable permits for the site and any required access agreements; and

(g) a schedule for completing significant proposed tasks, report submittals, and department review.

(3) The secretary shall not initiate an enforcement action, including an administrative or judicial action, against a participant for the contamination or release thereof, or for the activity that results in the contamination or release thereof, if the contamination is the subject of an agreement pursuant to these regulations. However, this Section shall not be a bar to any enforcement action if the agreement is not finalized,

if the agreement is terminated or rescinded, or if the participant does not successfully initiate or implement the agreement within a reasonable time under the schedules set forth in the voluntary remediation agreement and approved work plans.

(4) The agreement shall become final and effective upon being signed by both the secretary and the applicant. The effective date of the agreement shall be the later date of signature by either the secretary or the applicant.

B. Public Notice and Comment:

(1) Before the voluntary remediation agreement becomes finalized, the applicant must:

(a) make the proposed voluntary remediation agreement available for public inspection at a location in reasonable proximity to the site, within ten (10) calendar days of the receipt of the conditional eligibility determination from the department;

(b) notify the following entities and advise them of the proposed voluntary remediation agreement, the location where the proposed agreement can be reviewed, and the opportunity to submit comments to the department;

(i) any local, state, federal, tribal or pueblo governmental agency potentially affected by the proposed voluntary remediation agreement, including at a minimum, the mayor and director of the board of health, or their equivalent, of the municipality in which the site is located;

(ii) those parties that have requested notification;

(iii) the general public by posting a notice at the site on a form provided by the department, and by publishing a notice in a newspaper of general circulation in the state and a newspaper published in the area where the site is located, such notice to be published in the legal advertisements section of the newspaper and at one other place in the newspaper chosen to give the general public the most effective notice, and if the department determines it is appropriate, shall be published in both English and Spanish;

(c) Include in the public notice:

(i) the name of the applicant;

(ii) the location of the site;

(iii) a brief description of the proposed remediation activities described in the preliminary voluntary remediation work plan;

(iv) the address to which comments may be submitted and the deadline for submitting comments;

(v) the address and telephone number at which persons may obtain further information; and

(d) submit to the department a copy of the public notice as well as an affidavit of publication and a signed statement affirming that the applicant has complied with the provisions of this Subsection [Paragraph].

(2) The secretary shall provide a comment period of at least thirty (30) calendar days following publication of the newspaper notice.

(3) During the comment period, interested parties may submit written comments to the department concerning the proposed voluntary remediation agreement activities.

(4) During the comment period, any interested person may submit a request for public meeting. The request shall be in writing to the department and shall set forth the reasons why the meeting should be held. A public meeting will be held at the applicant's expense if the secretary determines that there is significant public interest.

(5) If a public meeting is to be held, the applicant shall, at its expense, at least ten (10) calendar days before the meeting, mail a notice of the time and place of the meeting to all persons who have submitted written comments or a request for public meeting, and publish the notice in a newspaper of general circulation in the state and a newspaper published in the area where the site is located, in the legal advertisements section of the newspaper and at one other place in the newspaper chosen to give the general public the most effective notice. If the department determines it is appropriate, the notice shall be published in both English and Spanish.

C. Public Meeting:

(1) The department may appoint a meeting facilitator.

(2) The applicant and the department may prepare a fact sheet to be distributed at the public meeting, written in English and Spanish or other language as deemed appropriate, describing site history and the planned voluntary remediation activities.

(3) The record of the public meeting will consist of a tape recording. Tape copying and other transcript costs shall be paid by the person requesting the copy or transcript.

(4) Persons requiring assistance in the form of auxiliary aid or translation will have such assistance provided at the expense of the applicant.

(5) At the meeting, all interested persons shall be given a reasonable chance to submit data, views, or arguments orally or in writing, and to ask questions of the department and of the applicant, or its authorized representatives.

D. Consideration of Public Comments:

(1) In deciding whether to enter into a voluntary remediation agreement, and whether to approve the terms of such an agreement, the secretary shall consider public comments.

(2) If the secretary deems it appropriate, public comments will be incorporated into the final voluntary remediation agreement.

E. Approval of Voluntary Remediation Agreement: The secretary shall, within thirty (30) calendar days of the secretary's final determination that the applicant is eligible, approve, approve with modifications, or disapprove the proposed voluntary remediation agreement. The secretary shall mail notice of this determination to the applicant and all persons who presented written comments or presented oral comments at the public hearing.

F. Execution of Voluntary Remediation Agreement: If the secretary approves the voluntary remediation agreement as proposed, the secretary and applicant shall execute the agreement and the agreement shall become effective. If the secretary approves the voluntary remediation agreement with modifications and the modifications are acceptable to the applicant, the secretary and applicant shall execute the agreement and the agreement shall become effective.

G. Additional Public Participation: If members of the public request to participate in the voluntary remediation activities, then a mailing list of interested parties will be developed. These interested parties will be kept informed of the availability of key project submittals as they are received by the department. Such submittals will be made available by the department for public review and comment upon request.

H. Termination:

(1) If an agreement is not reached between an applicant and the secretary on or before the thirtieth (30th) calendar day after the secretary determines an applicant to be eligible pursuant to the provisions of Subparts II and III of this Part [20.6.3.200 and 20.6.3.300 NMAC], the applicant or the secretary may withdraw from the negotiations.

(2) The participant may terminate a voluntary remediation agreement with sixty (60) calendar days' written notice via certified mail, return receipt requested, to the department.

(3) The secretary may terminate a voluntary remediation agreement on a finding that the participant is not in compliance with the voluntary remediation agreement. Notice of termination will be made to the participant via certified mail, return receipt requested, and facts supporting the secretary's rationale for termination shall be set forth in the notification.

(4) The department's costs incurred or obligated before the date the notice of termination is received are recoverable by the department under the agreement if the agreement is terminated.

I. Dispute Resolution: In the event of any dispute regarding the requirements of the voluntary remediation agreement, oversight costs charged by the department to the participant, these regulations, or the Act, the participant may notify the secretary by certified mail that a dispute has arisen and the participant desires to invoke the dispute resolution provisions of this Section. Such notification must be made within fifteen (15) calendar days after the participant receives the decision of the secretary that causes the dispute, or the applicant waives its right to dispute the decision. Upon such notification, all deadlines affected by the dispute shall be extended for a thirty (30) calendar day negotiation period, or for a maximum of sixty (60) calendar days if approved by the secretary for good cause shown. During this negotiation period, the secretary and the participant shall meet at least once. Such meeting(s) may be facilitated by a mutually agreed upon third party, but the third party shall assume no power or authority granted or delegated to the secretary by the Act. If the dispute remains unresolved after the negotiation period, the secretary shall issue a binding final decision, including a written statement of the reason for the decision.

J. Oversight Fee Structure: In accordance with the terms and schedule specified in the voluntary remediation agreement, the participant will compensate the department for all reasonable costs associated with the oversight of the voluntary remediation activities based upon a standard hourly rate to be

calculated by the department on an annual basis. Oversight costs shall include direct and indirect costs of overhead, salaries, benefits, equipment and utility use fees, and legal, management, and support costs associated with the preparation of the voluntary remediation agreement, review of the participant's work plans and reports, and oversight of and performance of field activities (including but not limited to travel, sampling, and chemical analysis of samples), participation in dispute resolution activities, as well as long-term oversight performed by the department after its issue of a conditional certificate of completion, as described in Subpart V of this Part [20.6.3.500 NMAC]. Oversight will be invoiced based on actual hours of staff oversight, at the rate calculated per a formula established by the department. Travel and per diem costs will be invoiced at state-designated rates. Sampling and analysis costs will be invoiced at actual cost plus indirect overhead rate. The effective hourly rate for the first twelve (12) months following the effective date of these regulations shall be based on the department's best estimate of total operating costs, and total available technical staff hours. The hourly rate for subsequent periods will be calculated and subsequently updated on November 1 of each year, following a thirty (30) calendar day public comment period. [7/15/99], 20.6.3.300 NMAC - Rn, 20 NMAC 6.3.III.300 to 310, Recompiled 11/27/01]

20.6.3.311 to 399 [RESERVED]

20.6.3.400 VOLUNTARY REMEDIATION WORK PLAN:

A. Applicability: Unless the participant demonstrates that further investigation and/or cleanup are not required in order to comply with the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC], after a voluntary remediation agreement becomes effective, the participant shall submit to the department a proposed final voluntary remediation work plan for the site remediation.

B. Content: The final voluntary remediation work plan shall provide a detailed description of voluntary remediation activities to be undertaken to achieve the performance standard described in Subpart I, Section 110 of this part [20.6.3.10 NMAC]. At a minimum, the final voluntary remediation work plan shall include:

(1) a summary of site and contaminant use, storage, disposal, and release history, and the site investigation work performed to date;

(2) A detailed description, including plans and sketches, of any additional investigation to be conducted to determine the type, nature and extent of contaminants at the site, including but not limited to: location and type of sample, sample collection techniques, monitoring techniques, sample analytical methods, and quality assurance/quality control methods;

(3) contaminants and media (including but not limited to air, surface water, groundwater, soil, and facility structures) to be addressed by the remediation;

(4) a statement of work to accomplish remediation of the site, and the method to reach the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC];

(5) a monitoring plan to be implemented during the duration of remediation activities, if applicable;

(6) confirmatory sampling and analytical methods to verify that remediation of the site has met the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC];

(7) post completion monitoring and maintenance to ensure that the closure conditions, including any engineering controls or affirmation of future non-residential land use upon which the final remedy is dependent, are maintained after completion, if applicable;

(8) an implementation schedule for all identified investigation and remediation tasks;

(9) a site-specific health and safety plan that complies with all applicable standards and guidelines;

(10) a plan describing the proposed management of investigation and remediation derived wastes, if applicable;

(11) copies of, or a schedule for obtaining, all necessary and applicable permits and access agreements required to accomplish remediation of the site; and

(12) any other pertinent information requested by the department which is reasonably necessary to meet the requirements of these regulations.

C. Schedule: The participant shall submit to the department a proposed final voluntary remediation work plan according to the schedule in the voluntary remediation agreement, but in no event shall the participant submit the work plan, or, if the work plan is to be prepared in phases, the work plan for the first phase, later than sixty (60) calendar days following the effective date of the voluntary remediation agreement.

D. Work Plan Modification: Any approved voluntary remediation work plan may be modified at the request of the participant and/or the department, with both parties' approval. Following receipt of the modification request, the secretary shall determine whether or not the proposed modification is significant. If the secretary determines that the proposed modification is significant, the applicant shall make the proposed modification available for public inspection at a location in reasonable proximity to the site within ten (10) calendar days of the secretary's determination, and the applicant and department shall comply with Sections 302.A.2, 302.A.3, 302.A.4 [Subparagraphs (b), (c) and (d), Paragraph (1), Subsection (B) of 20.6.3.300 NMAC], 302.B., 302.C, 302.D. and 302.E. of this Part [Paragraphs (2), (3) (4) and (5), Subsection (B) of 20.6.3.300 NMAC] with respect to the proposed modification. If a public meeting is held on the proposed modification, Section 303 of this Part [Subsection (C) of 20.6.3.300 NMAC] shall apply to the meeting. If the secretary determines that the proposed modification is not significant, the applicant shall at its expense mail to all persons on the mailing list of interested persons maintained pursuant to Section 307 of this Part [Subsection (G) of 20.6.3.300 NMAC] notice of the proposed modification. The proposed modification will be made available by the department for public review and comment upon request. In all cases, the secretary shall consider public comments in determining whether to approve the proposed modification.

E. Review Process: Following submittal of a proposed final voluntary remediation work plan or work plan modification, the secretary shall review and approve, approve with conditions, or disapprove the work plan or work plan modification within forty-five (45) calendar days of receipt. If the secretary disapproves the work plan or work plan modification, the participant may be granted an opportunity to submit a revised version, as determined by the secretary.

[7/15/99; 20.6.3.400 NMAC - Rn, 20 NMAC 6.3.IV 400 to 405, Recompiled 11/27/01]

20.6.3.401 to 20.6.3.499 [RESERVED]

20.6.3.500 CERTIFICATE OF COMPLETION:

A. Applicability:

(1) If the participant files with the department a signed Affidavit of Completion of Voluntary Remediation, and the secretary determines that a participant has successfully complied with the voluntary remediation agreement and the site conditions meet the applicable standards, the secretary shall issue the participant a certificate of completion.

(2) For voluntary remediation activities completed on a portion of a site, the certificate of completion shall pertain only to that specific portion of the site, and shall include a legal description of that area.

(3) If the remediation requires post-completion monitoring, maintenance of engineering controls, remediation systems, post-closure care, or an affirmation of future non-residential land use, and the participant is satisfactorily implementing these requirements, the secretary may issue a conditional certificate of completion. To keep a conditional certificate of completion valid, the participant must satisfactorily continue to implement and maintain the necessary monitoring, engineering controls, remediation systems, post-closure care, and affirmation of future non-residential land use upon which the final remedy is dependent.

B. Process:

(1) The participant shall demonstrate to the secretary that site conditions meet the applicable standards by submitting a voluntary remediation completion report to the department. The report shall include, as appropriate:

(a) a summary of remediation activities conducted at the site;

(b) sampling methods and results of verification sampling or monitoring that indicates that remediation is complete;

(c) the method used to evaluate potential risks posed by site-related contaminants that successfully demonstrates that the performance standard has been met, as described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC];

(d) a description of all monitoring, affirmation of future non-residential land use, or engineering controls upon which the final remedy is dependent;

(e) copies of all manifests, waste disposal records, or other documentation documenting the final disposition of all remediation-derived waste; and

(f) any other pertinent information requested by the department that is reasonably necessary to meet the requirements of these regulations.

(2) The report shall be submitted to the department with a signed Affidavit of Completion of Voluntary Remediation from the participant and legal description of the affected property that indicates that remediation is complete, in accordance with the voluntary remediation agreement and applicable regulations and guidance.

(3) No certificate of completion shall be issued to a participant who has not paid invoiced oversight costs in full to the department.

(4) The department shall review and determine the sufficiency of a completion report within forty-five (45) days of receipt. If the secretary approves the completion report, the secretary will issue a certificate of completion or a conditional certificate of completion, as appropriate. If the secretary does not approve the completion report, the secretary shall either issue a finding that the participant is not in compliance with the voluntary remediation agreement and terminate the agreement, or advise the participant in writing of data gaps in the report. The participant shall correct any identified data gaps and resubmit the completion report within thirty (30) calendar days of receipt of notice of the data gaps.

(5) If a conditional certificate of completion has been issued, the department shall conduct audits to ensure that all engineering controls, remediation systems, post-closure care, or affirmation of future non-residential land use upon which the final remedy is dependent are being maintained appropriately. These audits shall be performed at least every other year for the first ten (10) years following the issuance of the conditional certificate of completion, and every five (5) years thereafter. If during the course of such an audit, the department finds that any of the monitoring requirements, engineering controls, remediation systems, post-closure care, or affirmation of future non-residential land use are not being properly maintained such that the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC] is no longer being met, the department may revoke the conditional certificate of completion and initiate an enforcement action.
[7/15/99; 20.6.3.500 NMAC - Rn, 20 NMAC 6.3.V.500 to 502, Recompiled 11/27/01]

20.6.3.501 to 20.6.3.599 [RESERVED]

20.6.3.600 COVENANT NOT TO SUE:

A. Applicability: After the secretary issues a certificate of completion or a conditional certificate of completion for a site, the secretary shall provide a covenant not to sue to a purchaser or prospective purchaser of the site that did not contribute to the site contamination, for any direct liability, including future liability for claims based upon the contamination covered by the agreement and over which the department has authority. Except as may be provided under federal law or as may be agreed to by a federal government entity, the covenant not to sue shall not release or otherwise apply to claims by the federal government for claims based on federal law. Except as may be agreed to by another department or agency of the state, the covenant not to sue shall not release or otherwise apply to claims of any other office, department or agency of the State. Except as may be agreed to by a third party, the covenant not to sue shall not release or otherwise affect a person's liability to third parties.

B. Reservation of Rights: The department expressly reserves the right to take any action, including any enforcement action, to address any contamination not covered by the voluntary remediation agreement, including any release of a contaminant that occurs after issuance of the certificate of completion, or any release of a contaminant not covered by the voluntary remediation agreement. The secretary's covenant not to sue under this part shall not apply to any such release.

C. Transferability: The secretary's covenant not to sue under this part shall be transferable with title to the site, unless the title is transferred to a party who has contributed to the site contamination, or is an officer, director, parent, subsidiary, affiliate, partner, managing agent, or employee thereof.
[7/15/99; 20.6.3.600 NMAC - Rn, 20 NMAC 6.3.VI.600 to 603, Recompiled 11/27/01]

20.6.3.601 to 20.6.3.699 [RESERVED]

20.6.3.700 RESCISSION: The Secretary may rescind a certificate of completion, conditional certificate of completion, or a covenant not to sue if the Department determines that:

A. based on reasonable evidence, contamination addressed in the agreement still poses, following remediation, an unreasonable threat to human health or the environment, or that the performance standard described in Subpart I, Section 110 of this Part [20.6.3.10 NMAC] has not been met;

B. the voluntary remediation agreement was performed in a manner that fails to comply substantially with the terms and conditions of the agreement or voluntary remediation work plan;

C. any monitoring requirements, engineering controls, remediation systems, post-closure care, or affirmation of future non-residential land use upon which the final remedy is dependent are not being implemented satisfactorily;

D. the voluntary remediation agreement is a result of fraud; or

E. contamination was present at the site at the time the voluntary remediation agreement was signed or the voluntary remediation work plan was approved, but the department was not properly informed of the type, extent, or magnitude of the contaminants.

[7/15/99; 20.6.3.700 NMAC - Rn, 20 NMAC 6.3.VII.700 and 701, Recompiled 11/27/01]

20.6.3.701 to 20.6.3.799 [RESERVED]

HISTORY OF 20.6.3 NMAC: [RESERVED]

History of Repealed Material: [RESERVED]

Appendix B

Los Alamos County Fee Schedule

Building Permit Fees

Plan Review Fees

A plan review fee must be paid at the time of submitting documents for plan review. The plan review fee is 65% of the building permit fee as determined by the table below.

Building Permit Fees

Total Valuation	Fee
$1.00 to $500.00	$23.50
$500.01 to $2,000.00	$23.50 for the first $500 plus $3.05 for each additional $100.00 or fraction thereof, to and including $2,000.00.
$2,000.01 to $25,000.00	$69.25 for the first $2,000.00 plus $14.00 for each additional $1,000.00 or fraction thereof, to and including $25,000.00.
$25,000.01 to $50,000	$391.75 for the first $25,000.00 plus $10.10 for each additional $1,000.00 or fraction thereof, to and including $50,000.00.
$50,000.01 to $100,000.00	$643.75 for the first $50,000.00 plus $7.00 for each additional $1,000.00 or fraction thereof, to and including $100,000.00.
$100,000.01 to $500,000.00	$993.75 for the first $100,000.00 plus $5.60 for each additional $1,000.00 or fraction thereof, to and including $500,000.00.
$500,000.01 to $1,000,000.00	$3,233.75 for the first $500,000.00 plus $4.75 for each additional $1,000.00 or fraction thereof, to and including $1,000,000.00.
$1,000,000.01 and up	$5,608.75 for the first $1,000,000.00 plus $3.65 for each additional $1,000.00 or fraction thereof.

Other Fees

- Additional plan review required by changes, additions or revisions to plans: $47.00 per hour (*see Note 1*).
- Use of outside consultants for plan checking and/or inspections: actual costs (*see Note 2*).
- Standard/typical building inspections are included in the permit fee, but additional charges may be incurred for re-inspections and inspection outside of normal business hours. Contact the building division for additional information.

Note 1: Or the hourly cost to the County, whichever is greater. This cost shall include supervision, overhead, equipment, hourly wages and fringe benefits of the employee involved.

Note 2: Actual costs include administrative and overhead costs.

Los Alamos County Community Development Department ● 1000 Central Ave., Suite 150 ● Los Alamos, New Mexico 87544
505.661.8120 ● 505.662.8363 (fax)

Appendix C
Collection Center Registration Form

NEW MEXICO
ENVIRONMENT DEPARTMENT

Solid Waste Bureau

Harold Runnels Building – Room N 2150
1190 St Francis Dr.
PO Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-0197 Fax (505) 827-2902
www.env.nm.gov

COLLECTION CENTER REGISTRATION FORM

Notice to Registrant: The New Mexico Solid Waste Rules (SWR), 20.9.3.27 NMAC, requires the registration of a collection center with the New Mexico Environment Department. A collection center serves the general public, has an operational rate of less than 240 cubic yards of solid waste per day monthly average and does not accept special waste. The owner or operator of a collection center must apply for a registration at least 30 days prior to any operations and every five years thereafter. Existing collection centers shall apply for a registration at least 30 days prior to the expiration of their existing permit or registration, or within two years after the effective date of these regulations (August 2, 2007), whichever occurs first. A collection center that fails to file a timely and complete application for registration is deemed an unpermitted solid waste facility, subjecting the owner or operator to potential civil penalties, permit requirements and nuisance abatement orders.

!!!! NOTE : If a collection center that serves the general public increases its operational rate to more than 240 cubic yards of solid waste per day on a monthly average or accepts any special waste, the facility constitutes a "transfer station" which will require a permit in accordance with the SWR, 20.9.3.8 NMAC.

This form is provided to assist you in completing the registration process. Return the completed form with all attachments to: c/o Manager, Permitting Section, Solid Waste Bureau, New Mexico Environment Department, 1190 St. Francis Drive, P.O. Box 5469, Santa Fe, New Mexico 87502-5469.

I. GENERAL INFORMATION (Please type or print)

Facility Name: _____

Facility Owner: _____

Mailing Address: _____

Telephone: _____ Contact Person: _____

Facility Operator: _____

Mailing Address: _____

Telephone: _____ Contact Person: _____

Physical Address of Facility: _____

Legal Description of Property (GPS coordinates and/or section, township & range, county and state): _____

_____

Land Use and Zoning of Facility: _____

Revised 4/25/08

II. FACILITY LAYOUT

Attach a Map of the Facility Location, Indicating the Land Use and Zoning of the Surrounding Area, Parcel Size, Set Backs and Locations of All Watercourses or Wetlands Within 200 Feet of the Facility

Attach a Site Map of the Facility Identifying:

- North arrow, name and location of facility including adjacent roads or highways
- Facility boundary dimensions, fencing, gates, entrances and exits
- All solid waste and recyclable or compostable storage, loading, and unloading areas including yard waste, scrap tires or white goods
- Traffic flow pattern
- Location of all buildings, structures and utilities – including overhead electrical lines
- Location of any household hazardous waste storage area(s)

III. OPERATIONS

Anticipated Start Up Date (For new facilities): _____

Days/Hours of Operation: _____

On-Site Equipment and Storage Containers (Attach additional sheet, if necessary):

Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____
Type: _____ Number: _____ Size: _____

WASTE STREAM:

Origin (Indicate from where solid waste will be accepted, by country state, county and/or municipality): _____

_____

Type/Composition (e.g., municipal solid waste, construction and demolition debris): _____

_____

Operational Rate (Estimated volume of solid waste to be accepted at the facility each day): _____

_____

Recycling Component (List the types of recyclable materials to be accepted): _____

_____

OPERATIONS PLAN:

Attach an Operations Plan describing procedures for solid waste and recyclables acceptance, storage, processing and removal. The plan shall address the following items:

- Use of signs indicating location of the site, hours of operation, emergency telephone numbers, delivery instructions and to state that fires and scavenging are prohibited
- Means of controlling access to the facility (through use of fencing, gates, locks or other means)
- Use of leak-proof storage containers
- Means to control litter and prevent and extinguish fires
- Sufficient unloading areas to meet peak demands, confined to as small an area as possible
- Use of separate storage areas for bulky wastes (e.g., brush, white goods, scrap tires) and removal of the bulky wastes in a timely manner, as indicated in the registration
- Conducting safe and sanitary waste disposal and recycling/composting operations
- Storage of recyclable materials to preclude nuisances, hazards or vector harborage
- Compliance with applicable provisions of the Recycling, Illegal Dumping and Scrap Tire Management Regulations (RIDSTMR), 20.9.20 NMAC, if scrap tires are accepted [This is primarily a reminder that scrap tires must be transported under a manifest.]
- Frequency of recyclables removal
- Frequency of solid waste removal, which shall be by the end of the operating day, unless otherwise approved in the registration
- Disposition of solid waste and recyclable materials (removal from the facility), including names, telephone numbers, addresses, and NMED permit numbers of all utilized commercial haulers and solid waste or recycling facilities
- Procedures to be taken if unauthorized waste is received
- Procedures in response to emergency situations and equipment break down to ensure that stored waste and recyclables will be removed in a timely manner to avoid nuisances or hazards
- Record keeping requirements
  Submit an annual report to the Department (on the Department form) within 45 days from the end of each calendar year to include:
  (1)the type and weight or volume of waste received during the year;
  (2)the type and weight or volume of recyclable material sold or otherwise disposed of site during the year;
  (3)final disposition of material sold or otherwise disposed off-site; and
  (4)any other information as requested by the Secretary.
- Facility personnel requirements and duties (certified operator)
- Personnel training requirements (safety, operations, etc.)
- Update the registration if there are any significant changes in operation or of ownership
- Any additional information required by the Secretary

COMPOSTING IF PERFORMED ON SITE:

On site composting operations may be authorized under this registration with the following conditions:

1. Compostable materials (feedstock) utilized must be source separated;
2. Compostable materials (feedstock) utilized must not include any special waste (e.g., municipal waste water treatment plant sludge);
3. No more than 25 tons per day annual average of compostable materials (feedstock) shall be accepted at the facility;

4. The Facility Map and Site Map submitted under this registration shall include information regarding the location of the composting operations and related storage areas;
5. The Operations Plan submitted under this registration shall address the composting operations, to include origin, expected composition and weight or volume of materials to be composted and stored on-site pending composting, the process, loading rate, proposed capacity, size and operational rate (for the composting operations), the methods to ensure proper composting – such as the use of temperature probes and turning of windrows, and the anticipated disposition of the finished compost.

NOTE: **If a composting operation utilizes any special waste or accepts more than 25 tons of compostable material (feedstock) per day annual average, it shall be registered separately using the Solid Waste Bureau's Composting Facility Registration Form.**

IV. ACKNOWLEDGEMENTS

A. I AM AWARE THAT THE OWNER OR OPERATOR IS REQUIRED TO COMPLY WITH ALL OF THE TERMS OF THE APPROVED REGISTRATION _____
INITIALS

B. I AM AWARE THAT THE OWNER OR OPERATOR MUST UPDATE THIS REGISTRATION TO REFLECT ANY MATERIAL CHANGES IN OPERATIONS (PRIOR TO IMPLEMENTING SUCH CHANGES) _____
INITIALS

The undersigned attests the information provided is true and accurate.

_____	_____	_____
Signature and Title	**Date**	**Telephone**

Appendix D
Compost Facility Registration Application

NEW MEXICO
ENVIRONMENT DEPARTMENT

Solid Waste Bureau

Harold Runnels Building
1190 Saint Francis Drive, PO Box 5469Santa Fe, NM 87502-5469
Telephone (505) 827-0197
www.env.nm.gov/solid-waste

Compost Facility Registration Application

The New Mexico Solid Waste Rules, 20.9.3.27 NMAC, require the registration of a composting facility with the New Mexico Environment Department.

A "composting facility" means a facility, other than a transformation facility, that is capable of providing biological stabilization of organic material.

The owner or operator of a composting facility must apply for a registration **at least 30 days prior** to any operations and **every five years thereafter**. A composting facility that fails to file a timely and complete application for registration is deemed an unpermitted solid waste facility, subjecting the owner or operator to penalties, permit requirements and nuisance abatement orders.

Registered composting facilities shall accept only source separated compostable materials.

If a composting facility has or plans to increase its operational rate to more than 25 tons per day annual average, it must additionally comply with 20.9.3.28 NMAC. This is called an "Advanced Registration." Please contact the Permit Section Manager of the Solid Waste Bureau for application and financial assurance requirements.

This registration must be updated whenever operations change. Submit the updated registration to the Solid Waste Bureau within 30 days.

No fee is required for compost facility registration.

Instructions

Please complete the following form, which serves as your application and required operations plan. Write "N/A" if a question does not apply to your facility.

Most questions require only a short answer. A short phrase or one or two sentences may be enough to answer the question fully.

The information on this application and operations plan must describe your actual operations. When operations change, please resubmit a revised version of this form within 30 days. If actual operations differ from that described in this application and operations plan, the facility may be issued a violation.

If necessary, further explanation for any question may be given in the space at the end of the form.

Return the completed form with all attachments to:

Permit Section Manager
Solid Waste Bureau
New Mexico Environment Department
1190 St. Francis Dr.
PO Box 5469
Santa Fe, NM 87502-5469

For technical assistance, please contact Genevieve Morgan at (505) 827-0129. For questions regarding registration requirements, please contact John Offersen at (505) 827-2385.

Other Regulatory Requirements

Composting facilities may also be regulated by other agencies in addition to the Solid Waste Bureau. You should be aware of the requirements of the following statutes, programs and agencies. This list is provided for your convenience and is not intended to be comprehensive.

- **Groundwater discharge**: Notice of Intent to Discharge or Groundwater Discharge Permit. Contact NMED Groundwater Quality Bureau, (505) 827-2900, www.env.nm.gov/gwb/
- **Surface runoff**: National Pollutant Discharge Elimination System, 40 CFR Part 121, includes requirements for Stormwater Pollution Prevention Plan (SWPPP). Contact NMED Surface Water Quality Bureau, (505) 827-0187, www.env.nm.gov/swqb/
- **Biosolids and septage**: 40 CFR Part 503 and 20.6.2 NMAC. For more information, www.epa.gov/biosolids/biosolids-laws-and-regulations
- **Compost sales**: NM Fertilizer Act, 76-11-1 to 76-11-20 NMSA, includes requirements for fertilizer / soil conditioner registration. Contact NM Department of Agriculture, (575) 646-3007, www.nmda.nmsu.edu/fsf/fertilizer-and-soil-conditioners/fertilizersoil-conditioner-registration-and-tonnage/
- **Storage of combustible materials**: International Fire Code, Chapter 28 (2018)

  https://codes.iccsafe.org/content/IFC2018/CHAPTER-28-LUMBER-YARDS-AND-AGRO-INDUSTRIAL-SOLID-BIOMASS-AND-WOODWORKING-FACILITIES

Large Composting Facilities

Composting facilities that accept greater than 25 tons per day (annual average) compostable material or greater than 5 tons per day (annual average) of material that would otherwise become a special waste (for example, sludge, offal, petroleum contaminated soils) must complete an **Advanced Registration**, in compliance with 20.9.3.28 NMAC. Please contact the Solid Waste Bureau for application requirements.

Compost Facility Registration Application

Facility Information	
Facility Name	
Facility Owner	
Mailing Address	
City, State, Zip	
Telephone	
E-mail Address	
Contact person	
Facility Operator	
Mailing Address	
City, State, Zip	
Telephone	
E-mail Address	
Contact person	
Emergency Coordinator	
Telephone (24 hours)	
Facility Physical Address	
City, State	
County	

Legal Description of Property (GPS coordinates)	
Land Use and Zoning of Facility	

Please **check one** of the following boxes to indicate whether this is:

☐	Initial application	*Start-up date:*	
	OR		
☐	Renewal of existing registration	*Registration number:*	
		Expiration date:	

This registration application is appropriate for facilities that meet **all** the following criteria. Please **check each box** to indicate that this facility meets each criterion:

☐ This facility accepts **only** source-separated compostable materials.
"Source separation" means the separation of compostable materials from solid waste at the point of generation by the generator.
If this facility accepts non-source-separated waste, you will need a solid waste facility permit as described in 20.9.3.14 NMAC. Please contact the Solid Waste Bureau for application requirements.

☐ This facility does **not** accept solid waste, except incidental to collection of source-separated compostable materials (that is, contamination).
If this facility accepts solid waste, you will need a solid waste facility permit as described in 20.9.3 NMAC. Please contact the Solid Waste Bureau for application requirements.

☐ This facility accepts **less than** 25 tons per day (annual average) of compostable material including mortality waste.
If more than 25 tons per day, you must address additional requirements. Please contact the Solid Waste Bureau for information.

☐ This facility does not accept or accepts **less than** 5 tons per day (annual average) of material that would become a special waste if not composted (for example, sludge, offal).
If more than 5 tons per day, you must address additional requirements. Please contact the Solid Waste Bureau for information.

Operations Plan

Facility Management

Days / hours of operation	

Please **check the box** to indicate that the following is true:

☐	This facility has a written contingency plan. *(Required)*

Signs

Indicate where signs with the following information are posted at your facility (for example, at the facility entrance). Please add any additional signs you may have in the spaces provided. All signs must be large enough to be easily read and placed in locations where they can be easily read.

Information on sign(s)	Where is the sign with this information posted at your facility (describe location within facility or indicate on site map)?
Required signs	
Site address / location	
Hours of operation	
Emergency telephone numbers	
Delivery instructions	
Fires and scavenging prohibited	
No smoking	

Additional signs	
Source Separated Compostable Materials Only	

Facility Access

1. How is access to the facility controlled? For example, please describe fencing, gates, locks, directional signs, use of gate attendant and/or spotter, and any other means of controlling access.

2. Who typically comes onto the site? Check all that apply.

☐ Municipal haulers ☐ Private haulers ☐ General public	☐ Other (please describe below):

Solid Waste (Contamination)

3. What do you do with any solid waste that may be brought onto the site (for example, as contamination (trash) in the feedstock material)?

4. What size container do you use to hold solid waste (that is, residue, trash, or garbage) until disposal?

5. Who removes the solid waste from the site, and how often?

6. If the compost process does not work or the compost is unusable for any reason, how will you dispose of this waste?

Training

Please **check each box** to indicate that the following are true:

- ☐ A certified operator or representative will be present at all times while the facility is being operated. *(Required)*
- ☐ Photocopies of Compost Facility Operator certificate(s) are attached.
- ☐ Training records are kept on site and available for inspection.

Reporting

Please **check each box** to indicate that the following are true:

- ☐ This facility will complete and submit annual reports to the Solid Waste Bureau within 45 days of the end of each calendar year (that is, due Feb. 14 each year for the previous calendar year). *(Required)*
- ☐ Copies of the annual reports will be kept on site and available for inspection until the post-closure care period has ended. *(Required)*

Equipment

Please list all heavy equipment, tanks, storage containers, monitoring devices, etc. Include a brief description, as appropriate.

Type of equipment	Description	Quantity

Feedstocks

Please **check each box** to indicate that the following are true:

- ☐ This facility accepts only source-separated compostable materials. *(Required)*
- ☐ The feedstock storage areas are indicated on the attached site plan. *(Required)*

Please list all material types generated on site or brought from elsewhere, including liquids, that become feedstocks for the composting operation. List each type separately. Indicate the amount of water anticipated to be used and indicate the source.

Feedstock	Typical quantity	Maximum quantity
Feedstock means the general type of feedstock used in your compost mix. For example: yard trimmings, food scraps, horse manure, etc. **Source** means the type of operation or generator the feedstock comes from. For example: private residents, landscapers, restaurants, municipal collections, dairies, etc. **Description** means a brief description of any notable characteristics of the feedstock. For example: for sludge, indicate whether it has been dewatered and the resulting percent moisture; for food scraps, indicate whether compostable bags, boxes and serveware are present.	**Typical quantity** means the amount of each feedstock the facility normally expects to receive. Approximate amounts are OK. Please indicate units.	**Maximum quantity** means the largest amount of each feedstock the facility would be able to handle. Estimated amounts are OK. Please indicate units.

Feedstock		Typical quantity		Maximum quantity	
Feedstock			☐yd³ ☐tons		☐yd³ ☐tons
Source			per ☐day ☐week ☐month ☐year		per ☐day ☐week ☐month ☐year
Description					
Feedstock			☐yd³ ☐tons		☐yd³ ☐tons
Source			per ☐day ☐week ☐month ☐year		per ☐day ☐week ☐month ☐year
Description					

Feedstock		**Typical quantity**		**Maximum quantity**	
Feedstock			☐yd^3 ☐tons		☐yd^3 ☐tons
Source			per ☐day ☐week ☐month ☐year		per ☐day ☐week ☐month ☐year
Description					
Feedstock			☐yd^3 ☐tons		☐yd^3 ☐tons
Source			per ☐day ☐week ☐month ☐year		per ☐day ☐week ☐month ☐year
Description					
Feedstock			☐yd^3 ☐tons		☐yd^3 ☐tons
Source			per ☐day ☐week ☐month ☐year		per ☐day ☐week ☐month ☐year
Description					
Feedstock	**Water**		gallons per ☐day ☐week ☐month ☐year		
Source					
Data based on:	☐existing operation ☐proposed (estimate)				

For each of the feedstocks listed above, please indicate how it is processed and the maximum amount of time that will elapse between receiving the feedstock and incorporating it into the active composting pile.

Feedstock	How is it processed?	Time	
			☐hrs ☐days ☐weeks
			☐hrs ☐days ☐weeks
			☐hrs ☐days ☐weeks
			☐hrs ☐days ☐weeks
			☐hrs ☐days ☐weeks

Please **check one box** to indicate which of the following is true *(Required)*:

☐	This facility will process food waste, offal, or mortalities on the same working day they are received.
	OR:
☐	This facility does not receive food waste, offal, or mortalities.

7. Please describe the steps you will take to ensure that food waste, offal or mortalities are processed within that working day. (Please write “Not applicable” if the facility does not accept these materials.)

8. How will you prevent feedstocks from becoming a fire hazard?

Composting Methods

Please **check all that apply**:	Additional description:
☐ Windrow ☐ Modified windrow (describe at right) ☐ Static pile (describe at right) ☐ Modified static pile (describe at right) ☐ In-Vessel ☐ Vermicomposting ☐ Other (describe at right)	

Please fill in values in the following table. "**Typical**" means the amount that you anticipate under normal operations. "**Maximum**" means the amount that would be the largest amount the facility would be able to handle.

		Typical		Maximum	
Number of active composting piles			piles		piles
Dimensions of active composting piles	Length		feet		feet
	Width		feet		feet
	Height		feet		feet
Time spent in active composting phase			☐ days ☐ weeks ☐ months		☐ days ☐ weeks ☐ months
Dimensions of curing piles	Length		feet		feet
	Width		feet		feet
	Height		feet		feet

Time spent in curing phase		☐ days ☐ weeks ☐ months		☐ days ☐ weeks ☐ months
Total process time (composting and curing)		☐ days ☐ weeks ☐ months		☐ days ☐ weeks ☐ months

	Minimum	
Minimum distance between piles		feet

Construction

9. What carbon-to-nitrogen (C:N) ratio will you expect to achieve in your initial mix?

10. Indicate in the following table the quantities or proportions of feedstocks used in initial construction of the composting pile to reach this C:N ratio. Please also indicate the amount of water used in initial construction.

Feedstock	Quantity	
		☐yd^3 ☐tons
		☐yd^3 ☐tons
		☐yd^3 ☐tons
		☐yd^3 ☐tons
		☐yd^3 ☐tons
Water		gallons

11. How is sufficient mixing of feedstock materials ensured during pile construction?

Active Composting

12. How often and when is a typical pile turned?

13. Please describe your monitoring and recording procedure.

14. How will you determine if water needs to be added?

15. How is the water added, if necessary?

16. How do you determine when the composting phase is complete?

Curing

17. When and how do you test for stability or maturity?

Disposition of Finished Compost

18. What are your markets for the finished compost?

19. How is the compost removed from the site (for example, delivery, self-load)?

	Typical quantity		
Amount of compost product removed from the site		☐yd^3 ☐tons	per ☐day ☐week ☐month ☐year
Amount of compost product used on site		☐yd^3 ☐tons	per ☐day ☐week ☐month ☐year

Nuisance and Hazard Prevention

Litter

20. How is litter prevented and controlled?

21. If litter becomes a problem despite your usual efforts, what will you do?

Odor

22. How are odors controlled and minimized?

23. If odors become a problem despite your usual efforts, what will you do?

Fire

24. How are fires prevented and extinguished?

25. How will you extinguish a fire in a feedstock pile?

26. How will you extinguish a fire in an active pile?

Noise

27. What are the potential sources of noise at the facility?

28. When and for how long do they occur?

29. How is noise prevented and minimized?

30. If noise becomes a problem despite your usual efforts, what will you do?

Vectors

31. How are vectors (rodents, birds, insects and other animals) controlled?

32. If vectors become a problem despite your usual efforts, what will you do?

Solid Waste

33. How do you prevent unauthorized waste from entering your site?

34. If unauthorized waste is received despite your usual efforts to prevent it, what will you do? (For example, if feedstock is very contaminated with solid waste.)

Feedstock

35. If more feedstock than you typically handle is received, what will you do?

Composting process

36. If the compost fails to reach minimum desired temperatures, what will you do?

37. If the moisture content needs to be adjusted, what will you do?

38. If the porosity needs to be adjusted, what will you do?

Equipment

39. If your primary equipment breaks down, will operations cease?

40. If not, how will they continue?

Additional Information

Please use this space to add any comments or further details necessary to fully describe the proposed operations.

Attachments

The application must be accompanied by at least two maps. Applicants may submit additional maps if needed to clearly show each of the required features. Site plans may be hand-drawn if they clearly show each of the required features.

Area Map

Please attach a map of the area showing the facility location. This map should include enough of the surrounding area to show the following elements. Please indicate the following elements on the attached area map by marking it with the corresponding number.

1 North arrow
2 Scale
3 Parcel size
4 Land use and zoning of surrounding area
5 Set backs
6 Nearest drinking water well (or indicate distance)
7 Nearest arroyo (or indicate distance)
8 Nearest water body (or indicate distance)
9 Nearest occupied residence (or indicate distance)

Site Plan

Please attach a site plan of the composting facility. Please indicate each of the elements below with its corresponding number on the attached site plan.

1 North arrow
2 Scale
3 Name of facility
4 Location of facility
5 Adjacent roads or highways
6 Facility boundaries
7 Facility dimensions
8 Fencing, gates, entrances / exits
9 Internal roads and traffic flow patterns
10 Feedstock storage area (location and dimensions)
11 Active composting area (location and dimensions)
12 Curing area (location and dimensions)
13 Areas accessible to the public (if applicable)
14 Loading and unloading areas
15 Location of buildings, structures, and utilities including overhead power lines
16 Location of water source for composting operation and fire suppression
17 Leachate retention pond (if applicable)
18 Prevailing wind direction

Other Required Documents

Please also attach the following documents:

☐ Groundwater Quality Bureau Notice of Intent to Discharge
or ☐ Letter confirming no discharge permit is needed (if applicable)
or ☐ Groundwater Quality Bureau Permit Number (if applicable):
_____
☐ Compliance plan to meet 40 CFR 503 and 20.6.2 NMAC requirements
or ☐ This facility does not accept biosolids or septage

Acknowledgements

	Initials
I am aware that the owner or operator is required to comply with all of the terms of the approved registration.	
I am aware that the owner or operator must update this registration to reflect any material changes in operations, prior to implementing such changes.	

Signature	Date
Printed name	
Title	Phone

Appendix E

20.6.2 NMAC of the New Mexico Solid Waste Rules

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 2 GROUND AND SURFACE WATER PROTECTION

20.6.2.1 ISSUING AGENCY: Water Quality Control Commission
[12-1-95; 20.6.2.1 NMAC - Rn, 20 NMAC 6.2.I.1000, 1-15-01]

20.6.2.2 SCOPE: All persons subject to the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
[12-1-95; 20.6.2.2 NMAC - Rn, 20 NMAC 6.2.I.1001, 1-15-01]

20.6.2.3 STATUTORY AUTHORITY: Standards and Regulations are adopted by the commission under the authority of the Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17.
[2-18-77, 9-20-82, 12-1-95; 20.6.2.3 NMAC - Rn, 20 NMAC 6.2.I.1002, 1-15-01]

20.6.2.4 DURATION: Permanent.
[12-1-95; 20.6.2.4 NMAC - Rn, 20 NMAC 6.2.I.1003, 1-15-01]

20.6.2.5 EFFECTIVE DATE: December 1, 1995 unless a later date is cited at the end of a section.
[12-1-95, 11-15-96; 20.6.2.5 NMAC - Rn, 20 NMAC 6.2.I.1004, 1-15-01; A, 1-15-01]

20.6.2.6 OBJECTIVE: The objective of this Part is to implement the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
[12-1-95; 20.6.2.6 NMAC - Rn, 20 NMAC 6.2.I.1005, 1-15-01]

20.6.2.7 DEFINITIONS: The following terms, as used in this part shall have the following meanings; terms defined in the Water Quality Act, but not defined in this part, will have the meaning given in the act.

A. Definitions that begin with the letter "A."

(1) "abandoned well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be rehabilitated for its intended purpose or other purposes including monitoring and observation;

(2) "abate" or "abatement" means the investigation, containment, removal or other mitigation of water pollution;

(3) "abatement plan" means a description of any operational, monitoring, contingency and closure requirements and conditions for the prevention, investigation and abatement of water pollution, and includes Stage 1, Stage 2, or Stage 1 and 2 of the abatement plan, as approved by the secretary;

(4) "adjacent properties" means properties that are contiguous to the discharge site or property that would be contiguous to the discharge site but for being separated by a public or private right of way, including roads and highways.

B. Definitions that begin with the letter "B."

(1) "background" means, for purposes of ground water abatement plans only and for no other purposes in this part or any other regulations including but not limited to surface water standards, the amount of ground water contaminants naturally occurring from undisturbed geologic sources or water contaminants which the responsible person establishes are occurring from a source other than the responsible person's facility; this definition shall not prevent the secretary from requiring abatement of commingled plumes of pollution, shall not prevent responsible persons from seeking contribution or other legal or equitable relief from other persons, and shall not preclude the secretary from exercising enforcement authority under any applicable statute, regulation or common law;

C. Definitions that begin with the letter "C."

(1) "casing" means pipe or tubing of appropriate material, diameter and weight used to support the sides of a well hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent fluid from entering or leaving the well other than to or from the injection zone;

(2) "cementing" means the operation whereby a cementing slurry is pumped into a drilled hole and/or forced behind the casing;

(3) "cesspool" means a **"drywell"** that receives untreated domestic liquid waste containing human excreta, and which sometimes has an open bottom and/or perforated sides; a large capacity cesspool means a cesspool that receives liquid waste greater than that regulated by 20.7.3 NMAC;

(4) **"collapse"** means the structural failure of overlying materials caused by removal of underlying materials;

(5) **"commission"** means:

(a) the New Mexico water quality control commission or

(b) the department, when used in connection with any administrative and enforcement activity;

(6) **"confining zone"** means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement from an injection zone;

(7) **"conventional mining"** means the production of minerals from an open pit or underground excavation; underground excavations include mine shafts, workings and air vents, but does not include excavations primarily caused by in situ extraction activities;

D. Definitions that begin with the letter "D."

(1) **"daily composite sample"** means a sample collected over any twenty-four hour period at intervals not to exceed one hour and obtained by combining equal volumes of the effluent collected, or means a sample collected in accordance with federal permit conditions where a permit has been issued under the national pollutant discharge elimination system or for those facilities which include a waste stabilization pond in the treatment process where the retention time is greater than twenty (20) days, means a sample obtained by compositing equal volumes of at least two grab samples collected within a period of not more than twenty-four (24) hours;

(2) **"department", "agency",** or **"division"** means the New Mexico environment department or a constituent agency designated by the commission;

(3) **"discharge permit"** means a discharge plan approved by the department;

(4) **"discharge permit modification"** means a change to the requirements of a discharge permit that result from a change in the location of the discharge, a significant increase in the quantity of the discharge, a significant change in the quality of the discharge; or as required by the secretary;

(5) **"discharge permit renewal"** means the re-issuance of a discharge permit for the same, previously permitted discharge;

(6) **"discharge plan"** means a description of any operational, monitoring , contingency, and closure requirements and conditions for any discharge of effluent or leachate which may move directly or indirectly into ground water;

(7) **"discharge site"** means the entire site where the discharge and associated activities will take place;

(8) **"disposal"** means to abandon, deposit, inter or otherwise discard a fluid as a final action after its use has been achieved;

(9) **"domestic liquid waste"** means human excreta and water-carried waste from typical residential plumbing fixtures and activities, including but not limited to waste from toilets, sinks, bath fixtures, clothes or dishwashing machines and floor drains;

(10) **"domestic liquid waste treatment unit"** means a watertight unit designed, constructed and installed to stabilize only domestic liquid waste and to retain solids contained in such domestic liquid waste, including but not limited to aerobic treatment units and septic tanks;

(11) **"drywell"** means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids;

E. Definitions that begin with the letter "E."

"experimental technology" means a technology which has not been proven feasible under the conditions in which it is being tested;

F. Definitions that begin with the letter "F."

"fluid" means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state;

G. Definitions that begin with the letter "G."

"ground water" means interstitial water which occurs in saturated earth material and which is capable of entering a well in sufficient amounts to be utilized as a water supply;

H. Definitions that begin with the letter "H."

"hazard to public health" exists when water which is used or is reasonably expected to be used in the future as a human drinking water supply exceeds at the time and place of such use, one or more of the standards of Subsection A of 20.6.2.3103 NMAC, or the naturally occurring concentrations, whichever is higher in determining whether a discharge would cause a hazard to public health to exist, the secretary shall investigate and

consider the purification and dilution reasonably expected to occur from the time and place of discharge to the time and place of withdrawal for use as human drinking water;

I. Definitions that begin with the letter "I."

(1) **"improved sinkhole"** means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface;

(2) **"injection"** means the subsurface emplacement of fluids through a well;

(3) **"injection zone"** means a geological formation, group of formations, or part of a formation receiving fluids through a well;

J Definitions that begin with the letter "J." [RESERVED]

K. Definitions that begin with the letter "K." [RESERVED]

L. Definitions that begin with the letter "L." [RESERVED]

M. Definitions that begin with the letter "M."

"motor vehicle waste disposal well" means a well which receives or has received fluids from vehicular repair or maintenance activities;

N. Definitions that begin with the letter "N."

"non-aqueous phase liquid" means an interstitial body of liquid oil, petroleum product, petrochemical, or organic solvent, including an emulsion containing such material;

O. Definitions that begin with the letter "O."

(1) **"operational area"** means a geographic area defined in a project discharge permit where a group of wells or well fields in close proximity comprise a single class III well operation;

(2) **"owner of record"** means an owner of property according to the property records of the tax assessor in the county in which the discharge site is located at the time the application was deemed administratively complete;

P. Definitions that begin with the letter "P."

(1) **"packer"** means a device lowered into a well to produce a fluid-tight seal within the casing;

(2) **"person"** means an individual or any other entity including partnerships, corporation, associations, responsible business or association agents or officers, the state or a political subdivision of the state or any agency, department or instrumentality of the United States and any of its officers, agents or employees;

(3) **"petitioner"** means a person seeking a variance from a regulation of the commission pursuant to Section 74-6-4(H) NMSA 1978;

(4) **"plugging"** means the act or process of stopping the flow of water, oil or gas into or out of a geological formation, group of formations or part of a formation through a borehole or well penetrating these geologic units;

(5) **"project discharge permit"** means a discharge permit which describes the operation of similar class III wells or well fields within one or more individual operational areas;

Q. Definitions that begin with the letter "Q." [RESERVED]

R. Definitions that begin with the letter "R."

(1) **"refuse"** includes food, swill, carrion, slops and all substances from the preparation, cooking and consumption of food and from the handling, storage and sale of food products, the carcasses of animals, junked parts of automobiles and other machinery, paper, paper cartons, tree branches, yard trimmings, discarded furniture, cans, oil, ashes, bottles, and all unwholesome material;

(2) **"responsible person"** means a person who is required to submit an abatement plan or who submits an abatement plan pursuant to this part;

S. Definitions that begin with the letter "S."

(1) **"secretary"** or **"director"** means the secretary of the New Mexico department of environment or the director of a constituent agency designated by the commission;

(2) **"sewer system"** means pipelines, conduits, pumping stations, force mains, or other structures, devices, appurtenances or facilities used for collecting or conducting wastes to an ultimate point for treatment or disposal;

(3) **"sewerage system"** means a system for disposing of wastes, either by surface or underground methods, and includes sewer systems, treatment works, disposal wells and other systems;

(4) **"significant modification of Stage 2 of the abatement plan"** means a change in the abatement technology used excluding design and operational parameters, or re-location of 25 percent or more of the

compliance sampling stations, for any single medium, as designated pursuant to Paragraph (4) of Subsection E of 20.6.2.4106 NMAC;

(5) **"subsurface fluid distribution system"** means an assemblage of perforated pipes, drain tiles, or other mechanisms intended to distribute fluids below the surface of the ground;

(6) **"subsurface water"** means ground water and water in the vadose zone that may become ground water or surface water in the reasonably foreseeable future or may be utilized by vegetation;

T. Definitions that begin with the letter "T."

(1) **"TDS"** means total dissolved solids as determined by the "calculation method" (sum of constituents), by the "residue on evaporation method at 180 degrees" of the "*U.S. geological survey techniques of water resource investigations*," or by conductivity, as the secretary may determine;

(2) **"toxic pollutant"** means any water contaminant or combination of the water contaminants in the list below

(a) acrolein (CAS 107-02-8)

(b) acrylonitrile (CAS 107-13-1)

(c) benzene and alkylbenzenes

(i) benzene (CAS 71-43-2)

(ii) toluene (methylbenzene) (CAS 108-88-3)

(iii) ethylbenzene (CAS 100-41-4)

(iv) xylenes (dimethyl benzene isomers): o-xylene (CAS 95-47-6); m-xylene (CAS 108-38-3); and p-xylene (CAS 106-42-3)

(v) styrene (ethenylbenzene) (CAS 100-42-5)

(d) chlorinated benzenes

(i) monochlorobenzene (CAS 108-90-7)

(ii) 1,2-dichlorobenzene (ortho-dichlorobenzene) (CAS 95-50-1)

(iii) 1,4-dichlorobenzene (para-dichlorobenzene) (CAS 106-46-7)

(iv) 1,2,4-trichlorobenzene (CAS 120-82-1)

(v) 1,2,4,5-tetrachlorobenzene (CAS 95-94-3)

(vi) pentachlorobenzene (CAS 608-93-5)

(vii) hexachlorobenzene (CAS 118-74-1)

(e) chlorinated phenols

(i) 2,4-dichlorophenol (CAS 120-83-2)

(ii) 2,4,5-trichlorophenol (CAS 95-95-4)

(iii) 2,4,6-trichlorophenol (CAS 88-06-2)

(iv) pentachlorophenol (PCP) (CAS 87-86-5)

(f) chloroalkyl ethers

(i) bis (2-chloroethyl) ether (CAS 111-44-4)

(ii) bis (2-chloroisopropyl) ether (CAS 108-60-1)

(iii) bis (chloromethyl) ether (CAS 542-88-1)

(g) 1,2-dichloropropane (propylene dichloride, PDC) (CAS 78-87-5)

(h) dichloropropenes (CAS 542-75-6)

(i) 1,4-dioxane (CAS 123-91-1)

(j) halogenated ethanes

(i) 1,2-dibromoethane (ethylene dibromide, EDB) (CAS 106-93-4)

(ii) 1,1-dichloroethane (1,1-DCA) (CAS 75-34-3)

(iii) 1,2-dichloroethane (ethylene dichloride, EDC) (CAS 107-06-2)

(iv) 1,1,1-trichloroethane (TCA) (CAS 71-55-6)

(v) 1,1,2-trichloroethane (1,1,2-TCA) (CAS 79-00-5)

(vi) 1,1,2,2-tetrachloroethane (CAS 79-34-5)

(vii) hexachloroethane (CAS 67-72-1)

(k) halogenated ethenes

(i) chlorothene (vinyl chloride) (CAS 75-01-4)

(ii) 1,1-dichloroethene (1,1-DCE) (CAS 75-35-4)

(iii) cis-1,2-dichloroethene (cis-1,2-DCE) (CAS 156-59-2)

(iv) trans-1,2-dichloroethene (trans-1,2-DCE) (CAS 156-60-5)

(v) trichloroethene (trichloroethylene, TCE) (CAS 79-01-6)

(vi) tetrachloroethene (perchloroethylene, PCE) (CAS 127-18-4)

(l) halogenated methanes
- **(i)** bromodichloromethane (CAS 75-27-4)
- **(ii)** bromomethane (CAS 74-83-9)
- **(iii)** chloromethane (CAS 74-87-3)
- **(iv)** dichlorodifluoromethane (fluorocarbon-12) (CAS 75-71-8)
- **(v)** dichloromethane (methylene chloride) (CAS 75-09-2)
- **(vi)** tribromomethane (bromoform) (CAS 75-25-2)
- **(vii)** trichloromethane (chloroform) (CAS 67-66-3)
- **(viii)** tetrachloromethane (carbon tetrachloride) (CAS 56-23-5)
- **(ix)** trichlorofluoromethane (fluorocarbon-11) (CAS 75-69-4)

(m) hexachlorobutadiene (CAS 87-68-3)

(n) isophorone (CAS 78-59-1)

(o) methyl tertiary-butyl-ether (MTBE) (CAS 1634-04-4)

(p) nitroaromatics and high explosives (HE)
- **(i)** nitrobenzene (CAS 98-95-3)
- **(ii)** 2,4-dinitrotoluene (2,4-DNT) (CAS 121-14-2)
- **(iii)** 2,6-dinitrotoluene (2,6-DNT) (CAS 606-20-2)
- **(iv)** octrahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) (CAS 2691-41-0)
- **(v)** hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (CAS 121-82-4)
- **(vi)** 2,4,6-trinitrotoluene (TNT) (CAS 118-96-7)
- **(vii)** 2,4-dinitro-o-cresol (CAS 534-52-1)
- **(viii)** dinitrophenols (CAS 51-28-5)

(q) nitrosamines
- **(i)** N-nitrosodiethylamine (CAS 55-18-5)
- **(ii)** N-nitrosodimethylamine (CAS 62-75-9)
- **(iii)** N-nitrosodibutylamine (CAS 924-16-3)
- **(iv)** N-nitrosodiphenylamine (CAS 86-30-6)
- **(v)** N-nitrosopyrrolidine (CAS 930-55-2)

(r) perchlorate (CAS 14797-73-0)

(s) perfluorinated-chemicals (PFCs)
- **(i)** perfluorohexane sulfonic acid (PHHxS) (CAS 355-46-4)
- **(ii)** perfluorooctane sulfonate (PFOS) (CAS 1763-23-1)
- **(iii)** perfluorooctanoic acid (PFOA) (CAS 335-67-1)

(t) pesticides
- **(i)** Aldrin (CAS 309-00-2)
- **(ii)** atrazine (CAS 1912-24-9)
- **(iii)** chlordane (CAS 57-74-9)
- **(iv)** DDT (CAS 50-29-3)
- **(v)** dieldrin (CAS 60-57-1)
- **(vi)** endosulfan (CAS 115-29-7)
- **(vii)** endrin (CAS 72-20-8)
- **(viii)** heptachlor (CAS 76-44-8)
- **(ix)** hexachlorocyclohexane (HCH, lindane): alpha-HCH (CAS 319-84-6); beta-HCH (CAS 319-85-7); gamma-HCH (CAS 58-89-9); and, technical-HCH (CAS 608-73-1)
- **(x)** hexachlorocyclopentadiene (CAS 77-47-4)
- **(xi)** prometon (CAS 1610-18-0)
- **(xii)** toxaphene (CAS 8001-35-2)

(u) phenol (CAS 108-95-2)

(v) phthalate esters
- **(i)** dibutyl phthalate (CAS 84-74-2)
- **(ii)** di-2-ethylhexyl phthalate (DEHP) (CAS 117-81-7)
- **(iii)** diethyl phthalate (DEP) (CAS 84-66-2)
- **(iv)** dimethyl phthalate (DMP) (CAS 131-11-3)

(w) polycyclic compounds
- **(i)** benzidine (CAS 92-87-5)

(ii) dichlorobenzidine (CAS 91-94-1)
(iii) diphenylhydrazine (CAS 122-66-7
(iv) polychlorinated biphenyls (PCBs) (CAS 1336-36-3)

(x) polynuclear aromatic hydrocarbons (PAHs)
(i) anthracne (CAS 120-12-7)
(ii) benzo(a)pyrene (CAS 50-32-8)
(iii) 3,4-benzofluoranthene (CAS 205-99-2)
(iv) benzo(k)fluoranthene (CAS 207-08-9)
(v) fluoranthene (CAS 206-44-0)
(vi) fluorene (CAS 86-73-7)
(vii) naphthalene (CAS 91-20-3)
(viii) 1-methylnaphthalene (CAS 90-12-0)
(ix) 2-methylnaphthalene (CAS 91-57-6)
(x) phenanthrene (CAS 85-01-8)
(xi) pyrene (CAS 129-00-0)

(y) thiolane 1,1 dioxide (sulfolane) (CAS 126-33-0)

U. Definitions that begin with the letter "U." [RESERVED]

V. Definitions that begin with the letter "V."

(1) **"vadose zone"** means earth material below the land surface and above ground water, or in between bodies of ground water

W. Definitions that begin with the letter "W."

(1) **"wastes"** means sewage, industrial wastes, or any other liquid, gaseous or solid substance which will pollute any waters of the state;

(2) **"water"** means all water including water situated wholly or partly within or bordering upon the state, whether surface or subsurface, public or private, except private waters that do not combine with other surface or subsurface water;

(3) **"water contaminant"** means any substance that could alter if discharged or spilled the physical, chemical, biological or radiological qualities of water; "water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954;

(4) **"watercourse"** means any river, creek, arroyo, canyon, draw, or wash, or any other channel having definite banks and beds with visible evidence of the occasional flow of water;

(5) **"water pollution"** means introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property;

(6) **"well"** means: (1) A bored, drilled, or driven shaft; (2) A dug hole whose depth is greater than the largest surface dimension; (3) An improved sinkhole; or (4) A subsurface fluid distribution system;

(7) **"well stimulation"** means a process used to clean the well, enlarge channels, and increase pore space in the interval to be injected, thus making it possible for fluids to move more readily into the injection zone; well stimulation includes, but is not limited to, (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

X. Definitions that begin with the letter "X." [RESERVED]

Y. Definitions that begin with the letter "Y." [RESERVED]

Z. Definitions that begin with the letter "Z." [RESERVED]

[1-4-68, 4-20-68, 11-27-70, 9-3-72, 4-11-74, 8-13-76, 2-18-77, 6-26-80, 7-2-81, 1-29-82, 9-20-82, 11-17-84, 3-3-86, 8-17-91, 8-19-93, 12-1-95; 20.6.2.7 NMAC - Rn, 20 NMAC 6.2.I.1101, 1-15-01; A, 1-15-01; A, 12-1-01; A, 9-15-02; A, 9-26-04; A, 7-16-06; A, 8-1-14; A, 12-21-18]

20.6.2.8 **SEVERABILITY:** If any section, subsection, individual standard or application of these standards or regulations is held invalid, the remainder shall not be affected.
[2-18-77, 12-1-95; 20.6.2.8 NMAC - Rn, 20 NMAC 6.2.I.1007, 1-15-01]

20.6.2.9 **DOCUMENTS:** Documents referenced in the part may be viewed at the New Mexico environment department, ground water quality bureau, Harold Runnels building, 1190 St. Francis Drive, Santa Fe, New Mexico 87503.
[12-1-95; 20.6.2.9 NMAC - Rn, 20 NMAC 6.2.I.1006, 1-15-01; A, 12-1-01]

20.6.2.10 LIMITATIONS: These regulations do not apply to the following:

A. Any activity or condition subject to the authority of the environmental improvement board pursuant to the Hazardous Waste Act, NMSA 1978, Sections 74-4-1 to -14, the Ground Water Protection Act, NMSA 1978, Sections 74-6B-1 to -14, or the Solid Waste Act, NMSA 1978, Sections 74-9-1 to -25, except to abate water pollution or to control the disposal or use of septage and sludge; or

B. Any activity or condition subject to the authority of the oil conservation commission pursuant to the provisions of the Oil and Gas Act, NMSA 1978, Section 70-2-12 and other laws conferring power on the oil conservation commission and the oil conservation division of the energy, minerals and natural resources department to prevent or abate water pollution.

[N, 12-21-18]

20.6.2.11[~~0~~] - 20.6.2.1199: [RESERVED]

[12-1-95; 20.6.2.10 - 20.6.2.1199 NMAC - Rn, 20 NMAC 6.2.I.1008-1100, 1102-1199, 1-15-01]

20.6.2.1200 PROCEDURES:

[12-1-95; 20.6.2.1200 NMAC - Rn, 20 NMAC 6.2.I.1200, 1-15-01]

20.6.2.1201 NOTICE OF INTENT TO DISCHARGE:

A. Except for the notices specified in paragraphs (1) and (2) of this subsection, any person intending to make a new water contaminant discharge or to alter the character or location of an existing water contaminant discharge, unless the discharge is being made or will be made into a community sewer system or subject to the Liquid Waste Disposal Regulations adopted by the New Mexico environmental improvement board, shall file a notice with the ground water quality bureau of the department for discharges that may affect ground water, and/ or the surface water quality bureau of the department for discharges that may affect surface water.

(1) Notices regarding discharges from facilities for the production, refinement, pipeline transmission of oil and gas or products thereof, the oil field service industry as related to oil and gas production activities, oil field brine production wells, and carbon dioxide facilities shall be filed with the oil conservation division of the energy, minerals and natural resources department,

(2) Notices regarding discharges related to geothermal resources, as defined in Section 71-9-3 of the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016) shall be filed with the energy conservation and management division of the energy, minerals and natural resources department.

B. Except for the notices specified in paragraphs (1) and (2) of this subsection any person intending to inject fluids into a well, including a subsurface distribution system, unless the injection is being made subject to the Liquid Waste Disposal Regulations adopted by the New Mexico environmental improvement board, shall file a notice with the ground water quality bureau of the department.

(1) Notices regarding injections to wells associated with oil and gas facilities as described in Paragraph (1) of Subsection A of 20.6.2.1201 NMAC shall be filed with the oil conservation division.

(2) Notices regarding injections to wells associated with exploration, development or production of geothermal resources, as described in Paragraph (2) of Subsection A of 20.6.2.1201 NMAC, shall be filed with the energy conservation and management division of the energy, minerals and natural resources department pursuant to the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016).

C. Notices shall state:

(1) the name of the person making the discharge;

(2) the address of the person making the discharge;

(3) the location of the discharge;

(4) an estimate of the concentration of water contaminants in the discharge; and

(5) the quantity of the discharge.

D. Based on information provided in the notice of intent, the department will notify the person proposing the discharge as to which of the following apply:

(1) a discharge permit is required;

(2) a discharge permit is not required;

(3) the proposed injection well will be added to the department's underground injection well inventory;

(4) the proposed injection activity or injection well is prohibited pursuant to 20.6.2.5004 NMAC.

[1-4-68, 9-5-69, 9-3-72, 2-17-74, 2-20-81, 12-1-95; 20.6.2.1201 NMAC - Rn, 20 NMAC 6.2.I.1201, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.1202 FILING OF PLANS AND SPECIFICATIONS--SEWERAGE SYSTEMS:

A. Any person proposing to construct a sewerage system or proposing to modify any sewerage system in a manner that will change substantially the quantity or quality of the discharge from the system shall file plans and specifications of the construction or modification with ground water quality bureau of the department for discharges that may affect ground water, and/or the surface water quality bureau of the department for discharges that may affect surface water. Modifications having a minor effect on the character of the discharge from sewerage systems shall be reported as of January 1 and June 30 of each year to the ground water quality bureau of the department for discharges that may affect ground water, or the surface water quality bureau of the department for discharges that may affect surface water.

B. Plans, specifications and reports required by this section, if related to facilities for the production, refinement and pipeline transmission of oil and gas, or products thereof, shall be filed instead with the oil conservation division.

C. Plans and specifications required to be filed under this section must be filed prior to the commencement of construction.

[1-4-68, 9-3-72, 2-20-81, 12-1-95; 20.6.2.1202 NMAC - Rn, 20 NMAC 6.2.I.1202, 1-15-01; A, 12-1-01]

20.6.2.1203 NOTIFICATION OF DISCHARGE-REMOVAL:

A. With respect to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required:

(1) As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the chief of the ground water quality bureau of the department, or the appropriate counterpart in any constituent agency delegated responsibility for enforcement of these rules as to any facility subject to such delegation. To the best of that person's knowledge, the following items of information shall be provided:

(a) the name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;

(b) the name and address of the facility;

(c) the date, time, location, and duration of the discharge;

(d) the source and cause of discharge;

(e) a description of the discharge, including its chemical composition;

(f) the estimated volume of the discharge; and

(g) any actions taken to mitigate immediate damage from the discharge.

(2) When in doubt as to which agency to notify, the person in charge of the facility shall notify the chief of the ground water quality bureau of the department. If that department does not have authority pursuant to commission delegation, the department shall notify the appropriate constituent agency.

(3) Within one week after the discharger has learned of the discharge, the facility owner and/or operator shall send written notification to the same department official, verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

(4) The oral and written notification and reporting requirements contained in this Subsection A are not intended to be duplicative of discharge notification and reporting requirements promulgated by the oil conservation commission (OCC) or by the oil conservation division (OCD); therefore, any facility which is subject to OCC or OCD discharge notification and reporting requirements need not additionally comply with the notification and reporting requirements herein.

(5) As soon as possible after learning of such a discharge, the owner/operator of the facility shall take such corrective actions as are necessary or appropriate to contain and remove or mitigate the damage caused by the discharge.

(6) If it is possible to do so without unduly delaying needed corrective actions, the facility owner/operator shall endeavor to contact and consult with the chief of the ground water quality bureau of the department or appropriate counterpart in a delegated agency, in an effort to determine the department's views as to what further corrective actions may be necessary or appropriate to the discharge in question. In any event, no later

than fifteen (15) days after the discharger learns of the discharge, the facility owner/operator shall send to said Bureau Chief a written report describing any corrective actions taken and/or to be taken relative to the discharge. Upon a written request and for good cause shown, the bureau chief may extend the time limit beyond fifteen (15) days.

(7) The bureau chief shall approve or disapprove in writing the foregoing corrective action report within thirty (30) days of its receipt by the department. In the event that the report is not satisfactory to the department, the bureau chief shall specify in writing to the facility owner/operator any shortcomings in the report or in the corrective actions already taken or proposed to be taken relative to the discharge, and shall give the facility owner/operator a reasonable and clearly specified time within which to submit a modified corrective action report. The bureau chief shall approve or disapprove in writing the modified corrective action report within fifteen (15) days of its receipt by the department.

(8) In the event that the modified corrective action report also is unsatisfactory to the department, the facility owner/operator has five (5) days from the notification by the bureau chief that it is unsatisfactory to appeal to the department secretary. The department secretary shall approve or disapprove the modified corrective action report within five (5) days of receipt of the appeal from the bureau chief's decision. In the absence of either corrective action consistent with the approved corrective action report or with the decision of the secretary concerning the shortcomings of the modified corrective action report, the department may take whatever enforcement or legal action it deems necessary or appropriate.

(9) If the secretary determines that the discharge causes or may with reasonable probability cause water pollution in excess of the standards and requirements of Section 20.6.2.4103 NMAC, and the water pollution will not be abated within one hundred and eighty (180) days after notice is required to be given pursuant to Paragraph (1) of Subsection A of Section 20.6.2.1203 NMAC, the secretary may notify the facility owner/operator that he is a responsible person and that an abatement plan may be required pursuant to Section 20.6.2.4104 and Subsection A of Section 20.6.2.4106 NMAC.

B. Exempt from the requirements of this section are continuous or periodic discharges which are made:

(1) in conformance with regulations of the commission and rules, regulations or orders of other state or federal agencies; or

(2) in violation of regulations of the commission, but pursuant to an assurance of discontinuance or schedule of compliance approved by the commission or one of its duly authorized constituent agencies.

C. As used in this section and in Sections 20.6.2.4100 through 20.6.2.4115 NMAC, but not in other sections of this part:

(1) “discharge” means spilling, leaking, pumping, pouring, emitting, emptying, or dumping into water or in a location and manner where there is a reasonable probability that the discharged substance will reach surface or subsurface water;

(2) “facility” means any structure, installation, operation, storage tank, transmission line, motor vehicle, rolling stock, or activity of any kind, whether stationary or mobile;

(3) “oil” means oil of any kind or in any form including petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes;

(4) “operator” means the person or persons responsible for the overall operations of a facility; and

(5) “owner’ means the person or persons who own a facility, or part of a facility.

D. Notification of discharge received pursuant to this part or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except for perjury or for giving a false statement.

E. Any person who has any information relating to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, is urged to notify the chief of the ground water quality bureau of the department. Upon such notification, the secretary may require an owner/operator or a responsible person to perform corrective actions pursuant to Paragraphs (5) and (9) of Subsection A of Section 20.6.2.1203 NMAC.

[2-17-74, 2-20-81, 12-24-87, 12-1-95; 20.6.2.1203 NMAC - Rn, 20 NMAC 6.2.I.1203, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.1204 - 20.6.2.1209 [RESERVED]

[12-1-95; 20.6.2.1204 - 20.6.2.1209 NMAC - Rn, 20 NMAC 6.2.I.1204-1209, 1-15-01]

20.6.2.1210 VARIANCE PETITIONS:

A. Any person seeking a variance pursuant to Section 74-6-4(H) NMSA 1978, shall do so by filing a written petition with the commission. The petitioner may submit with his petition any relevant documents or material which the petitioner believes would support his petition. Petitions shall:

(1) state the petitioner's name and address;

(2) state the date of the petition;

(3) describe the facility or activity for which the variance is sought;

(4) state the address or description of the property upon which the facility is located;

(5) describe the water body or watercourse affected by the discharge for which the variance is sought and provide information on uses of water that may be affected;

(6) identify the regulation of the commission from which the variance is sought;

(7) state in detail the extent to which the petitioner wishes to vary from the regulation;

(8) state why the petitioner believes that compliance with the regulation will impose an unreasonable burden upon his activity; and

(9) state in detail how any water pollution above standards will be abated; and

(10) state the period of time for which the variance is desired including all reasons, data, reports and any other information demonstrating that such time period is justified and reasonable.

B. The variance petition shall be reviewed in accordance with the adjudicatory procedures of 20 NMAC 1.3.

C. The commission may grant the requested variance, in whole or in part, may grant the variance subject to conditions, or may deny the variance. If the variance is granted in whole or in part, or subject to conditions, the commission shall specify the length of time that the variance shall be in place.

D. For variances associated with a discharge permit or abatement plan, the existence and nature of the variance shall be disclosed in all public notices applicable to the discharge permit or abatement plan.

E. For variances granted for a period in excess of five years, the petitioner shall provide to the department for review a variance compliance report at five year intervals to demonstrate that the conditions of the variance are being met, including notification of any changed circumstances or newly-discovered facts that are material to the variance. At such time as the department determines the report is administratively complete, the department shall post the report on its website, and mail or e-mail notice of its availability to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications, and any person who participated in the variance process. If such conditions are not being met, or there is evidence indicating changed circumstances or newly-discovered facts or conditions that were unknown at the time the variance was initially granted, any person, including the department, may request a hearing before the commission to revoke, modify, or otherwise reconsider the variance within 90 days of the issuance of the notice of availability of the report.

F. An order of the commission is final and bars the petitioner from petitioning for the same variance without special permission from the commission. The commission may consider, among other things, the development of new information and techniques to be sufficient justification for a second petition. If the petitioner, or his authorized representative, fails to appear at the public hearing on the variance petition, the commission shall proceed with the hearing on the basis of the petition. A variance may not be extended or renewed unless a new petition is filed and processed in accordance with the procedures established by this section.

[7-19-68, 11-27-70, 9-3-72, 2-20-81, 11-15-96; 20.6.2.1210 NMAC - Rn, 20 NMAC 6.2.I.1210, 1-15-01; A, 12-21-18]

20.6.2.1211 - 20.6.2.1219: [RESERVED]

[12-1-95; 20.6.2.1211 - 20.6.2.1219 NMAC - Rn, 20 NMAC 6.2.I.1211-1219, 1-15-01]

20.6.2.1220 PENALTIES ENFORCEMENT, COMPLIANCE ORDERS, PENALTIES, ASSURANCE OF DISCONTINUANCE.: Failure to comply with the Water Quality Act, or any regulation or standard promulgated pursuant to the Water Quality Act is a prohibited act. If the secretary determines that a person has violated or is violating a requirement of the Water Quality Act or any regulation promulgated thereunder or is exceeding any water quality standard or ground water standard contained in commission regulations, or is not complying with a condition or provision of an approved or modified abatement plan, discharge plan, or permit issued pursuant to the Water Quality Act, the secretary may issue a compliance order, assess a penalty, commence a

civil action in district court, or accept an assurance of discontinuance in accordance with NMSA 1978, Section 74-6-10 of the Water Quality Act.
[12-1-95; 20.6.2.1220 NMAC - Rn, 20 NMAC 6.2.I.1220, 1-15-01]

20.6.2.1221 - 20.6.2.1999: [RESERVED]
[12-1-95; 20.6.2.1221 - 20.6.2.1999 NMAC - Rn, 20 NMAC 6.2.I.1221-2099, 1-15-01]

20.6.2.2000 SURFACE WATER PROTECTION:
[12-1-95; 20.6.2.2000 NMAC - Rn, 20 NMAC 6.2.II, 1-15-01]

20.6.2.2001 PROCEDURES FOR CERTIFICATION OF FEDERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS:

A. This section applies to the state certification of draft national pollutant discharge elimination system (NPDES) permits under Section 401 of the federal Clean Water Act. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit, the department will either: (1) certify that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. Pursuant to federal regulations at 40 CFR 124.10(c), the U.S. environmental protection agency provides notice of draft NPDES permits to the applicant (except for general permits); various local, state, federal, tribal and pueblo government agencies; and other interested parties, and it allows at least 30 days of public comment. To the extent practicable, the department will provide public notice that the department is reviewing a draft NPDES permit for the purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act jointly with the notice provided by the U.S. environmental protection agency. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft NPDES permit for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

(1) for general permits by:

(a) posting notice on the department's website;

(b) publishing notice in at least one newspaper of general circulation;

(c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and

(d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or

(2) for individual permits by:

(a) posting notice on the department's website;

(b) publishing notice in a newspaper of general circulation in the location of the discharge;

(c) mailing notice to the applicant;

(d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and

(e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one permit or permit action. The notice provided under Subsections C and D of 20.6.2.2001 NMAC shall include:

(1) for general permits:

(a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;

(b) a brief description of the activities that produce the discharge; and

(c) a description of the geographic area to be covered by the permit; or

(2) for individual permits:

(a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;

(b) the name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

(c) a brief description of the activities that produce the discharge; and

(d) a general description of the location of the discharge and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2001 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2001 NMAC. The department shall consider all pertinent comments.

G. Following the public comment period provided under Subsection F of 20.6.2.2001 NMAC, the department shall issue a final permit certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 45 days from the date a request to grant, deny or waive certification is received by the department, unless the department in consultation with the U.S. environmental protection agency regional administrator finds that unusual circumstances require a longer time. The department shall send a copy of the final permit certification or denial to the U.S. environmental protection agency, the applicant (except for general permits), and those members of the public who submitted comments to the department.

(1) The permit certification shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the NPDES permit number;

(b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;

(d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity;

(e) identification of any condition more stringent than that in the draft permit required to assure compliance with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law citing the Clean Water Act or state law upon which the condition is based;

(f) a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of state law, including water quality standards; and

(g) such other information as the department may determine to be appropriate.

(2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny permit certification. Denial of permit certification shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the NPDES permit number;

(b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement of denial including the reasons for the denial; and

(d) such other information as the department may determine to be appropriate.

H. Any person who is adversely affected by the certification or denial of a specific permit may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the department issues the final permit certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2001 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments,

or other information on the permit certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

I. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.

[20.6.2.2001 NMAC - N, 5-18-11]

20.6.2.2002 PROCEDURES FOR CERTIFICATION OF FEDERAL PERMITS FOR DISCHARGE OF DREDGED OR FILL MATERIAL:

A. This section applies to the state certification of draft permits or permit applications for the discharge of dredged or fill material under Section 401 of the federal Clean Water Act. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit or permit application, the department will either: (1) certify that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. Pursuant to federal regulations at 33 CFR 325.3 and 33 CFR 330.5, the U.S. army corps of engineers provides notice of draft dredged or fill permits and permit applications to the applicant (except for general or nationwide permits); various local, state, federal, tribal and pueblo government agencies; and other interested parties, and it allows at least 15 days of public comment. To the extent practicable, the department will provide public notice that the department is reviewing a draft permit or permit application for the purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act jointly with the notice provided by the U.S. army corps of engineers. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft dredged or fill permit or permit application for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

(1) for general permits by:

(a) posting notice on the department's website;

(b) publishing notice in at least one newspaper of general circulation;

(c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and

(d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or

(2) for individual permit applications by:

(a) posting notice on the department's website;

(b) publishing notice in a newspaper of general circulation in the location of the discharge;

(c) mailing notice to the applicant;

(d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and

(e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one permit or permit action. The notice provided under Subsections C and D of 20.6.2.2002 NMAC shall include:

(1) for general permits:

(a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;

(b) a brief description of the activities that produce the discharge; and

(c) a description of the geographic area to be covered by the permit; or

(2) for individual permit applications:

(a) a statement that the department will accept written comments on the permit application during the comment period including the address where comments may be submitted;

(b) the name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

(c) a brief description of the activities that produce the discharge; and

(d) a general description of the location of the discharge and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2002 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2002 NMAC. The department shall consider all pertinent comments.

G. The public notice provisions in Subsection C and D of Section 20.6.2.2002 NMAC and the public comment provisions in Subsection F of Section 20.6.2.2002 NMAC shall not apply to permits issued using emergency procedures under 33 CFR 325.2(e)(4). However, even in emergency situations, reasonable efforts shall be made to receive comments from interested state and local agencies and the affected public.

H. Following the public comment period provided under Subsection F of 20.6.2.2002 NMAC, the department shall issue a final permit certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 60 days from the date a request to grant, deny or waive certification is received by the department, unless the department in consultation with the U.S. army corps of engineers district engineer finds that unusual circumstances require a longer time. The department shall send a copy of the final permit certification or denial to the army corps of engineers, the applicant (except for general or nationwide permits), and those members of the public who submitted comments to the department.

(1) The permit certification or denial shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the permit number;

(b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;

(d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity; and

(e) such other information as the department may determine to be appropriate.

(2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny permit certification. Denial of permit certification shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the permit number;

(b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement of denial including the reasons for the denial; and

(d) such other information as the department may determine to be appropriate.

I. Any person who is adversely affected by the certification or denial of a specific permit may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the department issues the final permit certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location

of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2002 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information on the permit certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

J. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.

[20.6.2.2002 NMAC - N, 5-18-11]

20.6.2.2003 PROCEDURES FOR CERTIFICATION OF OTHER FEDERAL PERMITS:

A. This section applies to the state certification of draft federal permits, permit applications or licenses under Section 401 of the federal Clean Water Act, except for NPDES permits or permits for the discharge of dredged or fill material. For example, this section applies to certification of permits or licenses issued by the federal energy regulatory commission (FERC) and to permits or licenses issued under the Rivers and Harbors Act of 1899. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit, permit application or license, the department will either: (1) certify that the activity will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the activity will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. To the extent practicable, the department will provide public notice that the department is reviewing a draft federal permit, permit application or license for the purpose of preparing a state certification or denial jointly with the notice provided by the federal permitting or licensing agency. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft federal permit, permit application or license for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

(1) for general permits or licenses by:

(a) posting notice on the department's website;

(b) publishing notice in at least one newspaper of general circulation;

(c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and

(d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or

(2) for individual permits or licenses by:

(a) posting notice on the department's website;

(b) publishing notice in a newspaper of general circulation in the location of the permitted or licensed activity;

(c) mailing notice to the applicant;

(d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and

(e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one license, permit or permit action. The notice provided under Subsections C and D of 20.6.2.2003 NMAC shall include:

(1) for general permits or licenses:

(a) a statement that the department will accept written comments on the permit or license during the comment period including the address where comments may be submitted; and

(b) a brief description of the permitted or licensed activities; and

(c) a description of the geographic area to be covered by the permit; or

(2) for individual permits or licenses:

(a) a statement that the department will accept written comments on the permit or license during the comment period including the address where comments may be submitted;

(b) the name and address of the licensee, permittee or permit or license applicant and, if different, of the facility or activity regulated by the permit or license;

(c) a brief description of the permitted or licensed activities; and

(d) a general description of the location of the permitted or licensed activities and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2003 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2003 NMAC. The department shall consider all pertinent comments.

G. Following the public comment period provided under Subsection F of 20.6.2.2003 NMAC, the department shall issue a final certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 60 days from the date a request to grant or deny certification is received by the department, unless the department in consultation with the federal permitting or licensing agency finds that unusual circumstances require a longer time. The department shall send a copy of the final certification or denial to the federal permitting or licensing agency, the applicant (except for general permits), and those members of the public who submitted comments to the department.

(1) The certification or denial shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the permit or license number;

(b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;

(d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity;

(e) identification of any condition more stringent than that in the draft permit or license required to assure compliance with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law citing the Clean Water Act or state law upon which the condition is based;

(f) a statement of the extent to which each condition of the draft permit or license can be made less stringent without violating the requirements of state law, including water quality standards; and

(g) Such other information as the department may determine to be appropriate.

(2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny certification. Denial of certification shall be in writing and shall include:

(a) the name of the applicant (except for general permits) and the permit or license number;

(b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;

(c) a statement of denial including the reasons for the denial; and

(d) such other information as the department may determine to be appropriate.

H. Any person who is adversely affected by the certification or denial of a specific permit or license may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the

department issues the final certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2003 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information on the certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

I. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.

[20.6.2.2003 NMAC - N, 5-18-11]

20.6.2.2004 - 20.6.2.2099: [RESERVED]

[12-1-95; 20.6.2.2001 - 20.6.2.2099 NMAC - Rn, 20 NMAC 6.2.I.1221-2099, 1-15-01; A, 5-18-11]

20.6.2.2100 APPLICABILITY: The requirements of Section 20.6.2.2101 and 20.6.2.2102 NMAC shall not apply to any discharge which is subject to a permit under the National Pollutant Discharge Elimination System of P. L. 92-500; provided that any discharger who is given written notice of National Pollutant Discharge Elimination System permit violation from the Administrator of the Environmental Protection Agency and who has not corrected the violation within thirty days of receipt of said notice shall be subject to Section 20.6.2.2101 and 20.6.2.2102 NMAC until in compliance with the National Pollution Discharge Elimination System permit conditions; provided further that nothing in this Part shall be construed as a deterrent to action under Section 74-6-11 NMSA, 1978.

[8-13-76; 20.6.2.2100 NMAC - Rn, 20 NMAC 6.2.II.2100, 1-15-01]

20.6.2.2101 GENERAL REQUIREMENTS:

A. Except as otherwise provided in Sections 20.6.2.2000 through 20.6.2.2201 NMAC, no person shall cause or allow effluent to discharge to a watercourse if the effluent as indicated by:

(1) any two consecutive daily composite samples;

(2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);

(3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or

(4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

(a) Bio-chemical Oxygen Demand (BOD) Less than 30 mg/l

(b) Chemical Oxygen Demand (COD) Less than 125 mg/l

(c) Settleable Solids Less than 0.5 mg/l

(d) Fecal Coliform Bacteria Less than 500 organisms per 100 ml

(e) pH Between 6.6 and 8.6

B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

D. Samples shall be examined in accordance with the most current edition of Standard Methods for the Examination of Water and Wastewater published by the American Public Health Association or the most current edition of Methods for Chemical Analysis of Water and Wastes published by the Environmental Protection Agency, where applicable.

[4-20-68, 3-14-71, 10-8-71, 8-13-76, 2-20-81, 12-1-95; 20.6.2.2101 NMAC - Rn, 20 NMAC 6.2.II.2101, 1-15-01]

20.6.2.2102 RIO GRANDE BASIN--COMMUNITY SEWERAGE SYSTEMS:

A. No person shall cause or allow effluent from a community sewerage system to discharge to a watercourse in the Rio Grande Basin between the headwaters of Elephant Butte Reservoir and Angostura Diversion Dam as described in Subsection E of this Section if the effluent, as indicated by:

(1) any two consecutive daily composite samples;

(2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);

(3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or

(4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

(a)	Bio-chemical Oxygen Demand (BOD)	Less than 30 mg/l
(b)	Chemical Oxygen Demand (COD)	Less than 80 mg/l
(c)	Settleable Solids	Less than 0.1 mg/l
(d)	Fecal Coliform Bacteria	Less than 500 organisms per 100 ml
(e)	pH	Between 6.6 and 8.6

B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

D. Samples shall be examined in accordance with the most current edition of Standard Methods for the Analysis of Water and Wastewater published by the American Public Health Association or the most current edition of Methods for Chemical Analysis of Water and Wastes published by the Environmental Protection Agency, where applicable.

E. The following is a description of the Rio Grande Basin from the headwaters of Elephant Butte Reservoir to Angostura Diversion Dam as used in this Section. Begin at San Marcial USGS gauging station, which is the headwaters of Elephant Butte Reservoir Irrigation Project, thence northwest to U.S. Highway 60, nine miles + west of Magdalena; thence west along the northeast edge of the San Agustin Plains closed basin; thence north along the east side of the north plains closed basin to the Continental Divide; thence northly along the Continental Divide to the community of Regina on State Highway 96; thence southeasterly along the crest of the San Pedro Mountains to Cerro Toledo Peak; thence southwesterly along the Sierra de Los Valles ridge and the Borrego Mesa to Bodega Butte; thence southerly to Angostura Diversion Dam which is the upper reach of the Rio Grande in this basin; thence southeast to the crest and the crest of the Manzano Mountains and the Los Pinos Mountains; thence southerly along the divide that contributes to the Rio Grande to San Marcial gauging station to the point and place of beginning; excluding all waters upstream of Jemez Pueblo which flow into the Jemez River drainage and the Bluewater Lake. Counties included in the basin are:

(1) north portion of Socorro County;

(2) northeast corner of Catron County;

(3) east portion of Valencia County;

(4) west portion of Bernalillo County;

(5) east portion of McKinley County; and

(6) most of Sandoval County.

[3-14-71, 9-3-72, 8-13-76, 2-20-81, 12-1-95; 20.6.2.2102 NMAC - Rn, 20 NMAC 6.2.II.2102, 1-15-01]

20.6.2.2103 - 20.6.2.2199: [RESERVED]

[12-1-95; 20.6.2.2103 - 20.6.2.2199 NMAC - Rn, 20 NMAC 6.2.II.2103-2199, 1-15-01]

20.6.2.2200 WATERCOURSE PROTECTION:

[12-1-95; 20.6.2.2200 NMAC - Rn, 20 NMAC 6.2.II.2200, 1-15-01]

20.6.2.2201 DISPOSAL OF REFUSE: No person shall dispose of any refuse in a natural watercourse or in a location and manner where there is a reasonable probability that the refuse will be moved into a natural watercourse by leaching or otherwise. Solids diverted from the stream and returned thereto are not subject to abatement under this Section.

[4-20-68, 9-3-72; 20.6.2.2201 NMAC - Rn, 20 NMAC 6.2.II.2201, 1-15-01]

20.6.2.2202 - 20.6.2.2999: [RESERVED]
[12-1-95; 20.6.2.2202 - 20.6.2.2999 NMAC - Rn, 20 NMAC 6.2.II.2202-3100, 1-15-01]

20.6.2.3000 PERMITTING AND GROUND WATER STANDARDS:
[12-1-95; 20.6.2.3000 NMAC - Rn, 20 NMAC 6.2.III, 1-15-01]

20.6.2.3001 - 20.6.2.3100: [RESERVED]
[12-1-95; 20.6.2.3001 - 20.6.2.3100 NMAC - Rn, 20 NMAC 6.2.II.2202-3100, 1-15-01]

20.6.2.3101 PURPOSE:

A. The purpose of Sections 20.6.2.3000 through 20.6.2.3114 NMAC controlling discharges onto or below the surface of the ground is to protect all ground water of the state of New Mexico which has an existing concentration of 10,000 mg/l or less TDS, for present and potential future use as domestic and agricultural water supply, and to protect those segments of surface waters which are gaining because of ground water inflow, for uses designated in the New Mexico Water Quality Standards. Sections 20.6.2.3000 through 20.6.2.3114 NMAC are written so that in general:

(1) if the existing concentration of any water contaminant in ground water is in conformance with the standard of 20.6.2.3103 NMAC, degradation of the ground water up to the limit of the standard will be allowed; and

(2) if the existing concentration of any water contaminant in ground water exceeds the standard of Section 20.6.2.3103 NMAC, no degradation of the ground water beyond the existing concentration will be allowed.

B. Ground water standards are numbers that represent the pH range and maximum concentrations of water contaminants in the ground water which still allow for the present and future use of ground water resources.

C. The standards are not intended as maximum ranges and concentrations for use, and nothing herein contained shall be construed as limiting the use of waters containing higher ranges and concentrations.
[2-18-77; 20.6.2.3101 NMAC - Rn, 20 NMAC 6.2.III.3101, 1-15-01]

20.6.2.3102: [RESERVED]
[12-1-95; 20.6.2.3102 NMAC - Rn, 20 NMAC 6.2.III.3102, 1-15-01]

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection E of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "*methods for chemical analysis of water and waste of the U.S. environmental protection agency*," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total nonfiltered concentrations of the contaminants. If the secretary determines that there is a reasonable probability of facilitated contaminant transport by colloids or organic macromolecules, or that proper filtration procedures are not being followed, the discharger may be required to test for both filtered and nonfiltered portions of inorganic contaminants to develop appropriate protocol for monitoring contaminants that have the potential to migrate through the aquifer.

A. Human Health Standards

(1) Numerical Standards

(a) Antimony (Sb) (CAS 7440-36-0)……..……..0.006 mg/1

(b) Arsenic (As) (CAS 7440-38-2)……..……..……0.01 mg/l

(c) Barium (Ba) (CAS 7440-39-3)……...……..…...2 mg/l

(d) Beryllium (be) (CAS 7440-41-7)……0.004 mg/l

(e) Cadmium (Cd) (CAS 7440-43-9)……..…...0.005 mg/l

(f) Chromium (Cr) (CAS 7440-47-3)…… …….0.05 mg/l

(g) Cyanide (CN) (CAS 57-12-5)……..0.2 mg/l
(h) Fluoride (F) (CAS 16984-48-8)…….1.6 mg/l
(i) Lead (Pb) (CAS 7439-92-1)…….0.015 mg/l
(j) Total Mercury (Hg) (CAS 7439-97-6)……...0.002 mg/l
(k) Nitrate (NO_3 as N) (CAS 14797-55-8)……...10.0 mg/l
(l) Nitrite (NO_2 as N) (CAS 10102-44-0)…….1.0 mg/l
(m) Selenium (Se) (CAS 7782-49-2)……..0.05 mg/l
(n) Silver (Ag) (CAS 7440-224)…….0.05 mg/l
(o) Thallium (Tl) (CAS 7440-28-0)……..0.002 mg/l
(p) Uranium (U) (CAS 7440-61-1)……0.03 mg/l
(q) Radioactivity: Combined Radium-226 (CAS 13982-63-3) and Radium-228 (CAS 15262-20-1)……5 pCi/l
(r) Benzene (CAS 71-43-2)……0.005 mg/l
(s) Polychlorinated biphenyls (PCB's) (CAS 1336-36-3).0.0005 mg/l
(t) Toluene (CAS 108-88-3)……...1 mg/l
(u) Carbon Tetrachloride (CAS 56-23-5)……..0.005 mg/l
(v) 1,2-dichloroethane (EDC) (CAS 107-06-2)……0.005 mg/l
(w) 1,1-dichloroethylene (1,1-DCE) (CAS 75-35-4)…….0.007 mg/l
(x) tetrachloroethylene (PCE) (CAS 127-18-4)……..0.005 mg/l
(y) trichloroethylene (TCE) (CAS 79-01-6)……...0.005 mg/l
(z) ethylbenzene (CAS 100-41-4)…….……0.7 mg/l
(aa) total xylenes (CAS 1330-20-7)…….…….....0.62 mg/l
(bb) methylene chloride (CAS 75-09-2)…….……0.005 mg/l
(cc) chloroform (CAS 67-66-3)….……0.1 mg/l
(dd) 1,1-dichloroethane (CAS 75-34-3)…….……0.025 mg/l
(ee) ethylene dibromide (EDB) (CAS 106-93-4)……..…0.00005 mg/l
(ff) 1,1,1-trichloroethane (CAS 71-55-6)……..……...…0.2 mg/l
(gg) 1,1,2-trichloroethane (CAS 79-00-5)….……...0.005 mg/l
(hh) 1,1,2,2-tetrachloroethane (CAS 79-34-5)…….…….0.01 mg/l
(ii) vinyl chloride (CAS 75-01-4)….…….0.002 mg/l
(jj) PAHs: total naphthalene (CAS 91-20-3) plus monomethylnaphthalenes …0.03 mg/l
(kk) benzo-a-pyrene (CAS 50-32-8)….……0.0002 mg/l
(ll) cis-1,2-dichloroethene (CAS 156-59-2)……0.07 mg/l
(mm) trans-1,2-dichloroethene (CAS 156-60-5)…….0.1 mg/l
(nn) 1,2-dichloropropane (PDC) (CAS 78-87-5)……0.005 mg/l
(oo) styrene (CAS 100-42-5)……...0.1 mg/l
(pp) 1,2-dichlorobenzene (CAS 95-50-1)……..0.6 mg/l
(qq) 1,4-dichlorobenzene (CAS 106-46-7)……..0.075 mg/l
(rr) 1,2,4-trichlorobenzene (CAS 120-82-1)……..0.07 mg/l
(ss) pentachlorophenol (CAS 87-86-5)……..0.001 mg/l
(tt) atrazine (CAS 1912-24-9)……0.003 mg/l

(2) **Standards for Toxic Pollutants.** A toxic pollutant shall not be present at a concentration shown by credible scientific data and other evidence appropriate under the Water Quality Act, currently available to the public, to have potential for causing one or more of the following effects upon exposure, ingestion, or assimilation either directly from the environment or indirectly by ingestion through food chains: (1) unreasonably threatens to injure human health, or the health of animals or plants which are commonly hatched, bred, cultivated or protected for use by man for food or economic benefit; as used in this definition injuries to health include death, histopathologic change, clinical symptoms of disease, behavioral abnormalities, genetic mutation, physiological malfunctions or physical deformations in such organisms or their offspring; or (2) creates a lifetime risk of more than one cancer per 100,000 exposed persons.

(3) **Standards for Non-Aqueous Phase Liquids.** Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

B. **Other Standards for Domestic Water Supply**

(1) Chloride (Cl) (CAS 16887-00-6)…….……...250.0 mg/l
(2) Copper (Cu) (CAS 7440-50-8)…….……....1.0 mg/l
(3) Iron (Fe) (CAS 7439-89-6)…….……..…1.0 mg/l

(4) Manganese (Mn) (CAS 7439-96-5)……0.2 mg/l
(5) Phenols ……0.005 mg/l
(6) Sulfate (SO_4) (CAS 14808-79-8)……..600.0 mg/l
(7) Total Dissolved Solids (TDS) TDS……1000.0 mg/l
(8) Zinc (Zn) (CAS 7440-66-6)……10.0 mg/l
(9) pH……between 6 and 9
(10) Methyl tertiary-butyl ether (MTBE) (CAS 1634-04-4)……0.1 mg/l

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1) Aluminum (Al) (CAS 7429-90-5)……5.0 mg/l
(2) Boron (B) (CAS 7440-42-8)……...0.75 mg/l
(3) Cobalt (Co) (CAS 7440-48-4)……0.05 mg/l
(4) Molybdenum (Mo) (CAS 7439-98-7)……...1.0 mg/l
(5) Nickel (Ni) (CAS 7440-02-0)……....0.2 mg/l

D. For purposes of application of the amended numeric standards for arsenic, cadmium, lead, combined radium-226 & radium-228; benzene, PCBs, carbon tetrachloride, EDC, PCE, TCE, ethylbenzene, methylene chloride, EDB, 1,1,2-trichloroethane and benzo-a-pyrene, to past and current water discharges (as of July 1, 2017), the new standards will not become effective until July 1, 2020. With regard to sites for which the secretary has approved an abatement completion report as of the effective date of this rule pursuant to 20.6.2.4112 NMAC, the amended numeric standards for arsenic, cadmium, lead, combined radium-226 & radium-228; benzene, PCBs, carbon tetrachloride, EDC, PCE, TCE, ethylbenzene, methylene chloride, EDB, 1,1,2-trichloroethane and benzo-a-pyrene shall not apply unless the secretary notifies the responsible person that the site is a source of these contaminants in ground water that pose a hazard to public health.
[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04; A, 12-21-18]
[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers.
[2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the standards in Subsections A, B, and C of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is regulated pursuant to 20.7.3 NMAC, "Liquid Waste Disposal and Treatment" regulations;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

K. Effluent or leachate discharges resulting from activities regulated by permit issued by the mining and minerals division of the energy, minerals and natural resources department pursuant to the Surface Mining Act, NMSA 1978, Sections 69-25A-1 to 36, provided that this exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the mining and minerals division and the New Mexico Coal Surface Mining Commission; or

L. Discharges resulting from activities regulated by the energy conservation and management division of the energy, minerals and natural resources department under the authority of the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016).

[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01; A, 8-1-14; A, 12-21-18]

20.6.2.3106 APPLICATION FOR DISCHARGE PERMITS, RENEWALS, AND MODIFICATIONS:

A. Any person who, before or on June 18, 1977, is discharging any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall, within 120 days of receipt of written notice from the secretary that a discharge permit is required, or such longer time as the secretary shall for good cause allow, submit a discharge plan to the secretary for approval; such person may discharge without a discharge permit until 240 days after written notification by the secretary that a discharge permit is required or such longer time as the secretary shall for good cause allow.

B. Any person who intends to begin, after June 18, 1977, discharging any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall notify the secretary giving the information enumerated in Subsection B of 20.6.2.1201 NMAC; the secretary shall, within 60 days, notify such person if a discharge permit is required; upon submission of a discharge plan, the secretary shall review the discharge plan pursuant to 20.6.2.3108 and 20.6.2.3109 NMAC. For good cause shown the secretary may allow such person to discharge without a discharge permit for a period not to exceed 120 days.

C. Any person who intends to modify the discharge of any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant in a manner that is a discharge permit modification as defined in this part shall submit a discharge plan for modification that contains the information required in Subsection D of 20.6.2.3106 NMAC; upon submission of a discharge plan for modification, the secretary shall review the discharge plan for modification pursuant to 20.6.2.3108 and 20.6.2.3109 NMAC.

D. A proposed discharge plan shall set forth in detail the methods or techniques the discharger proposes to use or processes expected to naturally occur which will ensure compliance with this part. At least the following information shall be included in the plan:

(1) quantity, quality and flow characteristics of the discharge;

(2) location of the discharge and of any bodies of water, watercourses and ground water discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;

(3) depth to and TDS concentration of the ground water most likely to be affected by the discharge;

(4) flooding potential of the site;

(5) location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;

(6) depth to and lithological description of rock at base of alluvium below the discharge site if such information is available;

(7) any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of 20.6.2.3103 NMAC at any place of withdrawal of water for present or reasonably foreseeable future use; detailed information on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan; and

(8) additional detailed information required for a technical evaluation of underground injection control wells as provided in 20.6.2.5000 through 20.6.2.5399 NMAC.

E. An applicant for a discharge permit shall pay fees as specified in 20.6.2.3114 and 20.6.2.5302 NMAC.

F. An applicant for a permit to dispose of or use septage or sludge, or within a source category designated by the commission, may be required by the secretary to file a disclosure statement as specified in 74-6-5.1 of the Water Quality Act.

G. If the holder of a discharge permit submits an application for discharge permit renewal at least 120 days before the discharge permit expires, and the discharger is not in violation of the discharge permit on the date of its expiration, then the existing discharge permit for the same activity shall not expire until the application for renewal has been approved or disapproved. A discharge permit continued under this provision remains fully effective and enforceable. An application for discharge permit renewal must include and adequately address all of the information necessary for evaluation of a new discharge permit. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved. [2-18-77, 6-26-80, 7-2-81, 9-20-82, 8-17-91, 12-1-95; 20.6.2.3106 NMAC - Rn, 20 NMAC 6.2.III.3106, 1-15-01; A, 12-1-01; A, 9-15-02; A, 8-31-15; A, 12-21-18]

20.6.2.3107 MONITORING, REPORTING, AND OTHER REQUIREMENTS:

A. Each discharge plan shall provide for the following as the secretary may require:

(1) the installation, use, and maintenance of effluent monitoring devices;

(2) the installation, use, and maintenance of monitoring devices for the ground water most likely to be affected by the discharge;

(3) monitoring in the vadose zone;

(4) continuation of monitoring after cessation of operations;

(5) periodic submission to the secretary of results obtained pursuant to any monitoring requirements in the discharge permit and the methods used to obtain these results;

(6) periodic reporting to the secretary of any other information that may be required as set forth in the discharge permit;

(7) the discharger to retain for a period of at least five years any monitoring data required in the discharge permit;

(8) a system of monitoring and reporting to verify that the permit is achieving the expected results;

(9) procedures for detecting failure of the discharge system;

(10) contingency plans to cope with failure of the discharge permit or system;

(11) a closure plan to prevent the exceedance of standards of 20.6.2.3103 NMAC in ground water after the cessation of operation which includes: a description of closure measures, maintenance and monitoring plans, post-closure maintenance and monitoring plans, financial assurance, and other measures necessary to prevent or abate such contamination; the obligation to implement the closure plan as well as the requirements of the closure plan, if any is required, survives the termination or expiration of the permit; a closure plan for any underground injection control well must also incorporate the applicable requirements of 20.6.2.5005, 20.6.2.5209, and 20.6.2.5361 NMAC.

B. Sampling and analytical techniques shall conform with the following references unless otherwise specified by the secretary:

(1) standard methods for the examination of water and wastewater, latest edition, American public health association; or

(2) methods for chemical analysis of water and waste, and other publications of the analytical quality laboratory, EPA; or

(3) techniques of water resource investigations of the U.S. geological survey; or

(4) annual book of ASTM standards; Part 31; water, latest edition, American society for testing and materials; or

(5) federal register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations; or

(6) national handbook of recommended methods for water-data acquisition, latest edition, prepared cooperatively by agencies of the United States government under the sponsorship of the U.S. geological survey.

C. The discharger shall notify the secretary of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

D. Any discharger of effluent or leachate shall allow any authorized representative of the secretary to:

(1) inspect and copy records required by a discharge permit;

(2) inspect any treatment works, monitoring and analytical equipment;

(3) sample any effluent before or after discharge;

(4) use monitoring systems and wells installed pursuant to a discharge permit requirement in order to collect samples from ground water or the vadose zone.

E. Each discharge permit for an underground injection control well shall incorporate the applicable requirements of 20.6.2.5000 through 20.6.2.5399 NMAC.

[2-18-77, 9-20-82, 11-17-83, 12-1-95; 20.6.2.3107 NMAC - Rn, 20 NMAC 6.2.III.3107, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

A. Within 15 days of receipt of an application for a discharge permit, modification or renewal, the department shall review the application for administrative completeness. To be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) and (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC. The department shall notify the applicant in writing when the application is deemed administratively complete. If the department determines that the application is not administratively complete, the department shall notify the applicant of the deficiencies in writing within 30 days of receipt of the application and state what additional information is necessary.

B. Within 30 days of the department deeming an application for discharge permit or discharge permit modification administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) for each 640 contiguous acres or less of a discharge site, prominently posting a synopsis of the public notice at least 2 feet by 3 feet in size, in English and in Spanish, at a place conspicuous to the public, approved by the department, at or near the proposed facility for 30 days; one additional notice, in a form approved by and may be provided by the department, shall be posted at a place located off the discharge site, at a place conspicuous to the public and approved by the department; the department may require a second posting location for more than 640 contiguous acres or when the discharge site is not located on contiguous properties;

(2) providing written notice of the discharge by mail or electronic mail, to owners of record of all properties within a 1/3 mile distance from the boundary of the property where the discharge site is located; if there are no properties other than properties owned by the discharger within a 1/3 mile distance from the boundary of property where the discharge site is located, the applicant shall provide notice to owners of record of the next nearest adjacent properties not owned by the discharger;

(3) providing notice by certified mail, return receipt requested, to the owner of the discharge site if the applicant is not the owner; and

(4) publishing a synopsis of the notice in English and in Spanish, in a display ad at least three inches by four inches not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the proposed discharge.

C. Within 30 days of the department deeming an application for discharge permit renewal administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) providing notice by certified mail to the owner of the discharge site if the applicant is not the owner; and

(2) publishing a synopsis of the notice, in English and in Spanish, in a display ad at least two inches by three inches, not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the discharge.

D. Within 15 days of completion of the public notice requirements in Subsections B or C of 20.6.2.3108 NMAC, the applicant shall submit to the department proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

E. Within 30 days of determining an application for a discharge permit, modification or renewal is administratively complete, the department shall post a notice on its website and shall mail notice to any affected local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations and land grants, as identified by the department. The department shall also mail or e-mail notice to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications. The notice shall include the information listed in Subsection F of 20.6.2.3108 NMAC.

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

(1) the name and address of the proposed discharger;

(2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks;

(3) a brief description of the activities that produce the discharge described in the application;

(4) a brief description of the expected quality and volume of the discharge;

(5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge;

(6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices; and

(7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

G. All persons who submit comments or statements of interest to the department or previously participated in a public hearing and who provide a mail or e-mail address shall be placed on a facility-specific mailing list and the department shall send those persons the public notice issued pursuant to Subsection J of 20.6.2.3108 NMAC, and notice of any public meeting or hearing scheduled on the application. All persons who contact the department to inquire about a specific facility shall be informed of the opportunity to be placed on the facility-specific mailing list.

H. Within 60 days after the department makes its administrative completeness determination and all required technical information is available, the department shall make available a draft permit or a notice of intent to deny an application for a discharge permit, modification or renewal. The draft permit shall include all proposed effluent limitations or other conditions on proposed discharge, and all proposed monitoring, recordkeeping, and reporting requirements. A draft permit for a permit modification shall only include those permit conditions proposed to be modified.

I. The department shall prepare a fact sheet for every draft permit for a discharge at a federal facility, except for discharges comprised solely of domestic liquid waste, and for other draft permits as determined by the Secretary. The fact sheet shall include:

(1) the information in Paragraphs 1 - 4 of Subsection F of 20.6.2.3108 NMAC;

(2) the information in Subsection J of 20.6.2.3108 NMAC; and

(3) a brief summary of the basis for the draft permit conditions, including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record.

J. The department shall mail by certified mail a copy of the draft permit and fact sheet or notice of intent to deny to the applicant and shall provide notice of the draft permit or the notice of intent to deny by:

(1) posting on the department's website;

(2) publishing notice in a newspaper of general circulation in this state and a newspaper of general circulation in the location of the facility;

(3) mailing or e-mailing to those persons on a facility-specific mailing list;

(4) mailing to any affected local, state, or federal governmental agency, ditch associations and land grants, as identified by the department; and

(5) mailing to the governor, chairperson, or president of each Indian tribe, pueblo or nation within the state of New Mexico, as identified by the department.

K. The public notice issued under Subsection H shall include the information in Subsection F of 20.6.2.3108 NMAC and the following information:

(1) a brief description of the procedures to be followed by the secretary in making a final determination;

(2) a statement of the comment period and description of the procedures for a person to request a hearing on the application; and

(3) the address, telephone number, and email address at which interested persons may obtain a copy of the draft permit and fact sheet or the notice of intent to deny.

L. In the event that the draft permit or notice of intent to deny is available for review within 30 days of deeming the application administratively complete, the department may combine the public notice procedures of Subsections E and H of 20.6.2.3108 NMAC.

M. Following the public notice of the draft permit or notice of intent to deny, and prior to a final decision by the secretary, there shall be a period of at least 30 days during which written comments may be submitted to the department and/or a public hearing may be requested in writing. The 30-day comment period shall begin on the date of publication of notice in the newspaper. All comments will be considered by the department. Requests for a hearing shall be in writing and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the secretary determines there is substantial public interest. The department shall notify the applicant and any person requesting a hearing of the decision whether to hold a hearing and the reasons therefore in writing.

N. If a hearing is held, pursuant to Subsection M of 20.6.2.3108 NMAC, notice of the hearing shall be given by the department at least 30 days prior to the hearing in accordance with Subsection H of 20.6.2.3108 NMAC. The notice shall include the information identified in Subsection F of 20.6.2.3108 NMAC in addition to the time and place of the hearing and a brief description of the hearing procedures. The hearing shall be held pursuant to 20.6.2.3110 NMAC.

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3108 NMAC - Rn, 20 NMAC 6.2.III.3108, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06; A, 12-21-18]

20.6.2.3109 SECRETARY APPROVAL, DISAPPROVAL, MODIFICATION OR TERMINATION OF DISCHARGE PERMITS, AND REQUIREMENT FOR ABATEMENT PLANS:

A. The department shall evaluate the application for a discharge permit, modification or renewal based on information contained in the department's administrative record. The department may request from the discharger, either before or after the issuance of any public notice, additional information necessary for the evaluation of the application. The administrative record shall consist of the application, any additional information required by the department, any information submitted by the discharger or the general public, other information considered by the department, the proposed approval or disapproval of an application for a discharge permit, modification or renewal prepared pursuant to Subsection H of 20.6.2.3108 NMAC, and, if a public hearing is held, all of the documents filed with the hearing clerk, all exhibits offered into evidence at the hearing, the written transcript or tape recording of the hearing, any hearing officer report, and any post hearing submissions.

B. The secretary shall, within 30 days after the administrative record is complete and all required information is available, approve, approve with conditions or disapprove the proposed discharge permit, modification or renewal based on the administrative record. The Secretary shall issue a response to comments which shall specify which provisions, if any, in the draft permit were changed and the reasons for the change, and shall briefly describe and respond to all significant comments on the draft permit raised during the public comment period or at any hearing. The secretary shall notify the applicant or permittee by certified mail of the action taken and the reasons for such action and shall include a copy of the response to comments. Notice shall also be given by mail or email to persons who participated in the permitting action.

C. Provided that the other requirements of this part are met and the proposed discharge plan, modification or renewal demonstrates that neither a hazard to public health nor undue risk to property will result, the secretary shall approve the proposed discharge plan, modification or renewal if the following requirements are met:

(1) ground water that has a TDS concentration of 10,000 mg/l or less will not be affected by the discharge; or

(2) the person proposing to discharge demonstrates that approval of the proposed discharge plan, modification or renewal will not result in either concentrations in excess of the standards of 20.6.2.3103 NMAC at any place of withdrawal of water for present or reasonably foreseeable future use, except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(3) the proposed discharge plan conforms to either Subparagraph (a) or (b) below and Subparagraph (c) below:

(a) municipal, other domestic discharges, and discharges from sewerage systems handling only animal wastes: the effluent is entirely domestic, is entirely from a sewerage system handling only animal wastes or is from a municipality and conforms to the following:

(i) the discharge is from an impoundment or a leach field existing on February 18, 1977 which receives less than 10,000 gallons per day and the secretary has not found that the discharge may cause a hazard to public health; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment will not exceed 200 pounds per acre per year and that the effluent will meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(iii) the total nitrogen in effluent that is applied to a crop which is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC;

(b) discharges from industrial, mining or manufacturing operations:

(i) the discharger has demonstrated that the amount of effluent that enters the subsurface from a surface impoundment will not exceed 0.5 acre-feet per acre per year; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment shall not exceed 200 pounds per acre per year and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrate and contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(iii) the total nitrogen in effluent that is applied to a crop that is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrate and contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC;

(c) all discharges:

(i) the monitoring system proposed in the discharge plan includes adequate provision for sampling of effluent and adequate flow monitoring so that the amount being discharged onto or below the surface of the ground can be determined;

(ii) the monitoring data is reported to the secretary at a frequency determined by the secretary.

D. The secretary shall allow the following unless he determines that a hazard to public health may result:

(1) the weight of water contaminants in water diverted from any source may be discharged provided that the discharge is to the aquifer from which the water was diverted or to an aquifer containing a greater concentration of the contaminants than contained in the water diverted; and provided further that contaminants added as a result of the means of diversion shall not be considered to be part of the weight of water contaminants in the water diverted;

(2) the water contaminants leached from undisturbed natural materials may be discharged provided that:

(a) the contaminants were not leached as a product or incidentally pursuant to a solution mining operation; and

(b) the contaminants were not leached as a result of direct discharge into the vadose zone from municipal or industrial facilities used for the storage, disposal, or treatment of effluent;

(3) the water contaminants leached from undisturbed natural materials as a result of discharge into ground water from lakes used as a source of cooling water.

E. If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicates that this part is being or may be violated or that the standards of 20.6.2.3103 NMAC are being or will be exceeded in ground water at any place of withdrawal for present or reasonably foreseeable future use, or that the water quality standards for interstate and intrastate streams in New Mexico are being or may be violated in surface water, due to the discharge, except as provided in Subsection D of 20.6.2.3109 NMAC.

(1) The secretary may require a discharge permit modification within the shortest reasonable time so as to achieve compliance with this part and to provide that any exceeding of standards in ground water at any place of withdrawal for present or reasonably foreseeable future use, or in surface water, due to the discharge except as provided in Subsection E of 20.6.2.3109 NMAC will be abated or prevented. If the secretary requires a discharge permit modification to abate water pollution:

(a) the abatement shall be consistent with the requirements and provisions of 20.6.2.4101, 20.6.2.4103, Subsections C and E of 20.6.2.4106, 20.6.2.4107, 20.6.2.4108 and 20.6.2.4112 NMAC; and

(b) the discharger may request of the secretary approval to carry out the abatement under 20.6.2.4000 through 20.6.2.4115 NMAC, in lieu of modifying the discharge permit; the discharger shall make the request in writing and shall include the reasons for the request.

(2) The secretary may terminate a discharge permit when a discharger fails to modify the permit in accordance with Paragraph (1) of Subsection E of 20.6.2.3109 NMAC.

(3) The secretary may require modification, or may terminate a discharge permit for a Class I well, a Class III well or other type of well specified in Subsection A of 20.6.2.5101 NMAC, pursuant to the requirements of Subsection I of 20.6.2.5101 NMAC.

(4) If a discharge permit is terminated, the secretary shall notify the permittee by certified mail of the action taken and the reasons for that action. Notice of the termination shall also be given by mail or electronic mail to persons who participated in the permitting action and to those persons on the facility-specific list maintained by the department.

F. If a discharge permit expires or is terminated for any reason and the standards of 20.6.2.3103 NMAC are being or will be exceeded in ground water, or that the water quality standards for interstate and intrastate streams in New Mexico are being or may be violated, the secretary may require the discharger to submit an abatement plan pursuant to 20.6.2.4104 and Subsection A of 20.6.2.4106 NMAC.

G. At the request of the discharger, a discharge permit may be modified in accordance with 20.6.2.3000 through 20.6.2.3114 NMAC.

H. The secretary shall not approve a proposed discharge plan, modification, or renewal for:

(1) any discharge for which the discharger has not provided a site and method for flow measurement and sampling;

(2) any discharge that will cause any stream standard to be violated;

(3) the discharge of any water contaminant which may result in a hazard to public health; or

(4) a period longer than five years, except that for new discharges, the term of the discharge permit approval shall commence on the date the discharge begins, but in no event shall the term of the approval exceed seven years from the date the permit was issued; for those permits expiring more than five years from the date of issuance, the discharger shall give prior written notification to the department of the date the discharge is to commence; the term of the permit shall not exceed five years from that date.

[2-18-77, 6-26-80, 9-20-82, 7-2-81, 3-3-86, 12-1-95, 11-15-96; 20.6.2.3109 NMAC - Rn, 20 NMAC 6.2.III.3109, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06; A, 8-31-15; A, 12-21-18]

20.6.2.3110 PUBLIC HEARING PARTICIPATION:

A. The secretary may appoint an impartial hearing officer to preside over the hearing. The hearing officer may be a department employee other than an employee of the bureau evaluating the application.

B. The hearing shall be at a place in the area affected by the facility for which the discharge permit proposal, modification or renewal is sought.

C. Any person who wishes to present technical evidence at the hearing shall, no later than ten (10) days prior to the hearing, file with the department, and if filed by a person who is not the applicant, serve on the applicant, a statement of intent to present evidence. A person who does not file a statement of intent to present evidence may present a general non-technical statement in support of or in opposition to the proposed discharge plan, modification or renewal. The statement of intent to present technical evidence shall include:

(1) the name of the person filing the statement;

(2) indication of whether the person filing the statement supports or opposes the proposed discharge plan proposal, modification or renewal;

(3) the name of each witness;

(4) an estimate of the length of the direct testimony of each witness;

(5) a list of exhibits, if any, to be offered into evidence at the hearing; and

(6) a summary or outline of the anticipated direct testimony of each witness.

D. At the hearing, the New Mexico Rules of Civil Procedure, SCRA 1986, 1-001 to 1-102 and the New Mexico Rules of Evidence, SCRA 1986, 11-101 to 11-1102 shall not apply. At the discretion of the hearing officer, the rules may be used as guidance. Any reference to the Rules of Civil Procedure and the Rules of Evidence shall not be construed to extend or otherwise modify the authority and jurisdiction of the department under the Act.

E. The hearing officer shall conduct a fair and impartial proceeding, assure that the facts are fully elicited, and avoid delay. The hearing officer shall have authority to take all measures necessary for the maintenance of order and for the efficient, fair and impartial adjudication of issues arising in the proceedings.

F. At the hearing, all persons shall be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing.

G. Unless otherwise allowed by the hearing officer, testimony shall be presented in the following order:

(1) testimony by and examination of the applicant or permittee proving the facts relied upon to justify the proposed discharge plan, renewal or modification and meeting the requirements of the regulations;

(2) testimony by and examination of technical witnesses supporting or opposing approval, approval subject to conditions, or disapproval of the proposed discharge plan, renewal or modification, in any reasonable order;

(3) testimony by the general public; and

(4) rebuttal testimony, if appropriate.

H. The secretary may provide translation service at a public hearing conducted in a locale where the Department can reasonably expect to receive testimony from non-English speaking people.

I. If determined useful by the hearing officer, within thirty (30) days after conclusion of the hearing, or within such time as may be fixed by the hearing officer, the hearing officer may allow proposed findings of fact and conclusions of law and closing argument. All such submissions, if allowed, shall be in writing, shall be served upon the applicant or permittee, the department and all persons who request copies in advance in writing, and shall contain adequate references to the record and authorities relied on. No new evidence shall be presented unless specifically allowed by the hearing officer.

J. The department shall make an audio recording of the hearing. If the applicant or permittee, or a participant requests a written transcript or certified copy of the audio recording, the requestor shall pay the cost of the transcription or audio copying.

K. The hearing officer shall issue a report within thirty (30) days after the close of the hearing record. The report may include findings of fact, conclusions regarding all material issues of law or discretion, as well as reasons therefore. The report shall be served on the applicant or permittee, the department, and all persons who request copies in advance in writing. The report will be available for public inspection at the department's office in Santa Fe and at the field office closest to the point of the proposed discharge.

L. The secretary shall issue a decision in the matter no later than thirty (30) days of receipt of the hearing report. The decision shall be served and made available for inspection pursuant to Subsection K of this section.

M. Any person who testifies at the hearing or submits a written statement for the record will be considered a participant for purposes of Subsection 20.6.2.3113 NMAC and NMSA 1978, Section 74-6-5.N.
[2-18-77, 12-1-95, 11-15-96; 20.6.2.3110 NMAC - Rn, 20 NMAC 6.2.III.3110, 1-15-01; A, 12-1-01]

20.6.2.3111 TRANSFER OF DISCHARGE PERMIT: No purported transfer of any discharge permit shall be effective to create, alter or extinguish any right or responsibility of any person subject to this Part, unless the following transfer requirements are met:

A. Prior to any transfer of ownership, control, or possession (whether by lease, conveyance or otherwise) of a facility with a discharge permit, the transferor shall notify the transferee in writing of the existence of the discharge permit, and shall deliver or send by certified mail to the department a copy of such written notification, together with a certification or other proof that such notification has in fact been received by the transferee.

B. Upon receipt of such notification, the transferee shall have the duty to inquire into all of the provisions and requirements contained in such discharge permit, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the department's file or files concerning such discharge permit.

C. Until both ownership and possession of the facility have been transferred to the transferee, the transferor shall continue to be responsible for any discharge from the facility.

D. Upon assuming either ownership or possession of the facility, the transferee shall have the same rights and responsibilities under the discharge permit as were applicable to the transferor.

E. Nothing in this section or in this part shall be construed to relieve any person of responsibility or liability for any act or omission which occurred while that person owned, controlled or was in possession of the facility.

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3111 NMAC - Rn, 20 NMAC 6.2.III.3111, 1-15-01; A, 12-1-01]

20.6.2.3112 APPEALS OF SECRETARY'S DECISIONS:

A. If the secretary approves, approves subject to conditions, or disapproves a proposed discharge plan, renewal or modification, or modifies or terminates a discharge permit, appeal therefrom shall be in accordance with the provisions of Sections 74-6-5(N), (O) and (P), NMSA 1978. The filing of an appeal does not act as a stay of any provision of the Act, the regulations, or any permit issued pursuant to the Act, unless otherwise ordered by the secretary or the commission.

B. If the secretary determines that a discharger is not exempt from obtaining a discharge permit, or that the material to be discharged contains any toxic pollutant listed in 20.6.2.7 NMAC, which is not included in the numerical standards of Paragraph (1) of Subsection A of 20.6.2.3103 NMAC, then the discharger may appeal such determination by filing with the commission's secretary a notice of appeal to the commission within thirty days after receiving the secretary's written determination, and the appeal therefrom and any action of the commission thereon shall be in accordance with the provisions of Sections 74-6-5(O), (P), (Q), (R) and (S) NMSA 1978.

C. Proceedings before the commission shall be conducted in accordance with the commission's adjudicatory procedures, 20 NMAC 1.3.

[2-18-77, 7-2-81, 12-1-95, 11-15-96; 20.6.2.3112 NMAC - Rn, 20 NMAC 6.2.III.3112, 1-15-01; A, 12-1-01; A, 7-16-06; A, 12-21-18]

20.6.2.3113 APPEALS OF COMMISSION DECISIONS: An applicant, permittee or a person who participated in a permitting action and who is adversely affected by such action may appeal the decision of the commission in accordance with the provisions of Section 74-6-7(A), NMSA 1978.

[2-18-77, 12-1-95, 11-15-96; 20.6.2.3113 NMAC - Rn, 20 NMAC 6.2.III.3113, 1-15-01; A, 12-1-01]

20.6.2.3114 FEES:

A. FEE AMOUNT AND SCHEDULE OF PAYMENT - Every facility submitting a discharge permit application for approval or renewal shall pay the permit fees specified in Table 1 of this section and shall pay a filing fee as specified in Table 2 of this section to the Water Quality Management Fund. Every facility submitting a request for temporary permission to discharge pursuant to Subsection B of Section 20.6.2.3106 NMAC, or financial assurance pursuant to Paragraph 11 of Subsection A of Section 20.6.2.3107 NMAC shall pay the fees specified in Table 2 of this section to the Water Quality Management Fund.

B. Facilities applying for discharge permits which are subsequently withdrawn or denied shall pay one-half of the permit fee at the time of denial or withdrawal.

C. Every facility submitting an application for discharge permit modification will be assessed a filing fee plus one-half of the permit fee. Applications for both renewal and modification will pay the filing fee plus the permit fee.

D. If the secretary requires a discharge permit modification as a component of an enforcement action, the facility shall pay the applicable discharge permit modification fee. If the secretary requires a discharge permit modification outside the context of an enforcement action, the facility shall not be assessed a fee.

E. The secretary may waive or reduce fees for discharge permit modifications or renewals which require little or no cost for investigation or issuance.

F. Facilities shall pay the filing fee at the time of discharge permit application. The filing fee is nonrefundable. The required permit fees may be paid in a single payment at the time of discharge permit approval or in equal installments over the term of the discharge permit. Installment payments shall be remitted yearly, with the first installment due on the date of discharge permit approval. Subsequent installment payments shall be remitted yearly thereafter. The discharge permit or discharge permit application review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

G. Every three years beginning in 2004, the department shall review the fees specified in Table 1 and 2 of this section and shall provide a report to the commission. The department shall revise the fees as necessary in accordance with Section 74-6-5(J), NMSA 1978.

20.6.2.3114 TABLE 1 (gpd=gallons per day)	**Permit Fee**
Agriculture <10,000 gpd	$ 1,150
Agriculture 10,000 to 49,999 gpd	$ 2,300
Agriculture 50,000 to 99,999 gpd	$ 3,450

Agriculture 100,000 gpd or greater	$ 4,600
Domestic Waste <10,000 gpd	$ 1,150
Domestic Waste 10,000 to 49,999 gpd	$ 2,300
Domestic Waste 50,000 to 99,999 gpd	$ 3,450
Domestic Waste 100,000 to 999,999 gpd	$ 4,600
Domestic Waste 1,000,000 to 9,999,999 gpd	$ 7,000
Domestic Waste 10,000,000 gpd or greater	$ 9,200
Food Processing <10,000 gpd	$ 1,150
Food Processing 10,000 to 49,999 gpd	$ 2,300
Food Processing 50,000 to 99,999 gpd	$ 3,450
Food Processing 100,000 to 999,999 gpd	$ 4,600
Food Processing 1,000,000 or greater	$ 7,000
Grease/Septage surface disposal <10,000 gpd	$ 1,725
Grease/Septage surface disposal 10,000 gpd or greater	$ 3,450
Industrial <10,000 gpd; or <10,000 yd^3 of contaminated solids	$ 1,725
Industrial 10,000 to 99,999 gpd; or 10,000 to 99,999 yd^3 of contaminated solids	$ 3,450
Industrial 100,000 to 999,999 gpd; or 100,000 to 999,999 yd^3 of contaminated solids or greater	$ 6,900
Industrial 1,000,000 gpd or greater; or 1,000,000 yd^3 of contaminated solids or greater	$10,350
Discharge of remediation system effluent - remediation plan approved under separate regulatory authority	$ 1,600
Mining dewatering	$ 3,250
Mining leach dump	$13,000
Mining tailings	$13,000
Mining waste rock	$13,000
Mining in-situ leach (except salt) and old stope leaching	$13,000
Mining other (mines with minimal environmental impact, post closure operation and maintenance, evaporation lagoons and land application at uranium mines)	$ 4,750
Gas Compressor Stations 0 to 1000 Horsepower	$ 400
Gas Compressor Stations >1001 Horsepower	$ 1,700
Gas Processing Plants	$ 4,000
Injection Wells: Class I (non-hazardous)	$ 4,500
Injection Wells: Class III and Geothermal	$ 1,700
Oil and Gas Service Companies	$ 1,700
Refineries	$ 8,400
Crude Pump Station	$ 1,200
Underground Gas Storage	$ 1,700
Abatement of ground water and vadose zone contamination	$ 2,600
General permit	$ 600

20.6.2.3114 Table 2

	Fee Amount
Filing fee	$100

Temporary permission	$50
Financial assurance: approval of instrument	greater of $250 or .01%
Financial assurance: annual review	greater of $100 or .001%

[8-17-91, 12-1-95; 20.6.2.3114, Rn & A, 20 NMAC 6.2.III.3114, 01-01-01; A, 12-21-18]

20.6.2.3115 - 20.6.2.3999: [RESERVED]
[12-1-95; 20.6.2.3115 - 20.6.2.3999 NMAC - Rn, 20 NMAC 6.2.III.3115-4100, 1-15-01]

20.6.2.4000 PREVENTION AND ABATEMENT OF WATER POLLUTION:
[12-1-95; 20.6.2.4000 NMAC - Rn, 20 NMAC 6.2.IV, 1-15-01]

20.6.2.4001 - 20.6.2.4100: [RESERVED]
[12-1-95; 20.6.2.4001 - 20.6.2.4100 NMAC - Rn, 20 NMAC 6.2.III.3115-4100, 1-15-01]

20.6.2.4101 PURPOSE:

A. The purposes of Sections 20.6.2.4000 through 20.6.2.4115 NMAC are to:

(1) Abate pollution of subsurface water so that all ground water of the State of New Mexico which has a background concentration of 10,000 mg/L or less TDS, is either remediated or protected for use as domestic and agricultural water supply, and to remediate or protect those segments of surface waters which are gaining because of subsurface water inflow, for uses designated in the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC); and

(2) Abate surface water pollution so that all surface waters of the State of New Mexico are remediated or protected for designated or attainable uses as defined in the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC).

B. If the background concentration of any water contaminant exceeds the standard or requirement of Subsections A, B, and C of Section 20.6.2.4103 NMAC, pollution shall be abated by the responsible person to the background concentration.

C. The standards and requirements set forth in Section 20.6.2.4103 NMAC are not intended as maximum ranges and concentrations for use, and nothing herein contained shall be construed as limiting the use of waters containing higher ranges and concentrations.

[12-1-95; 20.6.2.4101 NMAC - Rn, 20 NMAC 6.2.IV.4101, 1-15-01; A, 12-21-18]

20.6.2.4102: [RESERVED]
[12-1-95; 20.6.2.4102 NMAC - Rn, 20 NMAC 6.2.IV.4102, 1-15-01]

20.6.2.4103 ABATEMENT STANDARDS AND REQUIREMENTS:

A. The vadose zone shall be abated as follows:

(1) water contaminants in the vadose zone shall not be capable of contaminating ground water or surface water, in excess of the standards in Subsections B and C below, through leaching, percolation or as the water table elevation fluctuates; and

(2) any constituent listed in 20.6.2.3103 NMAC or any toxic pollutant in the vadose zone shall be abated so that it is not capable of endangering human health due to inhalation of vapors that may accumulate in structures, utility infrastructure, or construction excavations.

B. Ground water pollution at any place of withdrawal for present or reasonably foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to meet the standards of Subsections A, B, and C of Section 20.6.2.3103 NMAC.

C. Surface water pollution shall be abated to conform to the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC).

D. Subsurface water and surface water abatement shall not be considered complete until a minimum of eight (8) consecutive sampling events collected from all compliance sampling stations approved by the secretary, with a minimum of ninety (90) days between sampling events spanning a time period no greater than four (4) years, meet the abatement standards of Subsections A, B, and C of this section. Abatement of water contaminants measured in solid-matrix samples of the vadose zone shall be considered complete after one-time sampling from compliance stations approved by the secretary.

E. Alternative Abatement Standards: If the person abating water pollution pursuant to an approved abatement plan, or pursuant to the exemptions of 20.6.2.4105 NMAC, is unable to fully meet an abatement standard set forth in Subsections A and C of this section, the person may file a petition with the commission seeking approval of an alternative abatement standard.

(1) A petition for an alternative abatement standard shall demonstrate at least one of the following criteria:

(a) compliance with the standard set forth in Subsections A and B of this section would not be feasible by the maximum use of commercially accepted abatement technology;

(b) compliance with the standard set forth in Subsections A and B of this section would not be feasible by the maximum use of technology within the economic capability of the person;

(c) there is no reasonable relationship between the economic and social costs and benefits of attainment of the standard set forth in Subsections A and B of this section; or

(d) compliance with the standard set forth in Subsections A and B of this section is technically infeasible following the maximum use of commercially accepted abatement technology, as demonstrated by a statistically valid extrapolation of the decrease in concentration of any water contaminant over a twenty (20) year period, such that projected future reductions during that time would be less than 20 percent of the concentration at the time technical infeasibility is proposed. Technical infeasibility proposals that involved the use of experimental abatement technology shall be considered at the discretion of the commission. A statistically valid decrease cannot be demonstrated by fewer than eight (8) consecutive sampling events. Sampling events demonstrating a statistically valid decrease shall be collected with a minimum of ninety (90) days between sampling events and shall not span a time period greater than four (4) years.

(2) A petition for alternative abatement standards shall specify, in addition to the information required by Subsection A of 20.6.2.1210 NMAC the following:

(a) the water contaminant for which the alternative abatement standard is proposed;

(b) the alternative abatement standard proposed;

(c) the three-dimensional body of water pollution for which approval is sought;

(d) a summary of all actions taken to abate water pollution to standards; and

(e) other information as deemed necessary, which may include a transport, fate and risk assessment in accordance with accepted methods.

(3) The commission may approve an alternative abatement standard if the petitioner demonstrates that:

(a) at least one of the criteria set forth in Paragraph 1 of Subsection E of this Section has been met;

(b) the proposed alternative abatement standard is technically achievable and cost benefit justifiable; and

(c) compliance with the proposed alternative abatement standard will not create a present or future hazard to public health or undue damage to property.

(4) An alternative abatement standard shall only be granted after a public hearing, as required by NMSA 1978, Section 74-6-4(H) of the water Quality Act.

(5) The commission shall review petitions for alternative abatement standards in accordance with the procedures for review of variance petitions provided in the commission's adjudicatory procedures, 20.1.3 NMAC.

F. For a site where abatement activities include post-completion monitoring, maintenance of engineering controls, remediation systems, affirmation of non-residential use, or port-closure care, institutional controls such as well drilling restrictions under 19.27.5 NMAC, deed restrictions, easements or other legal restrictions binding on successors in interest to the site may be required by the secretary.

[12-1-95, 11-15-96; 20.6.2.4103 NMAC - Rn, 20 NMAC 6.2.IV.4103, 1-15-01; A, 12-21-18]

20.6.2.4104 ABATEMENT PLAN REQUIRED:

A. Unless otherwise provided by this Part, all responsible persons who are abating, or who are required to abate, water pollution in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC of this Part shall do so pursuant to an abatement plan approved by the secretary. When an abatement plan has been approved, all actions leading to and including abatement shall be consistent with the terms and conditions of the abatement plan.

B. In the event of a transfer of the ownership, control or possession of a facility for which an abatement plan is required or approved, where the transferor is a responsible person, the transferee also shall be

considered a responsible person for the duration of the abatement plan, and may jointly share the responsibility to conduct the actions required by this Part with other responsible persons. The transferor shall notify the transferee in writing, at least thirty (30) days prior to the transfer, that an abatement plan has been required or approved for the facility, and shall deliver or send by certified mail to the secretary a copy of such notification together with a certificate or other proof that such notification has in fact been received by the transferee. The transferor and transferee may agree to a designated responsible person who shall assume the responsibility to conduct the actions required by this Part. The responsible persons shall notify the secretary in writing if a designated responsible person is agreed upon. If the secretary determines that the designated responsible person has failed to conduct the actions required by this Part, the secretary shall notify all responsible persons of this failure in writing and allow them thirty (30) days, or longer for good cause shown, to conduct the required actions before issuing a compliance order pursuant to Section 20.6.2.1220 NMAC.

C. The secretary may require the responsible person(s) to submit a financial assurance plan which covers the estimated costs to conduct the actions required by the abatement plan. Such a financial assurance plan shall be consistent with any financial assurance requirements adopted by the commission.

D. The Secretary may require an oversight funding agreement with the responsible person for abatement plans which compensates the department for reasonable costs associated with the oversight of activities. [12-1-95; 20.6.2.4104 NMAC - Rn, 20 NMAC 6.2.IV.4104, 1-15-01; A, 12-21-18]

20.6.2.4105 EXEMPTIONS FROM ABATEMENT PLAN REQUIREMENTS:

A. Except as provided in Subsection B of this Section, Sections 20.6.2.4104 and 20.6.2.4106 NMAC do not apply to a person who is abating water pollution:

(1) from a storage tank, under the authority of the Petroleum Storage Tank Regulations (20.5 NMAC) adopted by the New Mexico Environmental Improvement Board, or in accordance with the New Mexico Ground Water Protection Act;

(2) under the authority of the U.S. Environmental Protection Agency pursuant to either the federal Comprehensive Environmental Response, Compensation and Liability Act, and amendments, or the Resource Conservation and Recovery Act;

(3) under the authority of the secretary pursuant to the Hazardous Waste Management Regulations (20.4.1 NMAC) adopted by the New Mexico Environmental Improvement Board;

(4) under the authority of the U.S. Nuclear Regulatory Commission or the U.S. Department of Energy pursuant to the Atomic Energy Act;

(5) from a solid waste landfill, under the authority of the secretary pursuant to the Solid Waste Management Regulations (20.9.1 NMAC) adopted by the N.M. Environmental Improvement Board;

(6) under the authority of a ground water discharge plan approved by the secretary, provided that such abatement is consistent with the requirements and provisions of Sections 20.6.2.4101, 20.6.2.4103, Subsections C and E of Section 20.6.2.4106, Sections 20.6.2.4107 and 20.6.2.4112 NMAC;

(7) under the authority of a Letter of Understanding, Settlement Agreement or Administrative Order on Consent signed by the secretary prior to December 1, 1995, provided that abatement is being performed in full compliance with the terms of the Letter of Understanding, Settlement Agreement or Administrative Order on Consent; and

(8) on an emergency basis, or while abatement plan approval is pending, or in a manner that will result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within one hundred and eighty (180) days after notice is required to be given pursuant to Paragraph (1) of Subsection A of Section 20.6.2.1203 NMAC, provided that the delegated agency does not object to the abatement action pursuant to Paragraphs (6) and (7) of Subsection A of Section 20.6.2.1203 NMAC.

B. If the secretary determines that abatement of water pollution subject to Subsection A of this section will not meet the standards of Subsections A, B, and C of Section 20.6.2.4103 NMAC, or that additional action is necessary to protect health, welfare, environment or property, the secretary may notify a responsible person, by certified mail, to submit an abatement plan pursuant to Section 20.6.2.4104 and Subsection A of Section 20.6.2.4106 NMAC. The notification shall state the reasons for the secretary's determination. In any appeal of the secretary's determination under this Section, the secretary shall have the burden of proof.

C. Sections 20.6.2.4104 and 20.6.2.4106 NMAC do not apply to the following activities:

(1) Discharges subject to an effective and enforceable National Pollutant Discharge Elimination System (NPDES) permit;

(2) Land application of ground water contaminated with nitrogen originating from human or animal waste and not otherwise exceeding the standards of Subsection A of Section 20.6.2.3103 NMAC, provided that it is done in compliance with a discharge plan approved by the secretary;

(3) Abatement of water pollution resulting from the withdrawal and decontamination or blending of polluted water for use as a public or private drinking-water supply, by any person other than a responsible person, unless the secretary determines that a hazard to public health may result; and

(4) Reasonable operation and maintenance of irrigation and flood control facilities.

[12-1-95; 20.6.2.4105 NMAC - Rn, 20 NMAC 6.2.IV.4105, 1-15-01; A, 10-15-03; A, 12-21-18]

20.6.2.4106 ABATEMENT PLAN PROPOSAL:

A. Except as provided for in Section 20.6.2.4105 NMAC, a responsible person shall, within sixty (60) days of receipt of written notice from the secretary that an abatement plan is required, submit an abatement plan proposal to the secretary for approval. For good cause shown, the secretary may allow for a total of one hundred and twenty (120) days to prepare and submit the abatement plan proposal.

B. Voluntary Abatement:

(1) Any person wishing to abate water pollution in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC may submit a Stage 1 abatement plan proposal to the secretary for approval. Following approval by the secretary of a final site investigation report prepared pursuant to Stage 1 of an abatement plan, any person may submit a Stage 2 abatement plan proposal to the secretary for approval.

(2) Following approval of a Stage 1 or Stage 2 abatement plan proposal under Paragraph (1) of Subsection B of this Section, the person submitting the approved plan shall be a responsible person under Sections 20.6.2.4000 through 20.6.2.4115 NMAC for the purpose of performing the approved Stage 1 or Stage 2 abatement plan. Nothing in this Section shall preclude the secretary from applying Paragraph (9) of Subsection A of Section 20.6.2.1203 NMAC to a responsible person if applicable.

C. Stage 1 Abatement Plan: The purpose of Stage 1 of the abatement plan shall be to design and conduct a site investigation that will adequately define site conditions, and provide the data necessary to select and design an effective abatement option. Stage 1 of the abatement plan may include, but not necessarily be limited to, the following information depending on the media affected, and as reasonably needed to select and implement an expeditious abatement option:

(1) Descriptions of the site, including a site map, and of site history including the nature of the discharge that caused the water pollution, and a summary of previous investigations;

(2) Site investigation workplan to define:

(a) site geology and hydrogeology, the vertical and horizontal extent and magnitude of vadose-zone and ground water contamination, subsurface hydraulic parameters including hydraulic conductivity, transmissivity, storativity, and rate and direction of contaminant migration, inventory of water wells inside and within one (1) mile from the perimeter of the three-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded, and location and number of such wells actually or potentially affected by the pollution; and

(b) surface water hydrology, seasonal stream flow characteristics, ground water/surface water relationships, the vertical and horizontal extent and magnitude of contamination and impacts to surface water and stream sediments. The magnitude of contamination and impacts on surface water may be, in part, defined by conducting a biological assessment of fish, benthic macroinvertebrates and other wildlife populations. Seasonal variations should be accounted for when conducting these assessments.

(3) Monitoring program, including sampling stations and frequencies, for the duration of the abatement plan that may be modified, after approval by the secretary, as additional sampling stations are created;

(4) Quality assurance plan, consistent with the sampling and analytical techniques listed in Subsection B of Section 20.6.2.3107 NMAC and with Section 20.6.4.10 NMAC of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC), for all work to be conducted pursuant to the abatement plan;

(5) Site health and safety plan for all work to be performed pursuant to the abatement plan;

(6) A schedule for all Stage 1 abatement plan activities, including the submission of summary quarterly progress reports, and the submission, for approval by the secretary, of a detailed final site investigation report; and

(7) Any additional information that may reasonably be required to design and perform an adequate site investigation.

D. **Stage 2 Abatement Plan**: Any responsible person shall submit a Stage 2 abatement plan proposal to the secretary for approval within sixty (60) days after approval by the secretary of the final site investigation report prepared pursuant to Stage 1 of the abatement plan. The secretary may grant approval for an extension of time to submit a State 2 abatement plan for good cause shown.

E. The purpose of Stage 2 of the abatement plan shall be to select and design, if necessary, an abatement option that, when implemented, will result in attainment of the abatement standards and requirements set forth in Section 20.6.2.4103 NMAC, including post-closure maintenance activities. Stage 2 of the abatement plan should include, at a minimum, the following information:

(1) Brief description of the current situation at the site;

(2) Development and assessment of abatement options;

(3) Description, justification and design, if necessary, of preferred abatement option;

(4) Modification, if necessary, of the monitoring program approved pursuant to Stage 1 of the abatement plan, including the designation of pre and post abatement-completion sampling stations and sampling frequencies to be used to demonstrate compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC;

(5) Site maintenance activities, if needed, proposed to be performed after termination of abatement activities;

(6) A schedule for the duration of abatement activities, including the submission of summary quarterly progress reports;

(7) A public notification proposal designed to satisfy the requirements of Subsections B and C of Sections 20.6.2.4108 and 20.6.2.4108 NMAC; and

(8) Any additional information that may be reasonably required to select, describe, justify and design an effective abatement option.

[12-1-95; 20.6.2.4106 NMAC - Rn, 20 NMAC 6.2.IV.4106, 1-15-01; A, 12-21-18]

20.6.2.4107 OTHER REQUIREMENTS:

A. Any responsible person shall allow any authorized representative of the secretary to:

(1) upon presentation of proper credentials, enter the facility at reasonable times;

(2) inspect and copy records required by an abatement plan;

(3) inspect any treatment works, monitoring and analytical equipment;

(4) sample any wastes, ground water, surface water, stream sediment, plants, animals, or vadose-zone material including vadose-zone vapor;

(5) use monitoring systems and wells under such responsible person's control in order to collect samples of any media listed in Paragraph (4) of Subsection A of this section; and

(6) gain access to off-site property not owned or controlled by such responsible person, but accessible to such responsible person through a third-party access agreement, provided that it is allowed by the agreement.

B. Any responsible person shall provide the secretary, or a representative of the secretary, with at least four (4) working days advance notice of any sampling to be performed pursuant to an abatement plan, or any well plugging, abandonment or destruction at any facility where an abatement plan has been required.

C. Any responsible person wishing to plug, abandon or destroy a monitoring or water supply well within the perimeter of the 3-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded, at any facility where an abatement plan has been required, shall propose such action by certified mail to the secretary for approval, unless such approval is required from the State Engineer. The proposed action shall be designed to prevent water pollution that could result from water contaminants migrating through the well or borehole. The proposed action shall not take place without written approval from the secretary, unless written approval or disapproval is not received by the responsible person within thirty (30) days of the date of receipt of the proposal.

[12-1-95; 20.6.2.4107 NMAC - Rn, 20 NMAC 6.2.IV.4107, 1-15-01]

20.6.2.4108 PUBLIC NOTICE AND PARTICIPATION:

A. Within thirty (30) days of filing of a Stage 1 abatement plan proposal, the secretary shall issue a news release summarizing:

(1) the source, extent, magnitude and significance of water pollution, as known at that time;

(2) the proposed Stage 1 abatement plan investigation; and

(3) the name and telephone number of an agency contact who can provide additional information.

B. Any person proposing a Stage 2 abatement plan, a significant modification to a Stage 2 abatement plan, or an alternative abatement standard shall provide notice of the proposal to the following persons:

(1) the public, who shall be notified through publication of a notice in newspapers of general circulation in this state and in the county where the abatement will occur or where the water body that would be affected by a proposed alternative abatement standard is located, and, in areas with large percentages of non-English speaking people, through the mailing of the public notice in English to a bilingual radio station serving the area where the abatement will occur with a request that it be aired as a public service announcement in the predominant non-English language of the area;

(2) those persons, as identified by the secretary, who have requested notification, who shall be notified by mail or email;

(3) the New Mexico Trustee for Natural Resources, and any other local, state or federal governmental agency affected, as identified by the secretary, which shall be notified by certified mail;

(4) owners and residents of surface property located inside, and within one (1) mile from, the perimeter of the geographic area where the standards and requirements set forth in Section 20.6.2.4103 NMAC are exceeded who shall be notified by a means approved by the secretary; and

(5) the Governor or President of each Indian Tribe, Pueblo or Nation within the state of New Mexico, as identified by the secretary, who shall be notified by mail or email.

C. The public notice proposal for a Stage 2 abatement plan proposal or significant modification of a Stage 2 abatement plan shall be submitted to the secretary for approval with a proposed Stage 2 abatement plan, or significant modification of a Stage 2 abatement plan, and shall include:

(1) name and address of the responsible person;

(2) location of the proposed abatement;

(3) brief description of the nature of the water pollution and of the proposed abatement action;

(4) brief description of the procedures followed by the secretary in making a final determination;

(5) statement on the comment period;

(6) statement that a copy of the abatement plan can be viewed by the public at the department's main office or at the department field office for the area in which the discharge occurred;

(7) statement that written comments on the abatement plan, and requests for a public meeting or hearing that include the reasons why a meeting or hearing should be held, will be accepted for consideration if sent to the secretary within sixty (60) days after the date of public notice; and

(8) address and phone number at which interested persons may obtain further information.

D. The public notice proposal for a proposed alternative abatement standard shall be submitted to the secretary for approval thirty (30) days prior to the filing of a petition for alternative abatement standards, and shall include:

(1) name and address of the responsible person;

(2) location of the proposed alternative abatement standards;

(3) brief description of the nature of the water pollution and of the proposed alternative abatement standards;

(4) brief description of the procedures followed by the commission in making a final determination on a petition for alternate abatement standards;

(5) statement that a copy of the petition for alternate abatement standards petition can be viewed by the public at the department's main office or at the department field office for the area in which the affected water body is occurring;

(6) statement on how the public can request to be placed on a facility-specific mailing list for notification of any hearing conducted on the petition for alternate abatement standards pursuant to 20.1.3 NMAC; and

(7) address and phone number at which interested persons may obtain further information.

E. Within thirty (30) days of the secretary’s approval of a Stage 2 abatement plan public notice proposal, any responsible person shall provide to the secretary proof of public notice to the persons listed in Subsection B of 20.6.2.4108 NMAC.

F. For a proposed Stage 2 abatement plan or significant modification of a Stage 2 abatement plan, a public meeting or hearing may be held if the secretary determines there is significant public interest. Notice of the

time and place of the meeting or hearing shall be given at least thirty (30) days prior to the meeting or hearing pursuant to Subsections A and B above. The secretary may appoint a meeting facilitator or hearing officer. The secretary may require the responsible person to prepare for approval by the secretary a fact sheet, to be distributed at the public meeting or hearing and afterwards upon request, written in English and Spanish, describing site history, the nature and extent of water pollution, and the proposed abatement. The record of the meeting or hearing, requested under this Section, consists of a tape recorded or transcribed session, provided that the cost of a court recorder shall be paid by the person requesting the transcript. If requested by the secretary, the responsible person will provide a translator approved by the secretary at a public meeting or hearing conducted in a locale where testimony from non-English speaking people can reasonably be expected. At the meeting or hearing, all interested persons shall be given a reasonable chance to submit data, views or arguments orally or in writing, and to ask questions of the secretary or the secretary's designee and of the responsible person, or their authorized representatives.

G. An alternative abatement standard shall only be granted after a public hearing before the commission, as required by NMSA 1978, Section 74-6-4(H) of the Water Quality Act. The commission shall review petitions for alternative abatement standards in accordance with the procedures for review of variance petitions provided in the commission's adjudicatory procedures, 20.1.3 NMAC.

[12-1-95; 20.6.2.4108 NMAC - Rn, 20 NMAC 6.2.IV.4108, 1-15-01; A, 12-21-18]

20.6.2.4109 SECRETARY APPROVAL OR NOTICE OF DEFICIENCY OF SUBMITTALS:

A. The secretary shall, within sixty (60) days of receiving a Stage 1 abatement plan proposal, a site investigation report, or an abatement completion report, approve the document, or notify the responsible person of the document's deficiency, based upon the information available.

B. The secretary shall, within thirty (30) days of receiving a fact sheet, or Stage 2 abatement plan public notice proposal, approve or notify the responsible person of the document's deficiency, based upon the information available.

C. If no public meeting or hearing is held pursuant to Subsection E of Section 20.6.2.4108 NMAC, then the secretary shall, within 120 days of receiving a Stage 2 abatement plan proposal, approve the plan, or notify the responsible person of the plan's deficiency, based upon the information available.

D. If a public meeting or hearing is held pursuant to Subsection E of Section 20.6.2.4108, then the secretary shall, within sixty (60) days of receipt of all required information, approve Stage 2 of the abatement plan proposal, or notify the responsible person of the plan's deficiency, based upon the information contained in the plan and information submitted at the meeting or hearing.

E. If the secretary notifies a responsible person of any deficiencies in a site investigation report, or in a Stage 1 or Stage 2 abatement plan proposal, the responsible person shall submit a modified document to cure the deficiencies specified by the secretary within thirty (30) days of receipt of the notice of deficiency. The responsible person shall be in violation of Sections 20.6.2.4000 through 20.6.2.4115 NMAC if he fails to submit a modified document within the required time, or if the modified document does not make a good faith effort to cure the deficiencies specified by the secretary.

F. Provided that the other requirements of this Part are met and provided further that Stage 2 of the abatement plan, if implemented, will result in the standards and requirements set forth in Section 20.6.2.4103 NMAC being met within a schedule that is reasonable given the particular circumstances of the site, the secretary shall approve the plan.

[12-1-95; 20.6.2.4109 NMAC - Rn, 20 NMAC 6.2.IV.4109, 1-15-01; A, 12-21-18]

20.6.2.4110 INVESTIGATION AND ABATEMENT: Any responsible person who receives approval for Stage 1 and/or Stage 2 of an abatement plan shall conduct all investigation, abatement, monitoring and reporting activity in full compliance with Sections 20.6.2.4000 through 20.6.2.4115 NMAC and according to the terms and schedules contained in the approved abatement plans.

[12-1-95; 20.6.2.4110 NMAC - Rn, 20 NMAC 6.2.IV.4110, 1-15-01]

20.6.2.4111 ABATEMENT PLAN MODIFICATION:

A. Any approved abatement plan may be modified, at the written request of the responsible person, in accordance with Sections 20.6.2.4000 through 20.6.2.4115 NMAC, and with written approval of the secretary.

B. If data submitted pursuant to any monitoring requirements specified in the approved abatement plan or other information available to the secretary indicates that the abatement action is ineffective, or is creating unreasonable injury to or interference with health, welfare, environment or property, the secretary may require a

responsible person to modify an abatement plan within the shortest reasonable time so as to effectively abate water pollution which exceeds the standards and requirements set forth in Section 20.6.2.4103 NMAC, and to abate and prevent unreasonable injury to or interference with health, welfare, environment or property.
[12-1-95; 20.6.2.4111 NMAC - Rn, 20 NMAC 6.2.IV.4111, 1-15-01]

20.6.2.4112 COMPLETION AND TERMINATION:

A. Abatement shall be considered complete when the standards and requirements set forth in Section 20.6.2.4103 NMAC are met. At that time, the responsible person shall submit an abatement completion report, documenting compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC, to the secretary for approval. The abatement completion report also shall propose any changes to long term monitoring and site maintenance activities, if needed, to be performed after termination of the abatement plan.

B. Provided that the other requirements of this Part are met and provided further that the standards and requirements set forth in Section 20.6.2.4103 NMAC have been met, the secretary shall approve the abatement completion report. When the secretary approves the abatement completion report, he shall also notify the responsible person in writing that the abatement plan is terminated.
[12-1-95; 20.6.2.4112 NMAC - Rn, 20 NMAC 6.2.IV.4112, 1-15-01]

20.6.2.4113 DISPUTE RESOLUTION: In the event of any technical dispute regarding the requirements of Paragraph (9) of Subsection A and Subsection E of Section 20.6.2.1203, Sections 20.6.2.4103, 20.6.2.4105, 20.6.2.4106, 20.6.2.4111 or 20.6.2.4112 NMAC, including notices of deficiency, the responsible person may notify the secretary by certified mail that a dispute has arisen, and desires to invoke the dispute resolution provisions of this Section, provided that such notification must be made within thirty (30) days after receipt by the responsible person of the decision of the secretary that causes the dispute. Upon such notification, all deadlines affected by the technical dispute shall be extended for a thirty (30) day negotiation period, or for a maximum of sixty (60) days if approved by the secretary for good cause shown. During this negotiation period, the secretary or his/her designee and the responsible person shall meet at least once. Such meeting(s) may be facilitated by a mutually agreed upon third party, but the third party shall assume no power or authority granted or delegated to the secretary by the Water Quality Act or by the commission. If the dispute remains unresolved after the negotiation period, the decision of secretary shall be final.
[12-1-95; 20.6.2.4113 NMAC - Rn, 20 NMAC 6.2.IV.4113, 1-15-01]

20.6.2.4114 APPEALS FROM SECRETARY'S DECISIONS:

A. If the secretary determines that an abatement plan is required pursuant to Paragraph (9) of Subsection A of 20.6.2.1203, Subsection F of 20.6.2.3109, or Subsection B of 20.6.2.4105 NMAC, approves or provides notice of deficiency of a proposed abatement plan, or abatement completion report, or modifies or terminates an approved abatement plan, he shall provide written notice of such action by certified mail to the responsible person and any person who participated in the action.

B. Any person who participated in the action before the secretary and who is adversely affected by the action listed in Subsection A of 20.6.2.4114 NMAC may file a petition requesting a review before the commission.

C. The petition shall be made in writing to the commission and shall be filed with the commission's secretary within thirty (30) days after receiving notice of the secretary's action. The petition shall specify the portions of the action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered to the secretary, and to the applicant or permittee if the petitioner is not the applicant or permittee, and attach a copy of the action for which review is sought. Unless a timely petition for hearing is made, the secretary's action is final.

D. The proceedings before the commission shall be conducted as provided in the commission’s adjudicatory procedures, 20 NMAC 1.3.

E. The cost of the court reporter for the hearing shall be paid by the petitioner.

F. The appeal provisions do not relieve the owner, operator or responsible person of their obligations to comply with any federal or state laws or regulations.
[12-1-95, 11-15-96; 20.6.2.4114 NMAC - Rn, 20 NMAC 6.2.IV.4114, 1-15-01; A, 7-16-06; A, 12-21-18]

20.6.2.4115 COURT REVIEW OF COMMISSION DECISIONS: Court review of commission decisions shall be as provided by law.
[12-1-95; 20.6.2.4115 NMAC - Rn, 20 NMAC 6.2.IV.4115, 1-15-01]

20.6.2.4116 - 20.6.2.4999: [RESERVED]
[12-1-95; 20.6.2.4116 - 20.6.2.4999 NMAC - Rn, 20 NMAC 6.2.IV.4116-5100, 1-15-01]

20.6.2.5000 UNDERGROUND INJECTION CONTROL:
[12-1-95; 20.6.2.5000 NMAC - Rn, 20 NMAC 6.2.V, 1-15-01]

20.6.2.5001 PURPOSE: The purpose of 20.6.2.5000 through 20.6.2.5399 NMAC controlling discharges from underground injection control wells is to protect all ground water of the state of New Mexico which has an existing concentration of 10,000 mg/l or less TDS, for present and potential future use as domestic and agricultural water supply, and to protect those segments of surface waters which are gaining because of ground water inflow for uses designated in the New Mexico water quality standards. 20.6.2.5000 through 20.6.2.5399 NMAC include notification requirements, and requirements for discharges directly into the subsurface through underground injection control wells.
[20.6.2.5001 NMAC - N, 12-1-01; A, 8-31-15]

20.6.2.5002 UNDERGROUND INJECTION CONTROL WELL CLASSIFICATIONS:

A. Underground injection control wells include the following.

(1) Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.

(2) Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste.

(3) Any subsurface distribution system, cesspool or other well which is used for the injection of wastes.

B. Underground injection control wells are classified as follows:

(1) Class I wells inject fluids beneath the lowermost formation that contains 10,000 milligrams per liter or less TDS. Class I hazardous or radioactive waste injection wells inject fluids containing any hazardous or radioactive waste as defined in 74-4-3 and 74-4A-4 NMSA 1978 or 20.4.1.200 NMAC (incorporating 40 C.F.R. Section 261.3), including any combination of these wastes. Class I non-hazardous waste injection wells inject non-hazardous and non-radioactive fluids, and they inject naturally-occurring radioactive material (NORM) as provided by 20.3.1.1407 NMAC.

(2) Class II wells inject fluids associated with oil and gas recovery;

(3) Class III wells inject fluids for extraction of minerals or other natural resources, including sulfur, uranium, metals, salts or potash by in situ extraction. This classification includes only in situ production from ore bodies that have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.

(4) Class IV wells inject fluids containing any radioactive or hazardous waste as defined in 74-4-3 and 74-4A-4 NMSA 1978, including any combination of these wastes, above or into a formation that contains 10,000 mg/l or less TDS.

(5) Class V wells inject a variety of fluids and are those wells not included in Class I, II, III or IV. Types of Class V wells include, but are not limited to, the following:

(a) domestic liquid waste injection wells:

(i) domestic liquid waste disposal wells used to inject liquid waste volumes greater than that regulated by 20.7.3 NMAC through subsurface fluid distribution systems or vertical wells;

(ii) septic system wells used to emplace liquid waste volumes greater than that regulated by 20.7.3 NMAC into the subsurface, which are comprised of a septic tank and subsurface fluid distribution system;

(iii) large capacity cesspools used to inject liquid waste volumes greater than that regulated by 20.7.3 NMAC, including drywells that sometimes have an open bottom or perforated sides;

(b) industrial waste injection wells:

(i) air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling;

(ii) dry wells used for the injection of wastes into a subsurface formation;

(iii) injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electrical power;

(iv) stormwater drainage wells used to inject storm runoff from the surface into the subsurface;

(v) motor vehicle waste disposal wells that receive or have received fluids from vehicular repair or maintenance activities;

(vi) car wash waste disposal wells used to inject fluids from motor vehicle washing activities;

(c) mining injection wells:

(i) stopes leaching wells used for solution mining of conventional mines;

(ii) brine injection wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts;

(iii) backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether water injected is a radioactive waste or not;

(iv) injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale;

(d) ground water management injection wells:

(i) ground water remediation injection wells used to inject contaminated ground water that has been treated to ground water quality standards;

(ii) in situ ground water remediation wells used to inject a fluid that facilitates vadose zone or ground water remediation.

(iii) recharge wells used to replenish the water in an aquifer, including use to reclaim or improve the quality of existing ground water;

(iv) barrier wells used to inject fluids into ground water to prevent the intrusion of saline or contaminated water into ground water of better quality;

(v) subsidence control wells (not used for purposes of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water;

(vi) wells used in experimental technologies;

(e) agricultural injection wells - drainage wells used to inject fluids into ground water to prevent the intrusion of saline or contaminated water into ground water of better quality.

[20.6.2.5002 NMAC - N, 12-1-01; A, 8-1-14; A, 8-31-15; A, 12-21-18]

20.6.2.5003 NOTIFICATION AND GENERAL OPERATION REQUIREMENTS FOR ALL UNDERGROUND INJECTION CONTROL WELLS: All operators of underground injection control wells, except those wells regulated under the Oil and Gas Act, the Geothermal Resources Development Act, and the Surface Mining Act, shall:

A. for existing underground injection control wells, submit to the secretary the information enumerated in Subsection C of 20.6.2.1201 NMAC of this part; provided, however, that if the information in Subsection C of 20.6.2.1201 NMAC has been previously submitted to the secretary and acknowledged by him, the information need not be resubmitted; and

B. operate and continue to operate in conformance with 20.6.2.1 through 20.6.2.5399 NMAC;

C. for new underground injection control wells, submit to the secretary the information enumerated in Subsection C of 20.6.2.1201 NMAC of this part at least 120 days prior to well construction.

[9-20-82, 12-1-95; 20.6.2.5300 NMAC - Rn, 20 NMAC 6.2.V.5300, 1-15-01; 20.6.2.5003 NMAC - Rn, 20.6.2.5300 NMAC, 12-1-01; A, 12-1-01; A, 9-15-02; A, 8-31-15; A, 12-21-18]

20.6.2.5004 PROHIBITED UNDERGROUND INJECTION CONTROL ACTIVITIES AND WELLS:

A. No person shall perform the following underground injection activities nor operate the following underground injection control wells.

(1) The injection of fluids into a motor vehicle waste disposal well is prohibited. Motor vehicle waste disposal wells are prohibited. Any person operating a new motor vehicle waste disposal well (for which construction began after April 5, 2000) must close the well immediately. Any person operating an existing motor vehicle waste disposal well must cease injection immediately and must close the well by December 31, 2002, except as provided in this subsection.

(2) The injection of fluids into a large capacity cesspool is prohibited. Large capacity cesspools are prohibited. Any person operating a new large capacity cesspool (for which construction began after

April 5, 2000) must close the cesspool immediately. Any person operating an existing large capacity cesspool must cease injection immediately and must close the cesspool by December 31, 2002.

(3) The injection of any hazardous or radioactive waste into a well is prohibited, except as provided in 20.6.2.5300 through 20.6.2.5399 NMAC or this subsection.

(a) Class I radioactive waste injection wells are prohibited, except naturally-occurring radioactive material (NORM) regulated under 20.3.1.1407 NMAC is allowed as a Class I non-hazardous waste injection well pursuant to Paragraph (1) of Subsection B of 20.6.2.5002 NMAC.

(b) Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action if the injection has prior approval from the environmental protection agency (EPA) or the department under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA).

(4) Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited, except when the discharger can demonstrate that the discharge will not adversely affect the health of persons, and

(a) the injection fluid does not contain a constituent or exhibit a physical parameter (which could include pH, redox condition or temperature) which may cause an exceedance at any place of present or reasonable foreseeable future use of any primary state drinking water maximum contaminant level as specified in the water supply regulations, "Drinking Water" (20.7.10 NMAC), adopted by the environmental improvement board under the Environmental Improvement Act or the standard of 20.6.2.3103 NMAC, whichever is more stringent;

(b) the discharger can demonstrate that the injection will result in an overall or net improvement in water quality as determined by the secretary.

B. Closure of prohibited underground injection control wells shall be in accordance with 20.6.2.5005 and 20.6.2.5209 NMAC.

[20.6.2.5004 NMAC - N, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5005 PRE-CLOSURE NOTIFICATION AND CLOSURE REQUIREMENTS:

A. Any person proposing to close a Class I, III, IV or V underground injection control well must submit pre-closure notification to the department at least 30 days prior to closure. Pre-closure notification must include the following information:

(1) Name of facility.
(2) Address of facility.
(3) Name of Owner/Operator.
(4) Address of Owner/Operator.
(5) Contact Person.
(6) Phone Number.
(7) Type of Well(s).
(8) Number of Well(s).
(9) Well Construction (e.g. drywell, improved sinkhole, septic tank, leachfield, cesspool, other…).
(10) Type of Discharge.
(11) Average Flow (gallons per day).
(12) Year of Well Construction.
(13) Proposed Well Closure Activities (e.g. sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type well, ground water and vadose zone investigation, other).
(14) Proposed Date of Well Closure.
(15) Name of Preparer.
(16) Date.
(17) Well plugging plan as submitted to the Office of the State Engineer pursuant to 19.27.4 NMAC.

B. Proposed well closure activities must be approved by the department prior to implementation.

[20.6.2.5005 NMAC - N, 12-1-01; A; 12-21-18]

20.6.2.5006 DISCHARGE PERMIT REQUIREMENTS FOR CLASS V INJECTION WELLS: Class V injection wells must meet the requirements of Sections 20.6.2.3000 through 20.6.2.3999 NMAC and Sections

20.6.2.5000 through 20.6.2.5006 NMAC. Class V injection wells or surface impoundments constructed as recharge basins used to replenish the water in an aquifer, including use to reclaim or improve the quality of existing water must additionally provide documentation of compliance with 19.25.8 NMAC (Underground Storage and Recovery) and shall not be subject to the exemptions of 20.6.2.3105 NMAC.
[20.6.2.5006 NMAC - N, 12-1-01; A, 12-21-18]

20.6.2.5007 - 20.6.2.5100: [RESERVED]
[12-1-95; 20.6.2.5001 - 20.6.2.5100 NMAC - Rn, 20 NMAC 6.2.IV.4116-5100, 1-15-01; 20.6.2.5007 -20.6.2.5100 NMAC - Rn 20.6.2.5001 - 20.6.2.5100 NMAC, 12-1-01]

20.6.2.5101 DISCHARGE PERMIT AND OTHER REQUIREMENTS FOR CLASS I WELLS AND CLASS III WELLS:

A. Class I wells and Class III wells must meet the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC in addition to other applicable requirements of the commission regulations. The secretary may also require that some Class IV and Class V wells comply with the requirements for Class I wells in 20.6.2.5000 through 20.6.2.5399 NMAC if the secretary determines that the additional requirements are necessary to prevent the movement of water contaminants from a specified injection zone into ground water having 10,000 mg/l or less TDS. No Class I well or Class III well may be approved which allows for movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC, or pursuant to a temporary designation as provided in Paragraph (2) of Subsection C of 20.6.2.5101 NMAC.

B. Operation of a Class I well or Class III well must be pursuant to a discharge permit meeting the requirements of 20.6.2.3000 through 20.6.2.3999 NMAC and 20.6.2.5000 through 20.6.2.5399 NMAC.

C. Discharge permits for Class I wells, or Class III wells affecting ground water of 10,000 mg/l or less TDS submitted for secretary approval shall:

(1) receive an aquifer designation if required in 20.6.2.5103 NMAC prior to discharge permit issuance; or

(2) for Class III wells only, address the methods or techniques to be used to restore ground water so that upon final termination of operations including restoration efforts, ground water at any place of withdrawal for present or reasonably foreseeable future use will not contain either concentrations in excess of the standards of 20.6.2.3103 NMAC or any toxic pollutant; issuance of a discharge permit or project discharge permit for Class III wells that provides for restoration of ground water in accordance with the requirements of this subsection shall substitute for the aquifer designation provisions of 20.6.2.5103 NMAC; the approval shall constitute a temporary aquifer designation for a mineral bearing or producing aquifer, or portion thereof, to allow injection as provided for in the discharge permit; such temporary designation shall expire upon final termination of operations including restoration efforts.

D. The exemptions from the discharge permit requirement listed in 20.6.2.3105 NMAC do not apply to underground injection control wells except as provided below:

(1) wells regulated by the energy conservation management division of the energy, minerals and natural resources department under the “Geothermal Resources Development Act”;

(2) wells regulated by the mining and minerals division of the energy, minerals and natural resources department under the “Surface Mining Act”;

(3) wells for the disposal of effluent from systems which are regulated under the "Liquid Waste Disposal and Treatment” regulations (20.7.3 NMAC) adopted by the environmental improvement board under the “Environmental Improvement Act”.

E. Project permits for Class III wells.

(1) The secretary may consider a project discharge permit for Class III wells, if the wells are:

(a) within the same well field, facility site or similar unit;

(b) within the same aquifer and ore deposit;

(c) of similar construction;

(d) of the same purpose; and

(e) operated by a single owner or operator.

(2) A project discharge permit does not allow the discharger to commence injection in any individual operational area until the secretary approves an application for injection in that operational area (operational area approval).

(3) A project discharge permit shall:

(a) specify the approximate locations and number of wells for which operational area approvals are or will be sought with approximate time frames for operation and restoration (if restoration is required) of each area; and

(b) provide the information required under the following sections of this part, except for such additional site-specific information as needed to evaluate applications for individual operational area approvals: Subsection C of 20.6.2.3106, 20.6.2.3107, 20.6.2.5204 through 20.6.2.5209, and Subsection B of 20.6.2.5210 NMAC.

(4) Applications for individual operational area approval shall include the following:

(a) site-specific information demonstrating that the requirements of this part are met; and

(b) information required under 20.6.2.5202 through 20.6.2.5210 NMAC and not previously provided pursuant to Subparagraph (b) of Paragraph (3) of Subsection E of this section.

(5) Applications for project discharge permits and for operational area approval shall be processed in accordance with the same procedures provided for discharge permits under 20.6.2.3000 through 20.6.2.3114 NMAC, allowing for public notice on the project discharge permit and on each application for operational area approval pursuant to 20.6.2.3108 NMAC with opportunity for public hearing prior to approval or disapproval.

(6) The discharger shall comply with additional requirements that may be imposed by the secretary pursuant to this part on wells in each new operational area.

F. If the holder of a discharge permit for a Class I well, or Class III well submits an application for discharge permit renewal at least 120 days before discharge permit expiration, and the discharger is in compliance with his discharge permit on the date of its expiration, then the existing discharge permit for the same activity shall not expire until the application for renewal has been approved or disapproved. An application for discharge permit renewal must include and adequately address all of the information necessary for evaluation of a new discharge permit. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved.

G. Discharge permit signatory requirements: No discharge permit for a Class I well or Class III well may be issued unless:

(1) the application for a discharge permit has been signed as follows:

(a) for a corporation: by a principal executive officer of at least the level of vice-president, or a representative who performs similar policy-making functions for the corporation who has authority to sign for the corporation; or

(b) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(c) for a municipality, state, federal, or other public agency: by either a principal executive officer who has authority to sign for the agency, or a ranking elected official; and

(2) all reports required by Class I hazardous waste injection well permits and other information requested by the director pursuant to a Class I hazardous waste injection well permit shall be signed by a person described in Paragraph (1) of this subsection, or by a duly authorized representative of that person; a person is a duly authorized representative only if:

(a) the authorization is made in writing by a person described in Paragraph (1) of this subsection;

(b) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(c) the written authorization is submitted to the director.

(3) *Changes to authorization.* If an authorization under Paragraph (2) of this subsection is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Paragraph (2) of this subsection must be submitted to the director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(4) The signature on an application, report or other information requested by the director must be directly preceded by the following certification: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information

is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."

H. Transfer of Class I non-hazardous waste injection well and Class III well discharge permits.

(1) The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well or Class III well.

(2) A Class I non-hazardous waste injection well or Class III well discharge permit may be transferred if:

(a) the secretary receives written notice 30 days prior to the transfer date; and

(b) the secretary does not object prior to the proposed transfer date; the secretary may require modification of the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

(3) The written notice required by Subparagraph (a) of Paragraph (2) of Subsection H above shall:

(a) have been signed by the discharger and the succeeding discharger, including an acknowledgement that the succeeding discharger shall be responsible for compliance with the discharge permit upon taking possession of the facility; and

(b) set a specific date for transfer of discharge permit responsibility, coverage and liability; and

(c) include information relating to the succeeding discharger's financial responsibility required by Paragraph (17) of Subsection B of 20.6.2.5210 NMAC.

I. Modification or termination of a discharge permit for a Class I well or Class III well: If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicate that this part are being or may be violated, the secretary may require modification or, if it is determined by the secretary that the modification may not be adequate, may terminate a discharge permit for a Class I well, or Class III well or well field, that was approved pursuant to the requirements of this under 20.6.2.5000 through 20.6.2.5399 NMAC for the following causes:

(1) noncompliance by the discharger with any condition of the discharge permit; or

(2) the discharger's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or the discharger's misrepresentation of any relevant facts at any time; or

(3) a determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination.

[9-20-82, 12-1-95, 11-15-96; 20.6.2.5101 NMAC - Rn, 20 NMAC 6.2.V.5101, 1-15-01; A, 12-1-01; A, 9-15-02; A, 8-1-14; A, 8-31-15; A, 12-21-18]

20.6.2.5102 PRE-CONSTRUCTION REQUIREMENTS FOR CLASS I WELLS AND CLASS III WELLS:

A. Discharge permit requirement for Class I wells.

(1) Prior to construction of a Class I well or conversion of an existing well to a Class I well, an approved discharge permit is required that incorporates the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC, except Subsection C of 20.6.2.5210 NMAC. As a condition of discharge permit issuance, the operation of the Class I well under the discharge permit will not be authorized until the secretary has:

(a) reviewed the information submitted for his consideration pursuant to Subsection C of 20.6.2.5210 NMAC; and

(b) determined that the information submitted demonstrates that the operation will be in compliance with this part and the discharge permit.

(2) If conditions encountered during construction represent a substantial change which could adversely impact ground water quality from those anticipated in the discharge permit, the secretary shall require a discharge permit modification or may terminate the discharge permit pursuant to Subsection I of 20.6.2.5101 NMAC, and the secretary shall publish public notice and allow for comments and hearing in accordance with 20.6.2.3108 NMAC.

B. Notification requirement for Class III wells.

(1) The discharger shall notify the secretary in writing prior to the commencement of drilling or construction of wells which are expected to be used for in situ extraction, unless the discharger has previously received a discharge permit or project discharge permit for the Class III well operation.

(a) Any person proposing to drill or construct a new Class III well or well field, or convert an existing well to a Class III well, shall file plans, specifications and pertinent documents regarding such construction or conversion, with the ground water quality bureau of the environment department.

(b) Plans, specifications, and pertinent documents required by this section, if pertaining to carbon dioxide facilities, or facilities for the exploration, production, refinement or pipeline transmission of oil and natural gas, shall be filed instead with the oil conservation division of the energy, minerals and natural resources department.

(c) Plans, specifications and pertinent documents required to be filed under this section must be filed 90 days prior to the planned commencement of construction or conversion.

(d) The following plans, specifications and pertinent documents shall be provided with the notification:

(i) information required in Subsection C of 20.6.2.3106 NMAC;

(ii) a map showing the Class III wells which are to be constructed; the map must also show, in so far as is known or is reasonably available from the public records, the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads, that are within the expected area of review (20.6.2.5202 NMAC) of the Class III well or well field perimeter;

(iii) maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within one mile of the site, the position of such ground water within this area relative to the injection formation, and the direction of water movement, where known, in each zone of ground water which may be affected by the proposed injection operation;

(iv) maps and cross-sections detailing the geology and geologic structure of the local area, including faults, if known or suspected;

(v) the proposed formation testing program to obtain an analysis or description, whichever the secretary requires, of the chemical, physical, and radiological characteristics of, and other information on, the receiving formation;

(vi) the proposed stimulation program;

(vii) the proposed injection procedure;

(viii) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(ix) proposed construction procedures, including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

(x) information, as described in Paragraph (17) of Subsection B of 20.6.2.5210 NMAC, showing the ability of the discharger to undertake measures necessary to prevent ground water contamination; and

(xi) a plugging and abandonment plan showing that the requirements of Subsections B, C and D of 20.6.2.5209 NMAC will be met.

(2) Prior to construction, the discharger shall have received written notice from the secretary that the information submitted under item 10 of Subparagraph (d) of Paragraph (1) of Subsection B of 20.6.2.5102 NMAC is acceptable. Within 30 days of submission of the above information the secretary shall notify the discharger that the information submitted is acceptable or unacceptable.

(3) Prior to construction, the secretary shall review said plans, specifications and pertinent documents and shall comment upon their adequacy of design for the intended purpose and their compliance with pertinent sections of this part. Review of plans, specifications and pertinent documents shall be based on the criteria contained in 20.6.2.5205, Subsection E of 20.6.2.5209, and Subparagraph (d) of Paragraph (1) of Subsection B of 20.6.2.5102 NMAC.

(4) Within 30 days of receipt, the secretary shall issue public notice, consistent with Subsection B of 20.6.2.3108 NMAC, that notification was submitted pursuant to Subsection B of 20.6.2.5102 NMAC. The secretary shall allow a period of at least 30 days during which comments may be submitted. The public notice shall include:

(a) name and address of the proposed discharger;

(b) location of the discharge;

(c) brief description of the proposed activities;

(d) statement of the public comment period; and

(e) address and telephone number at which interested persons may obtain further information.

(5) The secretary shall comment in writing upon the plans and specifications within 60 days of their receipt by the secretary.

(6) Within 30 days after completion, the discharger shall submit written notice to the secretary that the construction or conversion was completed in accordance with submitted plans and specifications, or shall submit as-built plans detailing changes from the originally submitted plans and specifications.

(7) In the event a discharge permit application is not submitted or approved, all wells which may cause ground water contamination shall be plugged and abandoned by the applicant pursuant to the plugging and abandonment plan submitted in the notification; these measures shall be consistent with any comments made by the secretary in his review. If the wells are not to be permanently abandoned and the discharger demonstrates that plugging at this time is unnecessary to prevent ground water contamination, plugging pursuant to the notification is not required. Financial responsibility established pursuant to 20.6.2.5000 through 20.6.2.5299 NMAC will remain in effect until the discharger permanently abandons and plugs the wells in accordance with the plugging and abandonment plan.

[9-20-82, 12-24-87, 12-1-95; 20.6.2.5102 NMAC - Rn, 20 NMAC 6.2.V.5102, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5103 DESIGNATED AQUIFERS FOR CLASS I WELLS AND CLASS III WELLS:

A. Any person may file a written petition with the secretary seeking commission consideration of certain aquifers or portions of aquifers as "designated aquifers". The purpose of aquifer designation is:

(1) for Class I wells, to allow as a result of injection, the addition of water contaminants into ground water, which before initiation of injection has a concentration between 5,000 and 10,000 mg/l TDS; or

(2) for Class III wells, to allow as a result of injection, the addition of water contaminants into ground water, which before initiation of injection has a concentration between 5,000 and 10,000 mg/l TDS, and not provide for restoration or complete restoration of that ground water pursuant to Paragraph (2) of Subsection C of 20.6.2.5101 NMAC.

B. The applicant shall identify (by narrative description, illustrations, maps or other means) and describe such aquifers, in geologic and geometric terms (such as vertical and lateral limits and gradient) which are clear and definite.

C. An aquifer or portion of an aquifer may be considered for aquifer designation under Subsection A of this section, if the applicant demonstrates that the following criteria are met:

(1) it is not currently used as a domestic or agricultural water supply; and

(2) there is no reasonable relationship between the economic and social costs of failure to designate and benefits to be obtained from its use as a domestic or agricultural water supply because:

(a) it is situated at a depth or location which makes recovery of water for drinking or agricultural purposes economically or technologically impractical at present and in the reasonably foreseeable future; or

(b) it is already so contaminated that it would be economically or technologically impractical to render that water fit for human consumption or agricultural use at present and in the reasonably foreseeable future.

D. The petition shall state the extent to which injection would add water contaminants to ground water and why the proposed aquifer designation should be approved. For Class III wells, the applicant shall state whether and to what extent restoration will be carried out.

E. The secretary shall either transmit the petition to the commission within 60 recommending that a public hearing be held, or refuse to transmit the petition and notify the applicant in writing citing reasons for such refusal.

F. If the secretary transmits the petition to the commission, the commission shall review the petition and determine to either grant or deny a public hearing on the petition. If the commission grants a public hearing, it shall issue a public notice, including the following information:

(1) name and address of the applicant;

(2) location, depth, TDS, areal extent, general description and common name or other identification of the aquifer for which designation is sought;

(3) nature of injection and extent to which the injection will add water contaminants to ground water; and

(4) address and telephone number at which interested persons may obtain further information.

G. If the secretary refuses to transmit the petition to the commission, then the applicant may appeal the secretary's disapproval of the proposed aquifer designation to the commission within 30 days, and address the issue of whether the proposed aquifer designation meets the criteria of Subsections A, B, C, and D of this section.

H. If the commission grants a public hearing, the hearing shall be held in accordance with the provisions of Section 74-6-6 NMSA 1978.

I. If the commission does not grant a public hearing on the petition, the aquifer designation shall not be approved.

J. After public hearing and consideration of all facts and circumstances included in Section 74-6-4(D) NMSA 1978, the commission may authorize the secretary to approve a proposed designated aquifer if the commission determines that the criteria of Subsections A, B, C, and D of this section are met.

K. Approval of a designated aquifer petition does not alleviate the applicant from complying with other sections of 20.6.2.5000 through 20.6.2.5399 NMAC, or of the responsibility for protection, pursuant to this part, of other nondesignated aquifers containing ground water having 10,000 mg/l or less TDS.

L. Persons other than the petitioner may add water contaminants as a result of injection into an aquifer designated for injection, provided the person receives a discharge permit pursuant to the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC. Persons, other than the original petitioner or his designee, requesting addition of water contaminants as a result of injection into aquifers previously designated only for injection with partial restoration shall file a petition with the commission pursuant to the requirements of Subsections A, B, C, and D of this section.

[9-20-82, 12-1-95; 20.6.2.5103 NMAC - Rn, 20 NMAC 6.2.V.5103, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5104 WAIVER OF REQUIREMENT BY SECRETARY FOR CLASS I WELLS AND CLASS III WELLS:

A. Where a Class I well or a Class III well or well field, does not penetrate, or inject into or above, and which will not affect, ground water having 10,000 mg/l of less TDS, the secretary may:

(1) issue a discharge permit for a well or well field with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required by 20.6.2.5000 through 20.6.2.5399 NMAC; or

(2) for Class III wells only, issue a discharge permit pursuant to the requirements of 20.6.2.3000 through 20.6.2.3114 NMAC.

B. Authorization of a reduction in requirements under Subsection A of this section shall be granted only if injection will not result in an increased risk of movement of fluids into ground water having 10,000 mg/l or less TDS, except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

[9-20-82, 12-1-95; 20.6.2.5104 NMAC - Rn & A, 20 NMAC 6.2.V.5104, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5105 - 20.6.2.5199: [RESERVED]

[12-1-95; 20.6.2.5105 - 20.6.2.5199 NMAC - Rn, 20 NMAC 6.2.V.5105-5199, 1-15-01]

20.6.2.5200 TECHNICAL CRITERIA AND PERFORMANCE STANDARDS FOR CLASS I WELLS AND CLASS III WELLS:

[12-1-95; 20.6.2.5200 NMAC - Rn, 20 NMAC 6.2.V.5200, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5201 PURPOSE: 20.6.2.5200 through 20.6.2.5210 NMAC provide the technical criteria and performance standards for Class I wells and Class III wells. (20.6.2.5300 through 20.6.2.5399 NMAC provide certain additional technical and performance standards for Class I hazardous waste injection wells.)

[9-20-82; 20.6.2.5201 NMAC - Rn, 20 NMAC 6.2.V.5201, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5202 AREA OF REVIEW:

A. The area of review is the area surrounding a Class I non-hazardous waste injection well or Class III well or the area within and surrounding a well field that is to be examined to identify possible fluid conduits, including the location of all known wells and fractures which may penetrate the injection zone.

B. The area of review for each Class I non-hazardous waste injection well, or each Class III well or well field shall be an area which extends:

(1) two and one half (2 1/2) miles from the well, or well field; or

(2) one-quarter (1/4) mile from a well or well field where the area of review is calculated to be zero pursuant to Paragraph (3) of Subsection B below, or where the well field production at all times exceeds injection to produce a net withdrawal; or

(3) a suitable distance, not less than one-quarter (1/4) mile, proposed by the discharger and approved by the secretary, based upon a mathematical calculation to determine the area of review; computations to determine the area of review may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the Class I non-hazardous waste injection well, or Class III well or well field; the following modified Theis equation illustrates one form which the mathematical model may take to compute the area of review; the discharger must demonstrate that any equation or simulation used to compute the area of review applies to the hydrogeologic conditions in the area of review.

$$r = \left(\frac{2.25\, K\, H\, t}{S\, 10^{x}} \right)^{1/2}$$

Where:

4BKH $(H_w - H_{bo})$x S_pG_b

r = Radius of the area of review for a Class I non-hazardous waste injection well or Class III well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

H_{bo} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowest aquifer containing ground water of 10,000 mg/l or less TDS

H_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest aquifer containing ground water of 10,000 mg/l or less TDS

S_pG_b = Specific gravity of fluid in the injection zone (dimensionless)

B = 3.142 (dimensionless)

(4) The above equation is based on the following assumptions:

(a) the injection zone is homogenous and isotropic;

(b) the injection zone has infinite areal extent;

(c) the Class I non-hazardous waste injection well or Class III well penetrates the entire thickness of the injection zone;

(d) the well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

(e) the emplacement of fluid into the injection zone creates an instantaneous increase in pressure.

C. The secretary shall require submittal by the discharger of information regarding the area of review including the information to be considered by the secretary in Subsection B of Section 20.6.2.5210 NMAC.
[9-20-82, 12-1-95; 20.6.2.5202 NMAC - Rn, 20 NMAC 6.2.V.5202, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.5203 CORRECTIVE ACTION FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. Persons applying for approval of a Class I non-hazardous waste injection well, or a Class III well or well field shall identify the location of all known wells, drill holes, shafts, stopes and other conduits within the area of review which may penetrate the injection zone, in so far as is known or is reasonably available from the public records. For such wells or other conduits which are improperly sealed, completed, or abandoned, or otherwise provide a pathway for the migration of contaminants, the discharger shall address in the proposed discharge plan such steps or modifications (corrective action) as are necessary to prevent movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

B. Prior to operation, or continued operation of a well for which corrective action is required pursuant to Subsections A or D of Section 20.6.2.5203 NMAC, the discharger must demonstrate that:

(1) all required corrective action has been taken; or

(2) injection pressure is to be limited so that pressure in the injection zone does not cause fluid movement through any well or other conduit within the area of review into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC; this pressure limitation may be removed after all required corrective action has been taken.

C. In determining the adequacy of corrective action proposed in the discharge permit application, the following factors will be considered by the secretary:

(1) chemical nature and volume of the injected fluid;

(2) chemical nature of native fluids and by-products of injection;

(3) geology and hydrology;

(4) history of the injection and production operation;

(5) completion and plugging records;

(6) abandonment procedures in effect at the time a well, drill hole, or shaft was abandoned; and

(7) hydraulic connections with waters having 10,000 mg/l or less TDS

D. In the event that, after approval for a Class I non-hazardous waste injection well or Class III well has been granted, additional information is submitted or it is discovered that a well or other conduit within the applicable area of review might allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC, the secretary may require action in accordance with Subsection I of Section 20.6.2.5101 and Subsection B Section 20.6.2.5203 NMAC.
[9-20-82, 12-1-95; 20.6.2.5203 NMAC - Rn, 20 NMAC 6.2.V.5203, 1-15-01; A, 12-1-01]

20.6.2.5204 MECHANICAL INTEGRITY FOR CLASS I WELLS AND CLASS III WELLS:

A. A Class I well or Class III well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which the secretary considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the secretary considers to be significant.

B. Prior to well injection and at least once every five years or more frequently as the secretary may require for good cause during the life of the well, the discharger must demonstrate that a Class I well or Class III well has mechanical integrity. The demonstration shall be made through use of the following tests:

(1) for evaluation of leaks:

(a) monitoring of annulus pressure (after an initial pressure test with liquid or gas before operation commences); or

(b) pressure test with liquid or gas;

(2) for determination of conduits for fluid movement:

(a) the results of a temperature or noise log; or

(b) where the nature of the casing used for Class III wells precludes use of these logs, cementing records and an appropriate monitoring program as the secretary may require which will demonstrate the presence of adequate cement to prevent such movement;

(3) other appropriate tests as the secretary may require.

C. The secretary may consider the use by the discharger of equivalent alternative test methods to determine mechanical integrity. The discharger shall submit information on the proposed test and all technical data supporting its use. The secretary may approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. For Class III wells this demonstration may be made by submission of adequate monitoring data after the initial mechanical integrity tests.

D. In conducting and evaluating the tests enumerated in this section or others to be allowed by the secretary, the discharger and the secretary shall apply methods and standards generally accepted in the affected industry. When the discharger reports the results of mechanical integrity tests to the secretary, he shall include a description of the test(s), the method(s) used, and the test results. In making an evaluation, the secretary's review shall include monitoring and other test data submitted since the previous evaluation.

[9-20-82, 12-1-95; 20.6.2.5204 NMAC - Rn, 20 NMAC 6.2.V.5204, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5205 CONSTRUCTION REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. General Construction Requirements Applicable to Class I non-hazardous waste injection wells and Class III wells.

(1) Construction of all Class I non-hazardous waste injection wells and all new Class III wells shall include casing and cementing. Prior to well injection, the discharger shall demonstrate that the construction and operation of:

(a) Class I non-hazardous waste injection wells will not cause or allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC;

(b) Class III wells will not cause or allow movement of fluids out of the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

(2) The construction of each newly drilled well shall be designed for the proposed life expectancy of the well.

(3) In determining if the discharger has met the construction requirements of this section and has demonstrated adequate construction, the secretary shall consider the following factors:

(a) depth to the injection zone;

(b) injection pressure, external pressure, annular pressure, axial loading, and other stresses that may cause well failure;

(c) hole size;

(d) size and grade of all casing strings, including wall thickness, diameter, nominal weight, length, joint specification, and construction material;

(e) type and grade of cement;

(f) rate, temperature, and volume of injected fluid;

(g) chemical and physical characteristics of the injected fluid, including corrosiveness, density, and temperature;

(h) chemical and physical characteristics of the formation fluids including pressure and temperature;

(i) chemical and physical characteristics of the receiving formation and confining zones including lithology and stratigraphy, and fracture pressure; and

(j) **d**epth, thickness and chemical characteristics of penetrated formations which may contain ground water.

(4) To demonstrate adequate construction, appropriate logs and other tests shall be conducted during the drilling and construction of new Class I non-hazardous waste injection wells or Class III wells or during work-over of existing wells in preparation for reactivation or for change to injection use. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the secretary for review prior to well injection. The logs and tests appropriate to each type of injection well shall be based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses.

(a) The discharger shall demonstrate through use of sufficiently frequent deviation checks, or another equivalent method, that a Class I non-hazardous waste injection well or Class III well drilled

using a pilot hole then enlarged by reaming or another method, does not allow a vertical avenue for fluid migration in the form of diverging holes created during drilling.

(b) The secretary may require use by the discharger of the following logs to assist in characterizing the formations penetrated and to demonstrate the integrity of the confining zones and the lack of vertical avenues for fluid migration:

(i) for casing intended to protect ground water having 10,000 mg/l or less TDS: resistivity, spontaneous potential, and caliper logs before the casing is installed; and a cement bond, or temperature log after the casing is set and cemented.

(ii) **f**or intermediate and long strings of casing intended to facilitate injection: resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed; and fracture finder or spectral logs; and a cement bond or temperature log after the casing is set and cemented.

(5) In addition to the requirements of Section 20.6.2.5102 NMAC, the discharger shall provide notice prior to commencement of drilling, cementing and casing, well logging, mechanical integrity tests, and any well work-over to allow opportunity for on-site inspection by the secretary or his representative.

B. Additional construction requirements for Class I non-hazardous waste injection wells.

(1) All Class I non-hazardous waste injection wells shall be sited in such a manner that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, ground water having 10,000 mg/l TDS or less except as approved pursuant to Section 20.6.2.5103 NMAC.

(2) All Class I non-hazardous waste injection wells shall be cased and cemented by circulating cement to the surface.

(3) All Class I non-hazardous waste injection wells, except those municipal wells injecting noncorrosive wastes, shall inject fluids through tubing with a packer set in the annulus immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected length of service.

(a) The use of other alternatives to a packer may be allowed with the written approval of the secretary. To obtain approval, the operator shall submit a written request to the secretary which shall set forth the proposed alternative and all technical data supporting its use. The secretary may approve the request if the alternative method will reliably provide a comparable level of protection to ground water. The secretary may approve an alternative method solely for an individual well or for general use.

(b) In determining the adequacy of the specifications proposed by the discharger for tubing and packer, or a packer alternative, the secretary shall consider the following factors:

(i) depth of setting;

(ii) characteristics of injection fluid (chemical nature or characteristics, corrosiveness, and density);

(iii) injection pressure;

(iv) annular pressure;

(v) rate, temperature and volume of injected fluid; and

(vi) size of casing.

C. Additional construction requirements for Class III wells.

(1) Where injection is into a formation containing ground water having 10,000 mg/l or less TDS, monitoring wells shall be completed into the injection zone and into the first formation above the injection zone containing ground water having 10,000 mg/l or less TDS which could be affected by the extraction operation. If ground water having 10,000 mg/l or less TDS below the injection zone could be affected by the extraction operation, monitoring of such ground water may be required. These wells shall be of sufficient number, located and constructed so as to detect any excursion of injection fluids, process byproducts, or formation fluids outside the extraction area or injection zone. The requirement for monitoring wells in aquifers designated pursuant to Section 20.6.2.5103 NMAC may be waived by the secretary, provided that the absence of monitoring wells does not result in an increased risk of movement of fluids into protected ground waters having 10,000 mg/l or less TDS.

(2) Where injection is into a formation which does not contain ground water having 10,000 mg/l or less TDS, no monitoring wells are necessary in the injection zone. However, monitoring wells may be necessary in adjoining zones with ground water having 10,000 mg/l or less TDS that could be affected by the extraction operation.

(3) In an area that the secretary determines is subject to subsidence or collapse, the required monitoring wells may be required to be located outside the physical influence of that area.

(4) In determining the adequacy of monitoring well location, number, construction and frequency of monitoring proposed by the discharger, the secretary shall consider the following factors:

(a) the local geology and hydrology;

(b) the operating pressures and whether a negative pressure gradient to the monitor well is being maintained;

(c) the nature and volume of injected fluid, formation water, and process by-products; and

(d) the number and spacing of Class III wells in the well field.

[9-20-82, 12-1-95; 20.6.2.5205 NMAC - Rn, 20 NMAC 6.2.V.5205, 1-15-01; A, 12-1-01]

20.6.2.5206 OPERATING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. General operating requirements applicable to Class I non-hazardous waste injection wells and Class III wells.

(1) The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

(2) Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone.

B. Additional operating requirements for Class I non-hazardous waste injection wells.

(1) Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone.

(2) Unless an alternative to a packer has been approved under Subparagraph (c) of Paragraph (3) of Subsection B of Section 20.6.2.5205 NMAC, the annulus between the tubing and the long string of casing shall be filled with a fluid approved by the secretary and a pressure, also approved by the secretary shall be maintained on the annulus.

C. Additional operating requirements for Class III wells: Initiation of new fractures or propagation of existing fractures in the injection zone will not be approved by the secretary as part of a discharge permit unless it is done during well stimulation and the discharger demonstrates:

(1) that such fracturing will not cause movement of fluids out of the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC; and

(2) that the provisions of Subsection D of Section 20.6.2.3109 and Subsection C of Section 20.6.2.5101 NMAC for protection of ground water are met.

[9-20-82, 12-1-95; 20.6.2.5206 NMAC - Rn, 20 NMAC 6.2.V.5206, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.5207 MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. The discharger shall demonstrate mechanical integrity for each Class I non-hazardous waste injection well or Class III well at least once every five years during the life of the well pursuant to Section 20.6.2.5204 NMAC.

B. Additional monitoring requirements for Class I non-hazardous waste injection wells.

(1) The discharger shall provide analysis of the injected fluids at least quarterly or, if necessary, more frequently to yield data representative of their characteristics.

(2) Continuous monitoring devices shall be used to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

(3) The discharger shall provide wells within the area of review as required by the discharge permit to be used by the discharger to monitor pressure in, and possible fluid movement into, ground water having 10,000 mg/l or less TDS except for such ground waters designated pursuant to Section 20.6.2.5103 NMAC. This Section does not require monitoring wells for Class I non-hazardous waste injection wells unless monitoring wells are necessary due to possible flow paths within the area of review.

C. Additional monitoring requirements for Class III wells.

(1) The discharger shall provide an analysis or description, whichever the secretary requires, of the injected fluids at least quarterly or, if necessary, more frequently to yield representative data.

(2) The discharger shall perform:

(a) appropriate monitoring of injected and produced fluid volumes by whichever of the following methods the secretary requires:

(i) recording injection pressure and either flow rate or volume every two weeks; or

(ii) metering and daily recording of fluid volumes;

(b) monitoring every two weeks, or more frequently as the secretary determines, of the monitor wells, required in Subsection C of Section 20.6.2.5205 NMAC for:

(i) water chemistry parameters used to detect any migration from the injection zone;

(ii) fluid levels adjacent to the injection zone; and

(c) other necessary monitoring as the secretary for good cause may require to detect movement of fluids from the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

(3) With the approval of the secretary, all Class III wells may be monitored on a well field basis by manifold monitoring rather than on an individual well basis. Manifold monitoring to determine the quality, pressure, and flow rate of the injected fluid may be approved in cases of facilities consisting of more than one Class III well, operating with a common manifold, provided that the discharger demonstrates that manifold monitoring is comparable to individual well monitoring.

[9-20-82, 12-1-95; 20.6.2.5207 NMAC - Rn, 20 NMAC 6.2.V.5207, 1-15-01; A, 12-1-01]

20.6.2.5208 REPORTING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. Reporting requirements for Class I non-hazardous waste injection wells.

(1) If a Class I non-hazardous waste injection well is found to be discharging or is suspected of discharging fluids into a zone or zones other than the permitted or authorized injection zone, the discharger shall within 24 hours notify the secretary of the circumstances and action taken. The discharger shall provide subsequent written reports as required by the secretary.

(2) The discharger shall provide reports quarterly to the secretary on:

(a) the physical, chemical and other relevant characteristics of injection fluids;

(b) monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

(c) the results of monitoring prescribed under Subsection B of Section 20.6.2.5207 NMAC.

(3) The discharger shall report, no later than the first quarterly report after completion, the results of:

(a) periodic tests of mechanical integrity as required in Sections 20.6.2.5204 and 20.6.2.5207 NMAC;

(b) any other test of the Class I non-hazardous waste injection well conducted by the discharger if required by the secretary;

(c) any well work-over; and

(d) any changes within the area of review which might impact subsurface conditions.

B. Reporting requirements for Class III wells.

(1) The discharger shall notify the secretary within 48 hours of the detection or suspected detection of a leachate excursion, and provide subsequent reports as required by the secretary.

(2) The discharger shall provide to the secretary:

(a) reports on required monitoring quarterly, or more frequently as required by the secretary; and

(b) results of mechanical integrity testing as required in Sections 20.6.2.5204 and 20.6.2.5207 NMAC and any other periodic tests required by the secretary; these results are to be reported no later than the first regular report after the completion of the test.

(3) Where manifold monitoring is permitted, monitoring results may be reported on a well field basis, rather than individual well basis.

C. Report signatory requirements.

(1) All reports submitted pursuant to this section shall be signed and certified as provided in Subsection G of Section 20.6.2.5101 NMAC, or by a duly authorized representative.

(2) For a person to be a duly authorized representative, authorization must:

(a) be made in writing by a signatory described in Paragraph (1) of Subsection G of Section 20.6.2.5101 NMAC;

(b) specify either an individual or a position having responsibility for the overall operation of that regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility; and

(c) have been submitted to the secretary.

[9-20-82, 12-1-95; 20.6.2.5208 NMAC - Rn, 20 NMAC 6.2.V.5208, 1-15-01; A, 12-1-01]

20.6.2.5209 PLUGGING AND ABANDONMENT FOR CLASS I WELLS AND CLASS III WELLS:

A. The discharger shall submit as part of the discharge permit application, a plan for plugging and abandonment of a Class I well or a Class III well that meets the requirements of Subsection D of 20.6.2.3109, Subsection C of 20.6.2.5101, and 20.6.2.5005 NMAC for protection of ground water. If requested, a revised or updated abandonment plan shall be submitted for approval prior to closure. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of the permit.

B. Prior to abandonment of a well used in a Class I well or Class III well operation, the well shall be plugged in a manner which will not allow the movement of fluids through the well bore out of the injection zone or between other zones of ground water. Cement plugs shall be used unless a comparable method has been approved by the secretary for the plugging of Class III wells at that site.

C. Prior to placement of the plugs, the well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method approved by the secretary.

D. Placement of the plugs shall be accomplished by one of the following:

(1) the balance method; or

(2) the dump bailer method; or

(3) the two-plug method; or

(4) an equivalent method with the approval of the secretary.

E. The following shall be considered by the secretary in determining the adequacy of a plugging and abandonment plan:

(1) the type and number of plugs to be used;

(2) the placement of each plug, including the elevation of the top and bottom;

(3) the type, grade and quantity of cementing slurry to be used;

(4) the method of placement of the plugs;

(5) the procedure to be used to plug and abandon the well; and

(6) such other factors that may affect the adequacy of the plan.

F. The discharger shall retain all records concerning the nature and composition of injected fluids until five years after completion of any plugging and abandonment procedures.

[9-20-82, 12-1-95; 20.6.2.5209 NMAC - Rn, 20 NMAC 6.2.V.5209, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5210 INFORMATION TO BE CONSIDERED BY THE SECRETARY FOR CLASS I WELLS AND CLASS III WELLS:

A. This section sets forth the information to be considered by the secretary in authorizing construction and use of a Class I well or Class III well or well field. Certain maps, cross-sections, tabulations of all wells within the area of review, and other data may be included in the discharge permit application submittal by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved.

B. Prior to the issuance of a discharge permit or project discharge permit allowing construction of a new Class I well, operation of an existing Class I well, or operation of a new or existing Class III well or well field, or conversion of any well to injection use, the secretary shall consider the following:

(1) information required in Subsection C of 20.6.2.3106 NMAC;

(2) a map showing the Class I well, or Class III well or well fields, for which approval is sought and the applicable area of review; within the area of review, the map must show, in so far as is known or is reasonably available from the public records, the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads;

(3) a tabulation of data on all wells within the area of review which may penetrate into the proposed injection zone; such data shall include, as available, a description of each well's type, the distance and

direction to the injection well or well field, construction, date drilled, location, depth, record of plugging or completion, and any additional information the secretary may require;

(4) for wells within the area of review which penetrate the injection zone, but are not properly completed or plugged, the corrective action proposed to be taken under 20.6.2.5203 NMAC;

(5) maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within the area of review, the position of such ground water within the area of review relative to the injection formation, and the direction of water movement, where known, in each zone of ground water which may be affected by the proposed injection operation;

(6) maps and cross-sections detailing the geology and geologic structure of the local area, including faults, if known or suspected;

(7) generalized maps and cross-sections illustrating the regional geologic setting;

(8) proposed operating data, including:

(a) average and maximum daily flow rate and volume of the fluid to be injected;

(b) average and maximum injection pressure;

(c) source of injection fluids and an analysis or description, whichever the secretary requires, of their chemical, physical, radiological and biological characteristics;

(9) results of the formation testing program to obtain an analysis or description, whichever the secretary requires, of the chemical, physical, and radiological characteristics of, and other information on, the receiving formation, provided that the secretary may issue a conditional approval of a discharge permit if he finds that further formation testing is necessary for final approval;

(10) expected pressure changes, native fluid displacement, and direction of movement of the injected fluid;

(11) proposed stimulation program;

(12) proposed or actual injection procedure;

(13) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(14) construction procedures, including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

(15) contingency plans to cope with all shut-ins or well failures so as to prevent movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC;

(16) plans, including maps, for meeting the monitoring requirements of 20.6.2.5207 NMAC; and

(17) the ability of the discharger to undertake measures necessary to prevent contamination of ground water having 10,000 mg/l or less TDS after the cessation of operation, including the proper closing, plugging and abandonment of a well, ground water restoration if applicable, and any post-operational monitoring as may be needed; methods by which the discharger shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the secretary, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the state of New Mexico, with the state as beneficiary; (3) a non-renewable letter of credit made out to the state of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance; such bond or materials shall be approved and executed prior to discharge permit issuance and shall become effective upon commencement of construction; if an adequate bond is posted by the discharger to a federal or another state agency, and this bond covers all of the measures referred to above, the secretary shall consider this bond as satisfying the bonding requirements of 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the discharger will fully perform the measures required hereinabove.

C. Prior to the secretary's approval that allows the operation of a new or existing Class I well or Class III well or well field, the secretary shall consider the following:

(1) update of pertinent information required under Subsection B of 20.6.2.5210 NMAC;

(2) all available logging and testing program data on the well;

(3) the demonstration of mechanical integrity pursuant to 20.6.2.5204 NMAC;

(4) the anticipated maximum pressure and flow rate at which the permittee will operate;

(5) the results of the formation testing program;

(6) the physical, chemical, and biological interactions between the injected fluids and fluids in the injection zone, and minerals in both the injection zone and the confining zone; and

(7) the status of corrective action on defective wells in the area of review.
[9-20-82, 12-24-87, 12-1-95; 20.6.2.5210 NMAC - Rn, 20 NMAC 6.2.V.5210, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5211 - 20.6.2.5299: [RESERVED]
[12-1-95; 20.6.2.5211 - 20.6.2.5299 NMAC - Rn, 20 NMAC 6.2.V.5211-5299, 1-15-01]

20.6.2.5300 REQUIREMENTS FOR CLASS I HAZARDOUS WASTE INJECTION WELLS:

A. Except as otherwise provided for in 20.6.2.5300 through 20.6.2.5399 NMAC, Class I hazardous waste wells are subject to the minimum permit requirements for all Class I wells in 20.6.2.5000 through 20.6.2.5299 NMAC, in addition to the requirements of 20.6.2.5300 through 20.6.2.5399 NMAC. To the extent any requirement in 20.6.2.5300 through 20.6.2.5399 NMAC conflicts with a requirement of 20.6.2.5000 through 20.6.2.5299 NMAC, Class I hazardous waste injection wells must comply with 20.6.2.5300 through 20.6.2.5399 NMAC.

B. Class I hazardous waste injection wells are only authorized for use by petroleum refineries for the waste generated by the refinery ("generator").

C. The New Mexico energy, minerals and natural resources department, oil conservation division will administer and oversee all permitting of Class I hazardous waste wells pursuant to 20.6.2.5300 through 20.6.2.5399 NMAC.
[20.6.2.5300 NMAC - N, 8-31-15]

20.6.2.5301 DEFINITIONS: As used in 20.6.2.5300 through 20.6.2.5399 NMAC:

A. "**cone of influence**" means that area around the well within which increased injection zone pressures caused by injection into the hazardous waste injection well would be sufficient to drive fluids into groundwater of the state of New Mexico;

B. "**director**" means the director of the New Mexico energy, minerals and natural resources department, oil conservation division or his/her designee;

C. "**existing well**" means a Class I hazardous waste injection well which has become a Class I hazardous waste injection well as a result of a change in the definition of the injected waste which would render the waste hazardous under 20.4.1.200 NMAC (incorporating 40 C.F.R. Section 261.3);

D. "**ground water of the state of New Mexico**" means, consistent with 20.6.2.5001 NMAC, an aquifer that contains ground water having a TDS concentration of 10,000 mg/l or less;

E. "**injection interval**" means that part of the injection zone in which the well is screened, or in which the waste is otherwise directly emplaced;

F. "**new well**" means any Class I hazardous waste injection well which is not an existing well;

G. "**transmissive fault or fracture**" is a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.
[20.6.2.5301 NMAC - N, 8-31-15]

20.6.2.5302 FEES FOR CLASS I HAZARDOUS WASTE INJECTION WELLS: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.3114 NMAC.

A. *Filing Fee.* Every facility submitting a discharge permit application for approval of a Class I hazardous waste injection well shall pay a filing fee of $100 to the water quality management fund at the time the permit application is submitted. The filing fee is nonrefundable.

B. *Permit fee.*

(1) Every facility submitting a discharge permit application for approval of a Class I hazardous waste injection well shall pay a permit fee of $30,000 to the water quality management fund. The permit fee may be paid in a single payment at the time of permit approval or in equal installments over the term of the permit. Installment payments shall be remitted yearly, with the first installment due on the date of permit approval. Subsequent installments shall be remitted yearly thereafter. The permit or permit application review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

(2) Facilities applying for permits which are subsequently withdrawn or denied shall pay one-half of the permit fee at the time of denial or withdrawal.

C. *Annual administration fee.* Every facility that receives a Class I hazardous waste injection well permit shall pay an annual administrative fee of $20,000 to the water quality management fund. The initial administrative fee shall be remitted one year after commencement of disposal operations pursuant to the permit. Subsequent administrative fees shall be remitted annually thereafter.

D. *Renewal fee.*

(1) Every facility submitting a discharge permit application for renewal of a Class I hazardous waste injection well shall pay a renewal fee of $10,000 to the water quality management fund. The renewal fee may be paid in a single payment at the time of permit renewal or in equal installments over the term of the permit. Installment payments shall be remitted yearly, with the first installment due on the date of permit renewal. Subsequent installments shall be remitted yearly thereafter. The permit or permit renewal review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

(2) The director may waive or reduce fees for discharge permit renewals which require little or no cost for investigation or issuance.

E. *Modification fees.*

(1) Every facility submitting an application for a discharge permit modification of a Class I hazardous waste injection well will be assessed a filing fee plus a modification fee of $10,000 to the water quality management fund.

(2) Every facility submitting an application for other changes to a Class I hazardous waste injection well discharge permit will be assessed a filing fee plus a minor modification fee of $1,000 to the water quality management fund.

(3) Applications for both renewal and modification shall pay a filing fee plus renewal fee.

(4) If the director requires a discharge permit change as a component of an enforcement action, the facility shall pay the applicable modification fee. If the director requires a discharge permit change outside the context of an enforcement action, the facility shall not be assessed a fee.

(5) The director may waive or reduce fees for discharge permit changes which require little or no cost for investigation or issuance.

F. *Financial assurance fees.*

(1) Facilities with approved Class I hazardous waste injection well permits shall pay the financial assurance fees specified in Table 2 of 20.6.2.3114 NMAC.

(2) Facilities relying on the corporate guarantee for financial assurance shall pay an additional fee of $5,000 to the water quality management fund.

[20.6.2.5302 NMAC - N, 8-31-15]

20.6.2.5303 CONVERSION OF EXISTING INJECTION WELLS: An existing Class I non-hazardous waste injection well may be converted to a Class I hazardous waste injection well provided the well meets the modeling, design, compatibility, and other requirements set forth in 20.6.2.5300 through 20.6.2.5399 NMAC and the permittee receives a Class I hazardous waste permit pursuant to those sections.

[20.6.2.5303 NMAC - N, 8-31-15]

20.6.2.5304 - 20.6.2.5309: [RESERVED]

20.6.2.5310 REQUIREMENTS FOR WELLS INJECTING HAZARDOUS WASTE REQUIRED TO BE ACCOMPANIED BY A MANIFEST:

A. *Applicability*. The regulations in this section apply to all generators of hazardous waste, and to the owners or operators of all hazardous waste management facilities, using any class of well to inject hazardous wastes accompanied by a manifest. (See also Subparagraph (b) of Paragraph (3) of Subsection A of 20.6.2.5004 NMAC.)

B. *Authorization*. The owner or operator of any well that is used to inject hazardous waste required to be accompanied by a manifest or delivery document shall apply for authorization to inject as specified in 20.6.2.5102 NMAC within six months after the approval or promulgation of the state UIC program.

C. *Requirements*. In addition to complying with the applicable requirements of this part, the owner or operator of each facility meeting the requirements of Subsection B of this section, shall comply with the following.

(1) *Notification*. The owner or operator shall comply with the notification requirements of 42 U.S.C. Section 6930.

(2) *Identification number*. The owner or operator shall comply with the requirements of 20.4.1.500 NMAC (incorporating 40 CFR Section 264.11).

(3) *Manifest system*. The owner or operator shall comply with the applicable recordkeeping and reporting requirements for manifested wastes in 20.4.1.500 NMAC (incorporating 40 CFR Section 264.71).

(4) *Manifest discrepancies*. The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.72).

(5) *Operating record*. The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Sections 264.73(a), (b)(1), and (b)(2)).

(6) *Annual report*. The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.75).

(7) *Unmanifested waste report*. The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.75).

(8) *Personnel training*. The owner or operator shall comply with the applicable personnel training requirements of 20.4.1.500 NMAC (incorporating 40 CFR Section 264.16).

(9) *Certification of closure*. When abandonment is completed, the owner or operator must submit to the director certification by the owner or operator and certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in 20.6.2.5209 NMAC.
[20.6.2.5310 NMAC - N, 8-31-15]

20.6.2.5311 - 20.6.2.5319: [RESERVED]

20.6.2.5320 ADOPTION OF 40 CFR PART 144, SUBPART F (FINANCIAL RESPONSIBILITY: CLASS I HAZARDOUS WASTE INJECTION WELLS): Except as otherwise provided, the regulations of the United States environmental protection agency set forth in 40 CFR Part 144, Subpart F are hereby incorporated by reference.
[20.6.2.5320 NMAC - N, 8-31-15]

20.6.2.5321 MODIFICATIONS, EXCEPTIONS, AND OMISSIONS: Except as otherwise provided, the following modifications, exceptions, and omissions are made to the incorporated federal regulations.

A. The following term defined in 40 CFR Section 144.61 has the meaning set forth herein, in lieu of the meaning set forth in 40 CFR Section 144.61: "plugging and abandonment plan" means the plan for plugging and abandonment prepared in accordance with the requirements of 20.6.2.5341 NMAC.

B. The following terms not defined in 40 CFR Part 144, Subsection F have the meanings set forth herein when the terms are used in this part:

(1) "administrator," "regional administrator" and other similar variations means the director of the New Mexico energy, minerals and natural resources department, oil conservation division or his/her designee;

(2) "United States environmental protection agency" or "EPA" means New Mexico energy, minerals and natural resources department, oil conservation division or OCD, except when used in 40 CFR Section 144.70(f).

C. The following provisions of 40 CFR Part 144, Subpart F are modified in 20.6.2.5321 NMAC:

(1) cross references to 40 CFR Part 144 shall be replaced by cross references to 20.6.2.5300 through 20.6.2.5399 NMAC;

(2) the cross reference to Sections 144.28 and 144.51 in Section 144.62(a) shall be replaced by a cross reference to 20.6.2.5341 NMAC;

(3) the cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H shall be modified to include cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H and 20.4.1.500 and 20.4.1.600 NMAC;

(4) references to EPA identification numbers in financial assurance documents shall be replaced by references to API well numbers (US well numbers);

(5) the first sentence of 40 CFR Section 144.63(f)(1) shall be replaced with the following sentence: "An owner or operator may satisfy the requirements of this section by obtaining a guarantee from a corporate parent that meets the requirements of 40 CFR Section 144.63(f)(10), including the guarantor meeting the requirements for the owner or operator under the financial test specified in this paragraph.";

(6) trust agreements prepared in accordance with 40 CFR Section 144.70(a) must state that they will be administered, construed, and enforced according to the laws of New Mexico;

(7) surety companies issuing bonds prepared in accordance with 40 CFR Section 144, Subpart F must be registered with the New Mexico office of superintendent of insurance;

D. The following provisions of 40 CFR Part 144, Subpart F are omitted from 20.6.2.5320 NMAC:

(1) Section 144.65;

(2) Section 144.66;

(3) the third sentence in 40 CFR Section 144.63(h).

[20.6.2.5321 NMAC - N, 8-31-15]

20.6.2.5322 - 20.6.2.5340 [RESERVED]

20.6.2.5341 CONDITIONS APPLICABLE TO ALL PERMITS: The following conditions apply to all Class I hazardous permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations must be given in the permit.

A. *Duty to comply.* The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the New Mexico Water Quality Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in a variance issued under 20.6.2.1210 NMAC.

B. *Duty to reapply.* If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a permit renewal pursuant to Subsection F of 20.6.2.3106 NMAC.

C. *Need to halt or reduce activity not a defense.* It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

E. *Proper operation and maintenance.* The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

F. *Permit actions.* This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

G. *Property rights.* This permit does not convey any property rights of any sort, or any exclusive privilege.

H. *Duty to provide information.* The permittee shall furnish to the director, within a time specified, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.

I. *Duty to provide notice.* Public notice, when required, shall be provided as set forth in 20.6.2.3108 NMAC except that the following notice shall be provided in lieu of the notice required by Paragraph (2) of Subsection B of 20.6.2.3108 NMAC: a written notice must be sent by certified mail, return receipt requested, to all surface and mineral owners of record within a ½ mile radius of the proposed well or wells.

J. *Inspection and entry.* The permittee shall allow the director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the 20.6.2.5300 through 20.6.2.5399 NMAC, any substances or parameters at any location.

K. *Monitoring and records.*

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including the following:

(a) calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report, or application; this period may be extended by request of the director at any time; and

(b) the nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under 20.6.2.5351 through 20.6.2.5363 NMAC; the director may require the owner or operator to deliver the records to the director at the conclusion of the retention period.

(3) Records of monitoring information shall include:

(a) the date, exact place, and time of sampling or measurements;

(b) the individual(s) who performed the sampling or measurements;

(c) the date(s) analyses were performed;

(d) the individual(s) who performed the analyses;

(e) the analytical techniques or methods used; and

(f) the results of such analyses.

L. *Signatory requirement.* All applications, reports, or information submitted to the director shall be signed and certified. (See Subsection G of 20.6.2.5101 NMAC.)

M. *Reporting requirements.*

(1) *Planned changes.* The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) *Anticipated noncompliance.* The permittee shall give advance notice to the director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(4) *Compliance schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

(5) *Twenty-four hour reporting.* The permittee shall report any noncompliance which may endanger health or the environment, including:

(a) any monitoring or other information which indicates that any contaminant may cause an endangerment to ground water of the state of New Mexico; or

(b) any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between ground water of the state of New Mexico; any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances; a written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances; the written submission shall contain a description of the noncompliance and its cause; the area affected by the noncompliance, including any ground water of the state of New Mexico; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; the date and time the permittee became aware of the noncompliance; and steps taken or planned to reduce, remediate, eliminate, and prevent reoccurrence of the noncompliance.

(6) *Other noncompliance.* The permittee shall report all instances of noncompliance not reported under Paragraphs (3), (4), and (5) of Subsection M of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph (5) of Subsection M of this section.

(7) *Other information.* Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the director, it shall promptly submit such facts or information.

N. *Requirements prior to commencing injection.* A new injection well may not commence injection until construction is complete; and

(1) the permittee has submitted notice of completion of construction to the director; and

(2) the director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or the permittee has not received notice from the director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in Paragraph (1) of Subsection N of this section, in which case prior inspection or review is waived and the permittee may commence injection; the director shall include in his notice a reasonable time period in which he shall inspect the well.

O. The permittee shall notify the director at such times as the permit requires before conversion or abandonment of the well.

P. The permittee shall meet the requirements of 20.6.2.5209 NMAC.

Q. *Plugging and abandonment report.* Within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the director. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:

(1) a statement that the well was plugged in accordance with the plan previously submitted to the director; or

(2) where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the director, specifying the differences.

R. *Duty to establish and maintain mechanical integrity.*

(1) The permittee shall meet the requirements of 20.6.2.5204 NMAC.

(2) When the director determines that a Class I hazardous well lacks mechanical integrity pursuant to 20.6.2.5204 NMAC, the director shall give written notice of the director's determination to the owner or operator. Unless the director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the director's determination. The director may allow plugging of the well pursuant to the requirements of 20.6.2.5209 NMAC or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between ground water of the state of New Mexico caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the director that the owner or operator has demonstrated mechanical integrity pursuant to 20.6.2.5204 and 20.6.2.5358 NMAC.

(3) The director may allow the owner or operator of a well which lacks mechanical integrity pursuant to Subsection A of 20.6.2.5204 NMAC to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between groundwater of the state of New Mexico.

S. *Transfer of a permit.* The operator shall not transfer a permit without the director's prior written approval. A request for transfer of a permit shall identify officers, directors and owners of 25% or greater in the transferee. Unless the director otherwise orders, public notice or hearing are not required for the transfer request's approval. If the director denies the transfer request, it shall notify the operator and the proposed transferee of the denial by certified mail, return receipt requested, and either the operator or the proposed transferee may request a hearing with 10 days after receipt of the notice. Until the director approves the transfer and the required financial assurance is in place, the director shall not release the transferor's financial assurance.
[20.6.2.5341 NMAC - N, 8-31-15]

20.6.2.5342 ESTABLISHING PERMIT CONDITIONS:

A. In addition to conditions required in 20.6.2.5341 NMAC, the director shall establish conditions, as required on a case-by-case basis under Subsection I of 20.6.2.3109 NMAC, Subsection A of 20.6.2.5343 NMAC, and 20.6.2.5344 NMAC. Permits for owners or operators of hazardous waste injection wells shall also include conditions meeting the requirements of 20.6.2.5310 NMAC, Paragraphs (1) and (2) of Subsection A of this section, and 20.6.2.5351 through 20.6.2.5363 NMAC.

(1) *Financial responsibility.*

(a) The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the director until:

(i) the well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to Subsection P of 20.6.2.5341 NMAC, and 20.6.2.5209 NMAC, and submitted a plugging and abandonment report pursuant to Subsection Q of 20.6.2.5341 NMAC; or

(ii) the well has been converted in compliance with the requirements of Subsection O of 20.6.2.5341 NMAC; or

(iii) the transferor of a permit has received notice from the director that the transfer has been approved and that the transferee's required financial assurance is in place.

(b) The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of 20.6.2.5320 NMAC.

(2) *Additional conditions.* The director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into ground water of the state of New Mexico.

B. *Applicable requirements.*

(1) In addition to conditions required in all permits the director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of this part.

(2) An applicable requirement is a state statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. An applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit.

(3) New or renewed permits, and to the extent allowed under 20.6.2.3109 NMAC modified or terminated permits, shall incorporate each of the applicable requirements referenced in 20.6.2.5342 NMAC.

C. *Incorporation.* All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

[20.6.2.5342 NMAC - N, 8-31-15]

20.6.2.5343 SCHEDULE OF COMPLIANCE:

A. *General.* The permit may, when appropriate, specify a schedule of compliance leading to compliance with this part.

(1) *Time for compliance.* Any schedules of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit.

(2) *Interim dates.* Except as provided in Subparagraph (b) of Paragraph (1) of Subsection B of this section, if a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(a) The time between interim dates shall not exceed one year.

(b) If the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) *Reporting.* The permit shall be written to require that if Paragraph (1) of Subsection A of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.

B. *Alternative schedules of compliance.* A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows.

(1) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(a) the permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(b) the permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the director may issue or modify a permit to contain two schedules as follows:

(a) both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(b) one schedule shall lead to timely compliance with applicable requirements;

(c) the second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(d) each permit containing two schedules shall include a requirement that after the permittee has made a final decision under Subparagraph (a) of Paragraph (3) of Subsection B of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the director, such as a resolution of the board of directors of a corporation.
[20.6.2.5343 NMAC - N, 8-31-15]

20.6.2.5344 REQUIREMENTS FOR RECORDING AND REPORTING OF MONITORING RESULTS: All permits shall specify:

A. requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);

B. required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;

C. applicable reporting requirements based upon the impact of the regulated activity and as specified in 20.6.2.5359 NMAC; reporting shall be no less frequent than specified in the above regulations.
[20.6.2.5344 NMAC - N, 8-31-15]

20.6.2.5345 - 20.6.2.5350: [RESERVED]

20.6.2.5351 APPLICABILITY: 20.6.2.5351 through 20.6.2.5363 NMAC establish criteria and standards for underground injection control programs to regulate Class I hazardous waste injection wells. Unless otherwise noted, these sections supplement the requirements of 20.6.2.5000 through 20.6.2.5299 NMAC and apply instead of any inconsistent requirements for Class I non-hazardous waste injection wells.
[20.6.2.5351 NMAC - N, 8-31-15]

20.6.2.5352 MINIMUM CRITERIA FOR SITING:

A. All Class I hazardous waste injection wells shall be sited such that they inject into a formation that is beneath the lowermost formation containing within one quarter mile of the well bore groundwater of the state of New Mexico.

B. The siting of Class I hazardous waste injection wells shall be limited to areas that are geologically suitable. The director shall determine geologic suitability based upon:

(1) an analysis of the structural and stratigraphic geology, the hydrogeology, and the seismicity of the region;

(2) an analysis of the local geology and hydrogeology of the well site, including, at a minimum, detailed information regarding stratigraphy, structure and rock properties, aquifer hydrodynamics and mineral resources; and

(3) a determination that the geology of the area can be described confidently and that limits of waste fate and transport can be accurately predicted through the use of models.

C. Class I hazardous waste injection wells shall be sited such that:

(1) the injection zone has sufficient permeability, porosity, thickness and areal extent to prevent migration of fluids into ground water of the state of New Mexico; and

(2) the confining zone:

(a) is laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into ground water of the state of New Mexico; and

(b) contains at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing vertical propagation of fractures.

D. The owner or operator shall demonstrate to the satisfaction of the director that:

(1) the confining zone is separated from the base of the lowermost ground water of the state of New Mexico by at least one sequence of permeable and less permeable strata that will provide an added layer of protection for ground water of the state of New Mexico in the event of fluid movement in an unlocated borehole or transmissive fault; or

(2) within the area of review, the piezometric surface of the fluid in the injection zone is less than the piezometric surface of the lowermost groundwater of the state of New Mexico, considering density effects, injection pressures and any significant pumping in the overlying ground water of the state of New Mexico; or

(3) there is no ground water of the state of New Mexico present.

(4) The director may approve a site which does not meet the requirements in Paragraphs (1), (2), or (3) of Subsections D of this section if the owner or operator can demonstrate to the director that because of

the geology, nature of the waste, or other considerations, abandoned boreholes or other conduits would not cause endangerment of ground water of the state of New Mexico.
[20.6.2.5352 NMAC - N, 8-31-15]

20.6.2.5353 AREA OF REVIEW: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.5202 NMAC. The area of review for Class I hazardous waste injection wells shall be a two-mile radius around the well bore. The director may specify a larger area of review based on the calculated cone of influence of the well.
[20.6.2.5353 NMAC - N, 8-31-15]

20.6.2.5354 CORRECTIVE ACTION FOR WELLS IN THE AREA OF REVIEW: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.5203 NMAC.

A. The owner or operator of a Class I hazardous waste well shall as part of the permit application submit a plan to the director outlining the protocol used to:

(1) identify all wells penetrating the confining zone or injection zone within the area of review; and

(2) determine whether wells are adequately completed or plugged.

B. The owner or operator of a Class I hazardous waste well shall identify the location of all wells within the area of review that penetrate the injection zone or the confining zone and shall submit as required in Subsection A of 20.6.2.5360 NMAC:

(1) a tabulation of all wells within the area of review that penetrate the injection zone or the confining zone; and

(2) a description of each well or type of well and any records of its plugging or completion.

C. For wells that the director determines are improperly plugged, completed, or abandoned, or for which plugging or completion information is unavailable, the applicant shall also submit a plan consisting of such steps or modification as are necessary to prevent movement of fluids into or between groundwater of the state of New Mexico. Where the plan is adequate, the director shall incorporate it into the permit as a condition. Where the director's review of an application indicates that the permittee's plan is inadequate (based at a minimum on the factors in Subsection E of this section), the director shall:

(1) require the applicant to revise the plan;

(2) prescribe a plan for corrective action as a condition of the permit; or

(3) deny the application.

D. Requirements.

(1) Existing injection wells. Any permit issued for an existing Class I hazardous waste injection well requiring corrective action other than pressure limitations shall include a compliance schedule requiring any corrective action accepted or prescribed under Subsection C of this section. Any such compliance schedule shall provide for compliance no later than two years following issuance of the permit and shall require observance of appropriate pressure limitations under Paragraph (3) of Subsection D until all other corrective action measures have been implemented.

(2) New injection wells. No owner or operator of a new Class I hazardous waste injection well may begin injection until all corrective actions required under this section have been taken.

(3) The director may require pressure limitations in lieu of plugging. If pressure limitations are used in lieu of plugging, the director shall require as a permit condition that injection pressure be so limited that pressure in the injection zone at the site of any improperly completed or abandoned well within the area of review would not be sufficient to drive fluids into or between groundwater of the state of New Mexico. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation may be made part of a compliance schedule and may be required to be maintained until all other required corrective actions have been implemented.

E. In determining the adequacy of corrective action proposed by the applicant under Subsection C of this section and in determining the additional steps needed to prevent fluid movement into and between groundwater of the state of New Mexico, the following criteria and factors shall be considered by the director:

(1) nature and volume of injected fluid;

(2) nature of native fluids or byproducts of injection;

(3) geology;

(4) hydrology;

(5) history of the injection operation;

(6) completion and plugging records;

(7) closure procedures in effect at the time the well was closed;

(8) hydraulic connections with groundwater of the state of New Mexico;

(9) reliability of the procedures used to identify abandoned wells; and

(10) any other factors which might affect the movement of fluids into or between ground water of the state of New Mexico.

[20.6.2.5354 NMAC - N, 8-31-15]

20.6.2.5355 CONSTRUCTION REQUIREMENTS:

A. *General.* All existing and new Class I hazardous waste injection wells shall be constructed and completed to:

(1) prevent the movement of fluids into or between ground water of the state of New Mexico or into any unauthorized zones;

(2) permit the use of appropriate testing devices and workover tools; and

(3) permit continuous monitoring of injection tubing and long string casing as required pursuant to Subsection F of 20.6.2.5357 NMAC.

B. *Compatibility.* All well materials must be compatible with fluids with which the materials may be expected to come into contact. A well shall be deemed to have compatibility as long as the materials used in the construction of the well meet or exceed standards developed for such materials by the American petroleum institute, ASTM, or comparable standards acceptable to the director.

C. *Casing and cementing of new wells.*

(1) Casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well, including the post-closure care period. The casing and cementing program shall be designed to prevent the movement of fluids into or between ground water of the state of New Mexico, and to prevent potential leaks of fluids from the well. In determining and specifying casing and cementing requirements, the director shall consider the following information as required by 20.6.2.5360 NMAC:

(a) depth to the injection zone;

(b) injection pressure, external pressure, internal pressure and axial loading;

(c) hole size;

(d) size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material);

(e) corrosiveness of injected fluid, formation fluids and temperature;

(f) lithology of injection and confining zones;

(g) type or grade of cement; and

(h) quantity and chemical composition of the injected fluid.

(2) One surface casing string shall, at a minimum, extend into the confining bed below the lowest formation that contains ground water of the state of New Mexico and be cemented by circulating cement from the base of the casing to the surface, using a minimum of 120% of the calculated annual volume. The director may require more than 120% when the geology or other circumstances warrant it.

(3) At least one long string casing, using a sufficient number of centralizers, shall extend to the injection zone and shall be cemented by circulating cement to the surface in one or more stages:

(a) of sufficient quantity and quality to withstand the maximum operating pressure; and

(b) in a quantity no less than 120% of the calculated volume necessary to fill the annular space; the director may require more than 120% when the geology or other circumstances warrant it.

(4) Circulation of cement may be accomplished by staging. The director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement is continuous and does not allow fluid movement behind the well bore.

(5) Casings, including any casing connections, must be rated to have sufficient structural strength to withstand, for the design life of the well:

(a) the maximum burst and collapse pressures which may be experienced during the construction, operation and closure of the well; and

(b) the maximum tensile stress which may be experienced at any point along the length of the casing during the construction, operation, and closure of the well.

(6) At a minimum, cement and cement additives must be of sufficient quality and quantity to maintain integrity over the design life of the well.

D. *Tubing and packer*.

(1) All Class I hazardous waste injection wells shall inject fluids through tubing with a packer set at a point specified by the director.

(2) In determining and specifying requirements for tubing and packer, the following factors shall be considered:

(a) depth of setting;

(b) characteristics of injection fluid (chemical content, corrosiveness, temperature and density);

(c) injection pressure;

(d) annular pressure;

(e) rate (intermittent or continuous), temperature and volume of injected fluid;

(f) size of casing; and

(g) tubing tensile, burst, and collapse strengths.

(3) The director may approve the use of a fluid seal if he determines that the following conditions are met:

(a) the operator demonstrates that the seal will provide a level of protection comparable to a packer;

(b) the operator demonstrates that the staff is, and will remain, adequately trained to operate and maintain the well and to identify and interpret variations in parameters of concern;

(c) the permit contains specific limitations on variations in annular pressure and loss of annular fluid;

(d) the design and construction of the well allows continuous monitoring of the annular pressure and mass balance of annular fluid; and

(e) a secondary system is used to monitor the interface between the annulus fluid and the injection fluid and the permit contains requirements for testing the system every three months and recording the results.

[20.6.2.5355 NMAC - N, 8-31-15]

20.6.2.5356 LOGGING, SAMPLING, AND TESTING PRIOR TO NEW WELL OPERATION:

A. During the drilling and construction of a new Class I hazardous waste injection well, appropriate logs and tests shall be run to determine or verify the depth, thickness, porosity, permeability, and rock type of, and the salinity of any entrained fluids in, all relevant geologic units to assure conformance with performance standards in 20.6.2.5355 NMAC, and to establish accurate baseline data against which future measurements may be compared. A descriptive report interpreting results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the director. At a minimum, such logs and tests shall include:

(1) deviation checks during drilling on all holes constructed by drilling pilot holes which are enlarged by reaming or another method; such checks shall be at sufficiently frequent intervals to determine the location of the borehole and to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

(2) such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses; at a minimum, the following logs shall be required in the following situations:

(a) upon installation of the surface casing:

(i) resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(ii) a cement bond and variable density log, and a temperature log after the casing is set and cemented;

(b) upon installation of the long string casing:

(i) resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs before the casing is installed; and

(ii) a cement bond and variable density log, and a temperature log after the casing is set and cemented;

(c) the director may allow the use of an alternative to the above logs when an alternative will provide equivalent or better information; and

(3) a mechanical integrity test consisting of:

(a) a pressure test with liquid or gas;

(b) a radioactive tracer survey;

(c) a temperature or noise log;

(d) a casing inspection log, if required by the director; and

(e) any other test required by the director.

B. Whole cores or sidewall cores of the confining and injection zones and formation fluid samples from the injection zone shall be taken. The director may accept cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The director may require the owner or operator to core other formations in the borehole.

C. The fluid temperature, pH, conductivity, pressure and the static fluid level of the injection zone must be recorded.

D. At a minimum, the following information concerning the injection and confining zones shall be determined or calculated for Class I hazardous waste injection wells:

(1) fracture pressure;

(2) other physical and chemical characteristics of the injection and confining zones; and

(3) physical and chemical characteristics of the formation fluids in the injection zone.

E. Upon completion, but prior to operation, the owner or operator shall conduct the following tests to verify hydrogeologic characteristics of the injection zone:

(1) a pump test; or

(2) injectivity tests.

F. The director shall have the opportunity to witness all logging and testing required by 20.6.2.5351 through 20.6.2.5363 NMAC. The owner or operator shall submit a schedule of such activities to the director 30 days prior to conducting the first test.

[20.6.2.5356 NMAC - N, 8-31-15]

20.6.2.5357 OPERATING REQUIREMENTS:

A. Except during stimulation, the owner or operator shall assure that injection pressure at the wellhead does not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. The owner or operator shall assure that the injection pressure does not initiate fractures or propagate existing fractures in the confining zone, nor cause the movement of injection or formation fluids into ground water of the state of New Mexico.

B. Injection between the outermost casing protecting ground water of the state of New Mexico and the well bore is prohibited.

C. The owner or operator shall maintain an annulus pressure that exceeds the operating injection pressure, unless the director determines that such a requirement might harm the integrity of the well. The fluid in the annulus shall be noncorrosive, or shall contain a corrosion inhibitor.

D. The owner or operator shall maintain mechanical integrity of the injection well at all times.

E. Permit requirements for owners or operators of hazardous waste wells which inject wastes which have the potential to react with the injection formation to generate gases shall include:

(1) conditions limiting the temperature, pH or acidity of the injected waste; and

(2) procedures necessary to assure that pressure imbalances which might cause a backflow or blowout do not occur.

F. The owner or operator shall install and use continuous recording devices to monitor: the injection pressure; the flow rate, volume, and temperature of injected fluids; and the pressure on the annulus between the tubing and the long string casing, and shall install and use:

(1) automatic alarm and automatic shut-off systems, designed to sound and shut-in the well when pressures and flow rates or other parameters approved by the director exceed a range or gradient specified in the permit; or

(2) automatic alarms, designed to sound when the pressures and flow rates or other parameters approved by the director exceed a rate or gradient specified in the permit, in cases where the owner or operator certifies that a trained operator will be on-site at all times when the well is operating.

G. If an automatic alarm or shutdown is triggered, the owner or operator shall immediately investigate and identify as expeditiously as possible the cause of the alarm or shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under Subsection F of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator shall:

(1) cease injection of waste fluids unless authorized by the director to continue or resume injection;

(2) take all necessary steps to determine the presence or absence of a leak; and

(3) notify the director within 24 hours after the alarm or shutdown.

H. If a loss of mechanical integrity is discovered pursuant to Subsection G of this section or during periodic mechanical integrity testing, the owner or operator shall:

(1) immediately cease injection of waste fluids;

(2) take all steps reasonably necessary to determine whether there may have been a release of hazardous wastes or hazardous waste constituents into any unauthorized zone;

(3) notify the director within 24 hours after loss of mechanical integrity is discovered;

(4) notify the director when injection can be expected to resume; and

(5) restore and demonstrate mechanical integrity to the satisfaction of the director prior to resuming injection of waste fluids.

I. Whenever the owner or operator obtains evidence that there may have been a release of injected wastes into an unauthorized zone:

(1) the owner or operator shall immediately case injection of waste fluids, and:

(a) notify the director within 24 hours of obtaining such evidence;

(b) take all necessary steps to identify and characterize the extent of any release;

(c) comply with any remediation plan specified by the director;

(d) implement any remediation plan approved by the director; and

(e) where such release is into ground water of the state of New Mexico currently serving as a water supply, place a notice in a newspaper of general circulation.

(2) The director may allow the operator to resume injection prior to completing cleanup action if the owner or operator demonstrates that the injection operation will not endanger groundwater of the state of New Mexico.

J. The owner or operator shall notify the director and obtain his approval prior to conducting any well workover.

[20.6.2.5357 NMAC - N, 8-31-15]

20.6.2.5358 TESTING AND MONITORING REQUIREMENTS: Testing and monitoring requirements shall at a minimum include.

A. Monitoring of the injected wastes.

(1) The owner or operator shall develop and follow an approved written waste analysis plan that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the waste, including the quality assurance procedures used. At a minimum, the plan shall specify:

(a) the parameters for which the waste will be analyzed and the rationale for the selection of these parameters;

(b) the test methods that will be used to test for these parameters; and

(c) the sampling method that will be used to obtain a representative sample of the waste to be analyzed.

(2) The owner or operator shall repeat the analysis of the injected wastes as described in the waste analysis plan at frequencies specified in the waste analysis plan and when process or operating changes occur that may significantly alter the characteristics of the waste stream.

(3) The owner or operator shall conduct continuous or periodic monitoring of selected parameters as required by the director.

(4) The owner or operator shall assure that the plan remains accurate and the analyses remain representative.

B. Hydrogeologic compatibility determination. The owner or operator shall submit information demonstrating to the satisfaction of the director that the waste stream and its anticipated reaction products will not alter the permeability, thickness or other relevant characteristics of the confining or injection zones such that they would no longer meet the requirements specified in 20.6.2.5352 NMAC.

C. Compatibility of well materials.

(1) The owner or operator shall demonstrate that the waste stream will be compatible with the well materials with which the waste is expected to come into contact, and submit to the director a description of the methodology used to make that determination. Compatibility for purposes of this requirement is established if contact with injected fluids will not cause the well materials to fail to satisfy any design requirement imposed under Subsection B of 20.6.2.5355 NMAC.

(2) The director shall require continuous corrosion monitoring of the construction materials used in the well for wells injecting corrosive waste, and may require such monitoring for other waste, by:

(a) placing coupons of the well construction materials in contact with the waste stream; or

(b) routing the waste stream through a loop constructed with the material used in the well; or

(c) using an alternative method approved by the director.

(3) If a corrosion monitoring program is required:

(a) the test shall use materials identical to those used in the construction of the well, and such materials must be continuously exposed to the operating pressures and temperatures (measured at the well head) and flow rates of the injection operation; and

(b) the owner or operator shall monitor the materials for loss of mass, thickness, cracking, pitting and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in Subsection B of 20.6.2.5355 NMAC.

D. Periodic mechanical integrity testing. In fulfilling the requirements of 20.6.2.5204 NMAC, the owner or operator of a Class I hazardous waste injection well shall conduct the mechanical integrity testing as follows:

(1) the long string casing, injection tube, and annular seal shall be tested by means of an approved pressure test with a liquid or gas annually and whenever there has been a well workover;

(2) the bottom-hole cement shall be tested by means of an approved radioactive tracer survey annually;

(3) an approved temperature, noise, or other approved log shall be run at least once every five years to test for movement of fluid along the borehole; the director may require such tests whenever the well is worked over;

(4) casing inspection logs shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the director waives this requirement due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years; the director may require that a casing inspection log be run every five years, if he has reason to believe that the integrity of the long string casing of the well may be adversely affected by naturally-occurring or man-made events;

(5) any other test approved by the director in accordance with the procedures in 40 CFR Section 146.8(d) may also be used.

E. Ambient monitoring.

(1) Based on a site-specific assessment of the potential for fluid movement from the well or injection zone, and on the potential value of monitoring wells to detect such movement, the director shall require the owner or operator to develop a monitoring program. At a minimum, the director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

(2) When prescribing a monitoring system the director may also require:

(a) continuous monitoring for pressure changes in the first aquifer overlying the confining zone; when such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the director;

(b) the use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the director, or to provide other site specific data;

(c) periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;

(d) periodic monitoring of the ground water quality in the lowermost ground water of the state of New Mexico; and

(e) any additional monitoring necessary to determine whether fluids are moving into or between ground water of the state of New Mexico.

F. The director may require seismicity monitoring when he has reason to believe that the injection activity may have the capacity to cause seismic disturbances.
[20.6.2.5358 NMAC - N, 8-31-15]

20.6.2.5359 REPORTING REQUIREMENTS: Reporting requirements shall, at a minimum, include:

A. quarterly reports to the director containing:

(1) the maximum injection pressure;

(2) a description of any event that exceeds operating parameters for annulus pressure or injection pressure as specified in the permit;

(3) a description of any event which triggers an alarm or shutdown device required pursuant to Subsection F of 20.6.2.5357 NMAC and the response taken;

(4) the total volume of fluid injected;

(5) any change in the annular fluid volume;

(6) the physical, chemical and other relevant characteristics of injected fluids; and

(7) the results of monitoring prescribed under 20.6.2.5358 NMAC;

B. reporting, within 30 days or with the next quarterly report whichever comes later, the results of:

(1) periodic tests of mechanical integrity;

(2) any other test of the injection well conducted by the permittee if required by the director; and

(3) any well workover.

[20.6.2.5359 NMAC - N, 8-31-15]

20.6.2.5360 INFORMATION TO BE EVALUATED BY THE DIRECTOR: This section sets forth the information which must be evaluated by the director in authorizing Class I hazardous waste injection wells. For a new Class I hazardous waste injection well, the owner or operator shall submit all the information listed below as part of the permit application. For an existing or converted Class I hazardous waste injection well, the owner or operator shall submit all information listed below as part of the permit application except for those items of information which are current, accurate, and available in the existing permit file. For both existing and new Class I hazardous waste injection wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current and readily available to the director (for example, in the permitting agency's files) and sufficiently identifiable to be retrieved.

A. Prior to the issuance of a permit for an existing Class I hazardous waste injection well to operate or the construction or conversion of a new Class I hazardous waste injection well, the director shall review the following to assure that the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC are met:

(1) information required in 20.6.2.5102 NMAC;

(2) a map showing the injection well for which a permit is sought and the applicable area of review; within the area of review, the map must show the number or name and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads; the map should also show faults, if known or suspected;

(3) a tabulation of all wells within the area of review which penetrate the proposed injection zone or confining zone; such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging or completion and any additional information the director may require;

(4) the protocol followed to identify, locate and ascertain the condition of abandoned wells within the area of review which penetrate the injection or the confining zones;

(5) maps and cross-sections indicating the general vertical and lateral limits of all ground water of the state of New Mexico within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each groundwater of the state of New Mexico which may be affected by the proposed injection;

(6) maps and cross-sections detailing the geologic structure of the local area;

(7) maps and cross-sections illustrating the regional geologic setting;

(8) proposed operating data:

(a) average and maximum daily rate and volume of the fluid to be injected; and

(b) average and maximum injection pressure;

(9) proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection formation and the confining zone;

(10) proposed stimulation program;

(11) proposed injection procedure;

(12) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(13) contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any ground water of the state of New Mexico;

(14) plans (including maps) for meeting monitoring requirements of 20.6.2.5358 NMAC;

(15) for wells within the area of review which penetrate the injection zone or the confining zone but are not properly completed or plugged, the corrective action to be taken under 20.6.2.5354 NMAC;

(16) construction procedures including a cementing and casing program, well materials specifications and their life expectancy, logging procedures, deviation checks, and a drilling, testing and coring program; and

(17) a demonstration pursuant to 20.6.2.5320 NMAC, that the applicant has the resources necessary to close, plug or abandon the well and for post-closure care.

B. Prior to the director's granting approval for the operation of a Class I hazardous waste injection well, the owner or operator shall submit and the director shall review the following information, which shall be included in the completion report:

(1) all available logging and testing program data on the well;

(2) a demonstration of mechanical integrity pursuant to 20.6.2.5358 NMAC;

(3) the anticipated maximum pressure and flow rate at which the permittee will operate;

(4) the results of the injection zone and confining zone testing program as required in Paragraph (9) of Subsection A of 20.6.2.5360 NMAC;

(5) the actual injection procedure;

(6) the compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone and with the materials used to construct the well;

(7) the calculated area of review based on data obtained during logging and testing of the well and the formation, and where necessary revisions to the information submitted under Paragraphs (2) and (3) of Subsection A of 20.6.2.5360 NMAC;

(8) the status of corrective action on wells identified in Paragraph (15) of Subsection A of 20.6.2.5360 NMAC; and

(9) evidence that the permittee has obtained an exemption under 40 C.F.R. Part 148, Subpart C for the hazardous wastes permitted for disposal through underground injection.

C. Prior to granting approval for the plugging and abandonment (*i.e.*, closure) of a Class I hazardous waste injection well, the director shall review the information required in Paragraph (4) of Subsection A of 20.6.2.5361 NMAC and Subsection A of 20.6.2.5362 NMAC.

D. Any permit issued for a Class I hazardous waste injection well for disposal on the premises where the waste is generated shall contain a certification by the owner or operator that:

(1) the generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable; and

(2) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment.

[20.6.2.5360 NMAC - N, 8-31-15]

20.6.2.5361 CLOSURE:

A. *Closure plan.* The owner or operator of a Class I hazardous waste injection well shall prepare, maintain, and comply with a plan for closure of the well that meets the requirements of Subsection D of this section and is acceptable to the director. The obligation to implement the closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

(1) The owner or operator shall submit the plan as a part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(2) The owner or operator shall submit any proposed significant revision to the method of closure reflected in the plan for approval by the director no later than the date on which notice of closure is required to be submitted to the director under Subsection B of this section.

(3) The plan shall assure financial responsibility as required in Paragraph (1) of Subsection A of 20.6.2.5342 NMAC.

(4) The plan shall include the following information:

(a) the type and number of plugs to be used;

(b) the placement of each plug including the elevation of the top and bottom of each plug;

(c) the type and grade and quantity of material to be used in plugging;

(d) the method of placement of the plugs;

(e) any proposed test or measure to be made;

(f) the amount, size, and location (by depth) of casing and any other materials to be left in the well;

(g) the method and location where casing is to be parted, if applicable;

(h) the procedure to be used to meet the requirements of Paragraph (5) of Subsection D of this section;

(i) the estimated cost of closure; and

(j) any proposed test or measure to be made.

(5) The director may modify a closure plan following the procedures of 20.6.2.3109 NMAC.

(6) An owner or operator of a Class I hazardous waste injection well who ceases injection temporarily, may keep the well open provided he:

(a) has received authorization from the director; and

(b) has described actions or procedures, satisfactory to the director, that the owner or operator will take to ensure that the well will not endanger ground water of the state of New Mexico during the period of temporary disuse; these actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the director.

(7) The owner or operator of a well that has ceased operations for more than two years shall notify the director 30 days prior to resuming operation of the well.

B. *Notice of intent to close.* The owner or operator shall notify the director at least 60 days before closure of a well. At the discretion of the director, a shorter notice period may be allowed.

C. *Closure report.* Within 60 days after closure or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a closure report to the director. If the quarterly report is due less than 15 days after completion of closure, then the report shall be submitted within 60 days after closure. The report shall be certified as accurate by the owner or operator and by the person who performed the closure operation (if other than the owner or operator). Such report shall consist of either:

(1) a statement that the well was closed in accordance with the closure plan previously submitted and approved by the director; or

(2) where actual closure differed from the plan previously submitted, a written statement specifying the differences between the previous plan and the actual closure.

D. *Standards for well closure.*

(1) Prior to closing the well, the owner or operator shall observe and record the pressure decay for a time specified by the director. The director shall analyze the pressure decay and the transient pressure observations conducted pursuant to Paragraph (1) of Subsection E of 20.6.2.5358 NMAC and determine whether the injection activity has conformed with predicted values.

(2) Prior to well closure, appropriate mechanical integrity testing shall be conducted to ensure the integrity of that portion of the long string casing and cement that will be left in the ground after closure. Testing methods may include:

(a) pressure tests with liquid or gas;

(b) radioactive tracer surveys;

(c) noise, temperature, pipe evaluation, or cement bond logs; and

(d) any other test required by the director.

(3) Prior to well closure, the well shall be flushed with a buffer fluid.

(4) Upon closure, a Class I hazardous waste well shall be plugged with cement in a manner that will not allow the movement of fluids into or between groundwater of the state of New Mexico.

(5) Placement of the cement plugs shall be accomplished by one of the following:

(a) the balance method;

(b) the dump bailer method;

(c) the two-plug method; or

(d) an alternate method, approved by the director, that will reliably provide a comparable level of protection.

(6) Each plug used shall be appropriately tagged and tested for seal and stability before closure is completed.

(7) The well to be closed shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the director, prior to the placement of the cement plug(s).

[20.6.2.5361 NMAC - N, 8-31-15]

20.6.2.5362 POST-CLOSURE CARE:

A. The owner or operator of a Class I hazardous waste well shall prepare, maintain, and comply with a plan for post-closure care that meets the requirements of Subsection B of this section and is acceptable to the director. The obligation to implement the post-closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

(1) The owner or operator shall submit the plan as a part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(2) The owner or operator shall submit any proposed significant revision to the plan as appropriate over the life of the well, but no later than the date of the closure report required under Subsection C of 20.6.2.5361 NMAC.

(3) The plan shall assure financial responsibility as required in 20.6.2.5363 NMAC.

(4) The plan shall include the following information:

(a) the pressure in the injection zone before injection began;

(b) the anticipated pressure in the injection zone at the time of closure;

(c) the predicted time until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost ground water of the state of New Mexico;

(d) predicted position of the waste front at closure;

(e) the status of any cleanups required under 20.6.2.5354 NMAC; and

(f) the estimated cost of proposed post-closure care.

(5) At the request of the owner or operator, or on his own initiative, the director may modify the post-closure plan after submission of the closure report following the procedures in 20.6.2.3109 NMAC.

B. The owner or operator shall:

(1) continue and complete any cleanup action required under 20.6.2.5354 NMAC, if applicable;

(2) continue to conduct any ground water monitoring required under the permit until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost ground water of the state of New Mexico; the director may extend the period of post-closure monitoring if he determines that the well may endanger ground water of the state of New Mexico;

(3) submit a survey plat to the local zoning authority designated by the director; the plat shall indicate the location of the well relative to permanently surveyed benchmarks; a copy of the plat shall be submitted to the director;

(4) provide appropriate notification and information to such state and local authorities as have cognizance over drilling activities to enable such state and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the well's confining or injection zone;

(5) retain, for a period of three years following well closure, records reflecting the nature, composition and volume of all injected fluids; the director shall require the owner or operator to deliver the records to the director at the conclusion of the retention period, and the records shall thereafter be retained at a location designated by the director for that purpose.

C. Each owner of a Class I hazardous waste injection well, and the owner of the surface or subsurface property on or in which a Class I hazardous waste injection well is located, must record a notation on the deed to the facility property or on some other instrument which is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:

(1) the fact that land has been used to manage hazardous waste;

(2) the name of the state agency or local authority with which the plat was filed, as well as the address of the director;

(3) the type and volume of waste injected, the injection interval or intervals into which it was injected, and the period over which injection occurred.

[20.6.2.5362 NMAC - N, 8-31-15]

20.6.2.5363 FINANCIAL RESPONSIBILITY FOR POST-CLOSURE CARE: The owner or operator shall demonstrate and maintain financial responsibility for post-closure by using a trust fund, surety bond, letter of credit, financial test, insurance or corporate guarantee that meets the specifications for the mechanisms and instruments revised as appropriate to cover closure and post-closure care in 20.6.2.5320 NMAC. The amount of the funds available shall be no less than the amount identified in Subparagraph (f) of Paragraph (4) of Subsection A of 20.6.2.5362 NMAC. The obligation to maintain financial responsibility for post-closure care survives the termination of a permit or the cessation of injection. The requirement to maintain financial responsibility is enforceable regardless of whether the requirement is a condition of the permit.
[20.6.2.5363 NMAC - N, 8-31-15]

20.6.2.5364 - 20.6.2.5399: [RESERVED]

HISTORY of 20.6.2 NMAC:
Pre-NMAC History:
Material in this Part was derived from that previously filed with the commission of public records - state records center and archives:
WQC 67-2, Regulations Governing Water Pollution Control in New Mexico, filed 12-5-67, effective 1-4-68
WQC 72-1, Water Quality Control Commission Regulations, filed 8-4-72, effective 9-3-72
WQC 77-1, Amended Water Quality Control Commission Regulations, filed 1-18-77, effective 2-18-77
WQC 81-2, Water Quality Control Commission Regulations, filed 6-2-81, effective 7-2-81
WQC 82-1, Water Quality Control Commission Regulations, filed 8-19-82, effective 9-20-82

History of Repealed Material: [Reserved]

Other History:
20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 10-27-95, effective 12-1-95
20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 10-15-96, effective 11-15-96
20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 11-30-00, effective 1-15-01
20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 9-16-01, effective 12-1-01
20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 8-1-02, effective 9-15-02
20 NMAC 6.2, Water Quality – Ground and Surface Water Protection, filed 11-21-18, effective 12-21-18

Appendix H

Food Waste Composting Programs

Location:	Link to Program Website:	Best Practices Found:	Specific Questions for Communities:	Question 1a: Do you have an organics program for the collection of food waste and green waste?
	https://www.cabq.gov/solidwaste/green-waste		City of Albuquerque: ● Is the participation of residential and commercial green waste at the drop-off locations being tracked? ● How long have the drop-off locations been in operation?	Green waste only.
	https://soilutions.net/	● Soilutions partnership with Little Green Bucket compost facility.		They have a green waste and food waste program. Green waste is for yard waste only (information on website is incorrect) which anyone can drop off material to the facility directly and food waste is for all food and food soiled paper, as well as bio plastics for curbside service to residents and commercial businesses
Albuquerque, NM	https://littlegreenbucket.com/	● Little Green Bucket partnership with Soilutions commercial compost facility. ● Residences with collection service will receive ~ 1 cubic foot of finished compost two times per year, in spring and fall.	● How many residences and commercial businesses in Albuquerque, Bernalillo County are subscribing to service? - 600 customers, 98% residences. ● What are the barriers to increased participation with food scraps collection or drop off? - Cost of the service pushes a lot of people out of wanting to participate in the program. Drop-offs can only be 2 hours a week because people NEED to watch the bin	Yes, this is a food waste program with minimal green waste allowed.
	https://www.mountainwaste.com/			
	https://evergreenzerowaste.com/			Yes
Aspen, CO	https://www.cityofaspen.com/357/Waste-Recycling	● Partnership with Pitkin Co. Landfill ● Residences may drop off food scraps at Pikin compost facility free of charge ● City provides free internal buckets with instructions for residences; and internal bins and external bear proof collection bins for commercial businesses ● City provides technical assistance to commercial businesses	commercial accounts and what other best practices are utilized to deter bears? - Barracuda brand - Liz said hauler prefers 2yd container over carts and other sizes due to weight of containers ● Is the City or Pitkin Co. keeping records on the free residential drop -off to track participation? - No ● What are the barriers to increased participation with food scraps collection or drop off? - Money for the bear proof facility that also isn't a eye sore or smell for neighbors	Have a year long drop off service for yard waste 2x 30 yard dumpsters with an iron medal container so people can push leaves/grass into bin. Residents and businesses can divert food waste through two outside organizations that they would have to pay for: Ever Green Zero Waste or Mountain Waste and Recycling
Flagstaff, AZ	https://www.flagstaff.az.gov/4665/Residential-Food-Scraps-Drop-off https://www.flagstaff.az.gov/4633/Community-Compost-Bins			The Community Compost Bins are for both food waste and green waste, the Residential Food Scraps Drop Off is for only food waste.

Location:	Link to Program Website:	Best Practices Found:	Specific Questions for Communities:	Question 1a: Do you have an organics program for the collection of food waste and green waste?
Northfield, MN	https://www.ci.northfield.mn.us/336/Organics-RecyclingComposting		● How many residences and commercial businesses are subscribing to the green waste collection service? - residents: 400 ● How long has the drop-off location been in operation? - more than 5 years ● Is the participation of residential and/or commercial food scraps drop-off tracked? - n/a ● Is there a plan to expand residential participation of food scrap drop-off or collection? - Yes, they have a Climate Action Plan that includes educating the community of composting/recycling ● What are the barriers to increased participation with food scraps collection or drop off? - From survey last year, a lot of people noted not wanting to pay for	Residents have a drop off compost program and a green waste program for curbside collection at an cost extra.
	https://www.northfieldcompost.com/	● Soilutions partnership with Little Green Bucket compost facility.	● How many residences and commercial businesses in Albuquerque, Bernalillo County are subscribing to service? 750 residential customers in their 10mile pick up radius subscript to services. Only 10-12 businesses subscribe. ● What are the barriers to increased participation with food scraps collection or drop off? - Not enough employees, not enough space for material, purchasing needs.	Collects both green waste and food waste for their compost program.
Redmond, OR	https://www.wmnorthwest.com/redmond/		● How many residences and commercial businesses are subscribing to the green waste and food scraps collection service? ● Is the participation of residential and/or commercial food scraps drop-off tracked? ● Is there a plan to expand residential or commercial business participation of food scrap drop-off or collection? ● What are the barriers to increased participation with food scraps collection or drop off? ●	
Santa Fe, NM	https://www.santafenm.gov/trash_and_recycling		Santa Fe: ● Is the participation of residential and commercial green waste at the drop-off locations being tracked? ● How long have the drop-off locations been in operation?	Just green waste
	https://www.reunityresources.com/	● Reunity Resources operates a community farm and compost program; produce is sold locally and donated to those in need. ● Alliances with the community, City and County ● Residences receive a lined 4-gallon bucket that is replaced with a clean bucket on day of pickup. ● Residences with collection service will receive 1 cubic foot of premium compost delivered to their doorstep, twice per year: spring and fall. ● Commercial businesses receive bins, bags, labels, and 64-gallon carts for collection	Reunity Resources: ● How many residences and commercial businesses are subscribing to the doorstep collection and commercial food scrap collection service: 370 doorstep, 51 commercial ● What are the barriers to increased participation with food scraps collection or drop off: The cost and/or if a person or business doesn't know the program exists.	Paper bags, paper napkins, paper towels, coffee filters, paper tea bags, certified compostable products, meat, poultry and seafood including bones, cheese, diary products, fruit, vegetables, grains, pasta, eggshells, bread, coffee grounds, tea leaves, baked goods, nuts jelly candy, snack foods, leftovers, spoiled food (any of the food materials cooked or raw), grass clippings, flowers, leaves, straw, wood chips, sawdust, bamboo, compostable packing peanuts.

Location:	Link to Program Website:	Best Practices Found:	Specific Questions for Communities:	Question 1a: Do you have an organics program for the collection of food waste and green waste?
Truckee, CA	keeptruckeegreen.org/residential-waste-recycling/compost-drop-off/	● Centralized location at the town hall for year round drop off and multiple locations during May-October for residents to drop off food scraps free of charge	● How many commercial businesses in Truckee are subscribing to the organics collection service? - 60 businesses ● How long have the various drop-off locations been in operation? - Since the beginning of the program, will be adding two more drop off locations. ● Is the participation of residential food scraps drop-off being tracked? - No. ● Is there a plan to expand residential participation of food scrap drop-off or collection? - Yes, they originally had a 64-gal cart for residents to drop-off food waste, it is now a 2 or 3 yard garbage container that fills up 2x/week, will be adding two more drop off locations for residents to use. ● What are the barriers to increased participation with food scraps collection or drop off? - The residents use the current system so much that the town is adding more drop off locations and does not see a barrier yet, unless they need so many drop off locations that the dumpsters become an eye-sore to the public.	Yes, there is a food waste program for residents and commercial businesses.

Location:	Question 1b: What organic materials are accepted (e.g. compostable / bio plastics in the program)? Why or why not?	Question 2: Does the program offer services to both residents and commercial businesses?	Question 3: Is the organics program mandatory or elective?	Question 4: Do you charge a fee to participate in the program?
	Green waste only - no food, bio plastics, dirt or construction debris as the green waste is processed to mulch for the Cerro Colorado Landfill	Residents can drop their green waste off to one of the City's three convenience center locations	Elective	Yes, unless it is during a collection event which takes place every fall and the City comes around to collect green waste
	Green waste: trees, branches, leaves, shrubs/pruning's, grass, weeds, cactus, yucca, Christmas trees, sawdust, woodchips, shredded paper, spoiled grain, hay, straw, crop residuals Food waste: spoiled food, institutional food, commercial food processing residuals, natural cloth and fibers, sod, soil, waxed/spoiled cardboard (pizza boxes)	Yes. The green waste program is drop off only, food waste is curbside only.	Elective	Yes, $8 per cubic yard for green waste. A typical pickup for food waste is $50, though can increase if there are multiple carts on site.
Albuquerque, NM	Fruits, vegetables, meat, seafood, bones, dairy, eggshells, bread, nuts & grains, flowers and houseplants, compostable plastics and soiled paper products, natural cloth and fibers	Yes	Elective	$20/mo. + tax for biweekly residential service. Residents have the option to drop off food waste for free if they are on food assistance or in Section 8 housing. For commercial businesses, they have the option of $10 a month for a drop off membership for their drop-off events. Or a pay as you go membership: $1 per gallon. Depending on size of bucket/commercial business, pick-up service for commercial businesses can be between $60-$9p per month.
	Food scraps, green waste, compostable paper (no other specifics on site)	Yes	Elective	Yes, rates for residents and businesses starts at $18 per month
Aspen, CO	Only yard waste for the City's drop off green waste program	Public drop off center in the middle of the town for free. Only for residents. Commercial businesses - very few have yard waste, if they do, they hire a third party landscape service, illegal for the yard waste to go into the landfill.	Elective	The Drop Off program is free
Flagstaff, AZ	Fruit, vegetables, egg shells, coffee grounds, tea bags, nut shells, grains, cut flowers, mulch/wood chips, dead leaves, sawdust, small twigs, newspaper shredded paper	These are residential programs only	Elective	This is a free drop off program

Location:	Question 1b: What organic materials are accepted (e.g. compostable / bio plastics in the program)? Why or why not?	Question 2: Does the program offer services to both residents and commercial businesses?	Question 3: Is the organics program mandatory or elective?	Question 4: Do you charge a fee to participate in the program?
Northfield, MN	Fruit, vegetables, bread, cereal, dairy, meat (including bones), coffee grounds, filters and tea bags, non-recyclable paper, paper towels, plates, napkins, pizza boxes	Residents only	Elective	Hauler charges fees for green waste program, compost program is free for drop off
	Fruit, vegetables, meat, fish, bones, dairy products, egg, eggshells, bakery and dry goods, pet food, soiled napkins/paper/towels/tissues, paper egg cartons, shredded paper, certified compostable plates/bowls/containers, pizza boxes - bio plastics are accepted.	Yes	Elective	Yes, costs to give material as well as to take compost. The Household Organics Recycling Program is free to Scott County residents.
Redmond, OR				
Santa Fe, NM	green waste, yard trimmings, leaves and flowers from landscapes and parks	The program is for both residents and commercial businesses	Elective	No
	Yes, they have 3 programs: 1. Doorstep Compost Collection 2. Food Scraps Drop Off 3. Commercial Services Program	Elective	Doorstep Compost Collection: $36 per month + tax for weekly pickup, $20 per month + tax for bi-weekly pickup Drop off: Free Commercial: Elective	The program offers pick up as well as drop off programs for residents and commercial businesses. It is free to drop off material for residents, or they can opt in for a monthly subscription with a monthly purchase.

Location:	Question 1b: What organic materials are accepted (e.g. compostable / bio plastics in the program)? Why or why not?	Question 2: Does the program offer services to both residents and commercial businesses?	Question 3: Is the organics program mandatory or elective?	Question 4: Do you charge a fee to participate in the program?
Truckee, CA	Fruit, veggies, flowers, eggshells, meat, bones, avocado pits, coffee grounds (no paper products or bio plastics due to the compost facilities now allowing)	Voluntary for residents and mandatory for certain businesses.	Mandatory for businesses certain under AB 1826.	Yes - charges incentive to participate in recycling and food waste rather than trash services.

Location:	Question 5a: What types services does the program offer: (and why) (curbside, education/outreach/etc.)	Question 5b: If they offer Curbside collection: are these serviced provided through a hauler, city, or private service?	Question 5c: If they offer Drop-off locations(s): are organic collection containers provided (buckets, carts, bins)?	Question 5d:Are site visits and trainings offered to businesses?
	Drop-off	n/a	Is the participation of residential and commercial green waste at the drop-off locations being tracked?	
	Drop off for green waste program. Curbside for food waste program.	The curbside service for the food waste program is a private program.	Yes, 64-gallon (green) carts. They are exchanged during each pickup	Yes, very few people take them up on their offer
Albuquerque, NM	Both pick-up and drop-off options for both residents and small commercial businesses	n/a	Yes, buckets are provided. Slim-jims provided to commercial businesses that have more food waste (i.e. larger offices, cafes, etc.)	Provides presentations for commercial businesses when they start. Recommends Masters Compost Program through County for residents
	Curbside service	Through their own service (private)		Yes, continuously
Aspen, CO	Drop off for yard waste	n/a	The City promotes residents and businesses to use the two elective compost groups to divert their food waste with offering buckets, slim jims and pails, but does not offer any material for their green waste program.	n/a
Flagstaff, AZ	Drop off, educational information can be found online	n/a		

Location:	Question 5a: What types services does the program offer: (and why) (curbside, education/outreach/etc.)	Question 5b: If they offer Curbside collection: are these serviced provided through a hauler, city, or private service?	Question 5c: If they offer Drop-off locations(s): are organic collection containers provided (buckets, carts, bins)?	Question 5d:Are site visits and trainings offered to businesses?
Northfield, MN	Drop off for compost, curbside for green waste.	Green waste service is provided by hauler.	No containers provided for the two drop off compost bin (open April-Nov).	Will be starting a pilot program in 2022 to train to teach others how to compost and waste reduction, also send out educational post cards a couple times a year.
	Curbside pickup in the programs trucks and education tools/meetings with customers whenever they want or if they show contamination consistently.	They pickup curbside with their company trucks.	Buckets and 25 free compostable bags are provided to those participating in the Organics Household Recycling Program.	Community education to what is composting and why it matters to compost - churches, schools, restaurants, etc.
Redmond, OR				
Santa Fe, NM	Drop off	n/a	No	
	Commercial and residential compost collection services and education and outreach.	Yes, 64 gallon carts	Yes, 64 gallon carts	The program hosts paid apprentices from YouthWorks and the Santa Fe Community College as well as field trip and service learning groups, drop in volunteers on Tuesdays and Saturdays, and a work trade program. They also have a Learning Garden which a creative space to learn how plants grow and how to work with plants.

Location:	Question 5a: What types services does the program offer: (and why) (curbside, education/outreach/etc.)	Question 5b: If they offer Curbside collection: are these serviced provided through a hauler, city, or private service?	Question 5c: If they offer Drop-off locations(s): are organic collection containers provided (buckets, carts, bins)?	Question 5d:Are site visits and trainings offered to businesses?
Truckee, CA	Drop-off for residents, hauler services commercial collection for AB 1826 and the hauler also services the drop off bin(s).	Hauler	Dumpsters for drop-off (2 and 3 yard).	Yes, very big through the Town. Town is in charge of outreach, site visits and trainings.

Location:	Question 5e: What type educational materials are offered?	Question 5f: How much money/effort do you provide for this program?	Question 6a: Are separate containers required for collection of green waste and food waste?	Question 6b: Does the program allow for organics to be collected in bags and placed in the trash or green waste bins?
	Information is on their website. They also provide flyers, stickers and posters for customers.	n/a	Yes, they provide green 64-gallon carts for their food waste program	Prefer no bags, but if they do, has to be compostable
Albuquerque, NM	No	n/a	The program supplies a bucket to easily have residents and businesses separate their food waste from other material	Yes, works with Solutions to set the list- any bio-plastics certified compostable.
	Yes. Website provides videos and posters about sorting.		No	If the bags are compostable, it seems like customer's would be able to use them
Aspen, CO	City provides interior collection containers for both residents and businesses to participate in Ever Green Zero Waste or Mountain Waste and Recycling programs. The City has interior containers like slim jims and 6.5 gallon buckets. Stickers with guidelines 2.5 gallon pail for multi-family residents who have access to a larger container on site	Liz was not sure.	Not required since they are elective programs, but the City has containers to help separate food waste from recycling and landfill.	Yes, for the green waste program, people can use compostable bags.
Flagstaff, AZ	Online videos and quizzes to participate can be found online		For the residential food scraps program, yes, for the community hub program, no	No

Location:	Question 5e: What type educational materials are offered?	Question 5f: How much money/effort do you provide for this program?	Question 6a: Are separate containers required for collection of green waste and food waste?	Question 6b: Does the program allow for organics to be collected in bags and placed in the trash or green waste bins?
	Post cards, information of the programs is on their website.	Limited employees for this program so they do not put much, if any, money into these programs with only a couple hours a week designated. They have a pilot program coming up which will allocate more hours from training and education for these programs.	Yes, green waste container is provided by the hauler 1x/week May-Nov	Can use a compostable bag for the drop off sites.
Northfield, MN	Educational material can be found on their website	There are 7 employees who work part time for the program (some work 3 hours a week, some work 20 hrs. a week)	No	Yes, allows for compostable bags
Redmond, OR				
				No
Santa Fe, NM	Website information, stickers, postcards	Doorstep Compost Collection: Food Scraps Drop Off: Commercial Services:	Doorstep Compost Collection: Yes Food Scraps Drop Off: Yes Commercial Services: Yes	Doorstep Compost Collection: No Food Scraps Drop Off: No Commercial Services: No

Location:	Question 5e: What type educational materials are offered?	Question 5f: How much money/effort do you provide for this program?	Question 6a: Are separate containers required for collection of green waste and food waste?	Question 6b: Does the program allow for organics to be collected in bags and placed in the trash or green waste bins?
Truckee, CA	Signage, internal containers, outreach documents.	n/a money, required a lot of staff time to talk to businesses and prepare outreach	With commercial businesses, businesses have to have a different container to source separate.	No, no liners allowed.

Location:	Question 7a: Does the program provide customers with clean bins?	Question 7b: What is the internal process for cleaning bins?	Question 8a: Are you satisfied with these type of containers or would a different container work better (e.g. issues with wild life and/or vermin)?	Question 8b: Do they experience any problems with rodents or wild life? If you do, what measures do you take to manage?
	Yes after every pickup.	Once the cart is dumped at the site, they spare the interior with water and allow it to dry before bringing it back out to a customer.	Walter mentioned he likes the containers as they are easy enough for him to service.	Walter mentioned this isn't too big of an issue as they are servicing carts weekly.
Albuquerque, NM	Exchange buckets for every bucket with a clean bag.	Commercial triple sink to clean buckets.	n/a	n/a Have had 30 buckets destroyed by dogs - never had issues with bears.
	No	n/a	Satisfied	Because we are in bear-country, outdoor containers are bear-proof and animal-resistant bins are kept inside enclosures.
Aspen, CO	n/a	n/a	Like the 2-yard as long as people remember to lock them	The County provides free outdoor bear proof containers for food waste collection - 96gallon cart created by Barracuda their Titan Model. 2-yard bear proof dumpster by Barracuda as well
Flagstaff, AZ	No	n/a	n/a	

Location:	Question 7a: Does the program provide customers with clean bins?	Question 7b: What is the internal process for cleaning bins?	Question 8a: Are you satisfied with these type of containers or would a different container work better (e.g. issues with wild life and/or vermin)?	Question 8b: Do they experience any problems with rodents or wild life? If you do, what measures do you take to manage?
Northfield, MN	No	n/a	3yd-4yd dumpsters, don't have much wildlife so are happy with containers they use.	Not a big problem for the City. Assume it is locked, but there are no bears in this area usually so don't have an issue with larger wildlife so don't even need containers locked.
	Given a 5 gallon bucket (take as many as they want) or a 32-gallon cart (commercial contracts). Each week they give out compostable bags for their carts/buckets	The customers have to clean their containers if they want them to be cleaned as the program provides free compostable bags at every pick up.	Have had a very minimum amount of issues with wild life. 5-gallon buckets can be completely sealed. Only a handful of buckets have been disrupted by rodents. The 32-gallon carts don't have a sealed lid, but they are heavy enough to make it difficult to tip	n/a
Redmond, OR				
Santa Fe, NM				
	Doorstep Compost Collection: Yes Food Scraps Drop Off: Yes Commercial Services: Yes	Doorstep Compost Collection: Washing and drying Food Scraps Drop Off: Washing and drying Commercial Services: Washing and drying	Satisfied	The Doorstep Compost Collection has the option to subscribe to service weekly or bi-weekly. The Commercial Services have weekly service.

Location:	Question 7a: Does the program provide customers with clean bins?	Question 7b: What is the internal process for cleaning bins?	Question 8a: Are you satisfied with these type of containers or would a different container work better (e.g. issues with wild life and/or vermin)?	Question 8b: Do they experience any problems with rodents or wild life? If you do, what measures do you take to manage?
Truckee, CA	Swap bins every 6 months for the businesses. If they receive a call from a business, they will swap it out, if they want more than once a once, the business will be charged.	n/a	Their current system for the 2-3 dumpsters work well with rigged chains and carabineers. Kodiak carts - not happy with how the original carts were working, new design that Kodiak came out with will be used in the Town, Melanie is hopeful they will work.	Yes, they use certain carts and try to use dumpsters as much as possible.

Location:	Question 9a: How often is the food waste or green waste collected (frequency)?	Question 9b: How many staff is dedicated to this program? Collection, managing compost, outreach?	Question 10a: Which composting facility is the organic material taken to?	Question 10b: What type of process does the compost facility use (e.g., windrow, aerated static pile, in-vessel composting, anaerobic digestion)?
	Drop off green waste as needed/wanted, Fall Green Waste Collection (Nov 29-Dec 1)		Green waste is turned to mulch then goes to Cerro Colorado Landfill to help prevent erosion	n/a
	Green waste - as often as the customer wants to drop off material Food waste - generally weekly, though some customer's request more (Tues-Sat offered)	5 on site, 1 dedicated to food waste program with 2 others as needed to organize the cleaning on the carts and pickups.	Material is to be dropped off/brought to their own site	Modified static pile (not windrow b/c of their environment)
Albuquerque, NM	Weekly or bi-weekly	6 employees (would like 8, everyone is part time)	Little Green Bucket has their own compost facility	Compost goes to Soilutions.
	1x week for residents, as needed for businesses	4	Pitkin County's US Compost Council Certified Industrial Composting Facility	Windrow
Aspen, CO	Drop off containers are serviced as often as needed, fall 1x/week, summer 1x/month	2 people at 30% of their time	Yard waste is taken to the same place as where the food waste is taken to, the Pitkin County Compost Facility	Windrow
Flagstaff, AZ	Drop off as often as they want		Bonito Community Garden - 572 W Elm Ave Izabel Community Garden - 2300 N Izabel St O'Leary Community Garden - 900 S O'Leary St	aerated static pile

Location:	Question 9a: How often is the food waste or green waste collected (frequency)?	Question 9b: How many staff is dedicated to this program? Collection, managing compost, outreach?	Question 10a: Which composting facility is the organic material taken to?	Question 10b: What type of process does the compost facility use (e.g., windrow, aerated static pile, in-vessel composting, anaerobic digestion)?
Northfield, MN	Green waste 1x/week May-Nov. Drop off is serviced 1x/week.	About 2-3	Dick's Sanitation picks it up and brings to reservation in Shakopee that has a small composting processing facility.	Traditional compost facility that sells material for road projects.
	Can drop-off material whenever they have open business hours. Pick up in your radius (10-ish miles) once a week unless greater than 10-miles and they pick up every other week and give those customer's additional buckets	7 employees	Shakopee Mdewakanton Sioux Community Organics Recycling Facility	Windrow
Redmond, OR				
Santa Fe, NM	Dropped off as frequently as needed		Buckman Recycling Center (BuRRT) and El Dorado, Jacona, and Stanley transfer stations. The green waste at BuRRT is ground into chips and taken to the Caja del Rio Landfill where it is added to the compost mixture. Payne's Nursery through a contract with the Santa Fe Solid Waste Management Joint Powers Board oversees the composting operation at the landfill and sells the finished compost at the Payne's Organic Soil Yard.	
	1x2 times a week, biweekly	Their own.	Aerated Static Piles	Aerated static pile

Location:	Question 9a: How often is the food waste or green waste collected (frequency)?	Question 9b: How many staff is dedicated to this program? Collection, managing compost, outreach?	Question 10a: Which composting facility is the organic material taken to?	Question 10b: What type of process does the compost facility use (e.g., windrow, aerated static pile, in-vessel composting, anaerobic digestion)?
Truckee, CA	Drop off dumpsters are serviced 2x/week. Commercial businesses can get their containers serviced up to 3x/week.	Town employees: 3 employees doing business outreach	Full Circle Soils and Compost in Nevada	Outdoor Windrow

Location:	Question 10c: How is the material pre-processed (debagger?)?	Question 10d: Does the facility ever stockpile food? Is the material covered?	Question 10e: How long does your facility allow for food scraps and green waste on-site?	Question 10f: How do you deal with contamination?
	n/a	n/a	n/a	
	Only looked through for contamination.	15ft tall piles/150ft tall, no material is used to cover compost.	n/a	Hand pick it out when they go to pick up food waste. Tag cart with sticker for an internal process. If they notice when at site, they will notify their client, fine them and potentially drop as a client.
Albuquerque, NM	Soilutions does not have a pre-processed system. Only have customers that use smaller bags.	Soilutions does not. Prep a pad of wood chips, dump everything from a days haul, cover it, then mix it into a new haul. Construction of a new haul each day.	Soilutions picks up every Thursday - max 7 days. Could be up to 5 weeks old from customer to Green Bucket to Solutions	Does not have much due to dumping each bucket and searching, does not find a lot.
	n/a	n/a	n/a	n/a
Aspen, CO	No bags allowed, unless they are compostable - residents must push leaves into drop off containers and then can also place their compostable bag in container.	Yes, though not covered.	n/a	This is monitored and then manually pulled out. If the contamination makes it to the facility, compost facility will fine the City, though this doesn't happen often.
Flagstaff, AZ	no bags allowed			

Location:	Question 10c: How is the material pre-processed (debagger?)?	Question 10d: Does the facility ever stockpile food? Is the material covered?	Question 10e: How long does your facility allow for food scraps and green waste on-site?	Question 10f: How do you deal with contamination?
	Compost bags can be used, do not need to have a pre-process.	No	n/a	Will turn loads away that are contaminated and goes to landfill.
Northfield, MN	They do not have a process. If they see contamination, it is pulled out.	Look at answers from Soilutions	Look at answers from Soilutions	When it is seen, it is removed. People are generally good about not putting in trash/recycling. Have issues with commercial businesses in which they come back and remind them not to put in trash/recycling. Talking about putting a fee for contamination in the future when they process their material on site (right now they use Soilutions)
Redmond, OR				
Santa Fe, NM	Occasional manual depackaging	No, Yes	2 days	Screen and education with customers

Location:	Question 10c: How is the material pre-processed (debagger?)?	Question 10d: Does the facility ever stockpile food? Is the material covered?	Question 10e: How long does your facility allow for food scraps and green waste on-site?	Question 10f: How do you deal with contamination?
Truckee, CA	n/a	n/a	n/a	Driver first looks at container, if there is contamination, it will be tagged and will not be serviced. There is a large contamination fee ($100 per contamination to pay for trash truck to come around and service container)

Location:	Question 11: When did the green waste and/or food scraps program start?	Question 12a: What initiated the organics collection service in your community?	Question 12b: Has the program been successful? Why or why not?	Question 13: What percentage of residential and/or commercial businesses are participating in the program?
	2009-current	Walter (co-owner) wanted to come up with an inexpensive way to divert food from landfill	Yes, 4-6 million tons in the last 8 years diverted from the landfill	Food waste = 30-50 customers
Albuquerque, NM	2018-Current	Brad started his company for personal reasons.	Yes, though cost of the program has made it difficult to expand.	600 customer's, 450 buckets per week (weekly, bi-weekly and drop-offs). 98% residential.
	2010	"Us seeing a need for this service"	Yes, because people have begun to see the value in it over time.	4%
Aspen, CO	2005	Waste Ordinance created that banned yard waste going into the landfill so the City needed to provide a program to allow people to dispose of yard waste.	17% of the landfill trash coming from Aspen is yard waste. "divert several tons of yard waste each year" People would prefer to have a curbside pickup rather than drop off.	n/a
Flagstaff, AZ				

Location:	Question 11: When did the green waste and/or food scraps program start?	Question 12a: What initiated the organics collection service in your community?	Question 12b: Has the program been successful? Why or why not?	Question 13: What percentage of residential and/or commercial businesses are participating in the program?
	Green waste = 2019 Compost = more than 5 years	n/a	Yes, more and more people are signing up for both green waste and participating in the drop off compost containers. They do not put a lot of effort into outreach and education, but there are people who do want to participate.	n/a
Northfield, MN	2017-current	Conversations in the City about the county landfill filling up quickly and construction being needed for a second landfill. City workers had an eye towards how to reduce waste in the City. Helen and another friend decided to start the business around the City's needs.	Yes - they are continuing to grow and have customer's return and new ones come in. The City is very receptive to their program.	Have 750 residential customers Have 10-12 commercial customers
Redmond, OR				
Santa Fe, NM	2012	They believed it was silly for food waste to go to the landfill	Yes, serves a wide population and makes great compost.	unknown

Location:	Question 11: When did the green waste and/or food scraps program start?	Question 12a: What initiated the organics collection service in your community?	Question 12b: Has the program been successful? Why or why not?	Question 13: What percentage of residential and/or commercial businesses are participating in the program?
Truckee, CA	Feb-19	AB 1826	Yes and no - lots of learning curves and finding a wildlife resistant container has been difficult.	60 businesses participate in the AB 1826 program, n/a for residential program.

Location:	Question 14: What are the barriers to increased participation with green waste and/or food scraps collection or drop off?	Question 15: Is data available on the total tons composted per year? If so, where can I find this information?	Question 16: Any advice to offer for a new program or other general feedback?	Question 17: If you would do it differently, what would you do?
		n/a		
	Cost to participate in the program- do not push to increase the food waste program	Yes, listed on their website. Soilutions has diverted 42,769,981 pounds of food waste from the landfill so far.	Make sure that the numbers are right - charge what it costs.	Thinks his program is successful! Infrastructure improvements to keep the program growing and running
Albuquerque, NM	Price of the service and location of the drop-off site makes it difficult to grow the business.	Use to, when Soilutions changes ownership, they stopped publishing the data they would track for this organization.	Because it is a Private business, customers feel a lot more ownership over their buckets and changes to the program are difficult for them to understand.	Remember that the little details can be wasteful (changing printed documents, containers, etc.)
	Cost. Desire. Business managers thinking their employees won't do it, based on previous problems with recycling.	7050139 pounds composted so far this year (found on their website)	Hauling organics is heavy and difficult work, have good trucks and pay your team well.	
Aspen, CO	Drop off is inconvenient for residents so not everyone is willing to participate. Those that have a landscaper take their material are not guaranteed that their material goes to the compost facility, the City has noticed they still have green waste going into the landfill and are unable to track and fine those who put green waste into their landfill containers.	Yes, but unable to access during our call.	For yard waste, people are eager to get rid of (seasonally in Aspen), starting with a program with a limited scope makes it easier to start. Would not recommend a public drop off for food waste + yard waste as it will bring in wildlife	Community would love to compost if the City of Aspen had the ability to do so - does not have a bear proof facility.
Flagstaff, AZ				

Location:	Question 14: What are the barriers to increased participation with green waste and/or food scraps collection or drop off?	Question 15: Is data available on the total tons composted per year? If so, where can I find this information?	Question 16: Any advice to offer for a new program or other general feedback?	Question 17: If you would do it differently, what would you do?
	Having to drop off their compost or green waste (prior to program), 'ick' factor of storing food waste in the home in between drop offs, concerns of mandatory program - doesn't want to be charged for a compost program	n/a	Outreach and education is important - even with recycling, keep providing multiple forms of outreach to residents and businesses so they are aware of changes in compost/recycling and minimize contamination.	Staff it!! Need more resources to staff the program.
Northfield, MN	COVID	Look at Soilutions response	As you are starting, ask questions that you may think you should already know the answer to - rather get your answer If they do think about doing collection, the 5-gallon buckets from food service industries has been a benefit to cost savings and reuse reduce recycle!	Run your numbers and best guesses about what things are going to cost! Do not underestimate operating costs - charge enough for your service.
Redmond, OR				
Santa Fe, NM	There is information online. They have diverted 3,957,539 pounds of food waste between 2014-2018. They have also sold/donated 8,000 cubic yards of compost through the City of Santa Fe.		Put the customers first and communicate regularly.	N/A

Location:	Question 14: What are the barriers to increased participation with green waste and/or food scraps collection or drop off?	Question 15: Is data available on the total tons composted per year? If so, where can I find this information?	Question 16: Any advice to offer for a new program or other general feedback?	Question 17: If you would do it differently, what would you do?
Truckee, CA	n/a exempted from SB 1383.	n/a	Be aggressive with education to keep contamination down and businesses to keep participating, lots of handholding at the start of the program, having someone fulltime being supportive to the businesses, put yourself in the shoes of those who need to participate in the program and making it as easy as possible for them.	Require the hauler to have a 1/2 cubic yard dumpster option for businesses to easily keep wildlife out.

Appendix I

Collection Matrix

SUMMARY BY SCENARIO (2021 $s) - Gross Incremental Costs w/Collections (inc. add for FW collection)

RESIDENTIAL SCENARIOS	FOOD IN GREEN WASTE CONTAINER		FOOD IN (NEW) FOOD WASTE CONTAINER		DROP-OFF SITE COLLECTION	
SCENARIO NO.	R1.1	R1.2	R2.1	R2.2	R3.1	R3.2
COLLECTION TYPE (SUB SCENARIO)	BIN (LOOSE) COLLECTION	BAG-IN-CART COLLECTION	BIN (LOOSE) COLLECTION	BAG-IN-CART COLLECTION	ECO STATION & OVERLOOK PRK	ES/OP & 2 UN-KNOWN SITES
Collection Cost ($/year) - Includes Containe	$ 189,876	$ 264,756	$ 549,681	$ 624,561	$ 44,014	$ 84,822
Primary Transport Cost ($/year)	$ 33,559	$ 33,559	$ 33,559	$ 33,559	$ 61,027	$ 122,054
Transfer Station/Bag Pull Cost ($/year)[1]	NA	NA	NA	NA	NA	NA
Education & Outreach/Prog. Cost ($/yr flat)	$ 17,000	$ 17,000	$ 17,000	$ 17,000	$ 20,000	$ 20,000
Total Annual Cost ($/year)	**$ 240,436**	**$ 315,316**	**$ 600,241**	**$ 675,121**	**$ 125,041**	**$ 226,876**
Cost per Month per Account ($/mo)	**$ 2.78**	**$ 3.65**	**$ 6.95**	**$ 7.81**	**$ 1.45**	**$ 2.63**
Cost per Ton Recovered ($/mo)	**$ 214.23**	**$ 280.95**	**$ 534.82**	**$ 601.54**	**$ 111.41**	**$ 202.15**

1. TS bag pull cost assumed to be 1 new TS laborer position for res
1. Bio-bag shredde
1. Food waste assumed to require same
1. Assumes increm
1. Assumes incremental costs of R3.1 and R3.2 summed
2. 1x every week wi
2. Same collection freq. of waste collection assumed (weekly
2. Assumes addt'l E
2. Assumes addt'l E&O due to second location
3. Green waste routes have space to accept food waste (time/capacity)
4. For implementation, might reduce trash frequency to compensate for costs.

COMMERCIAL SCENARIOS	FOOD IN (NEW) FOOD WASTE CONTAINER	
SCENARIO NO.	C1.1	C1.2
COLLECTION TYPE (SUB SCENARIO)	BIN (LOOSE) COLLECTION	BAG-IN-CART COLLECTION
Collection Cost ($/year) - Includes Containe	$ 258,237	$ 299,121
Primary Transport Cost ($/year)	$ 64,287	$ 82,657
Transfer Station/Bag Pull Cost ($/year)	NA	NA
Education & Outreach/Prog. Cost ($/yr flat)	$ 5,000	$ 5,000
Total Annual Cost ($/year)	**$ 327,523**	**$ 386,778**
Cost per Month per Account ($/mo)	**$ 108.31**	**$ 127.90**
Cost per Ton Recovered ($/mo)	**$ 645.07**	**$ 761.78**

1. TS bag pull cost assumed to be 0.5 FTE nev
1. Baseline is "Busi
1. E&O reduced rel
1. Assume entire commercial food waste collection program costs same as current commercial waste (trash) program (daily collection

Key Overall Assumptions

1. Costs are gross and do not include any assumed savings from collection/material reductions from other programs.
2. All Bagged waste scenarios assume bags provided by LAC (cost to LAC= $0.20 to $0.52 apiece) only to participating residents/businesses.
3. Residential and Commercial food waste diversion scenarios assume 100% participation rate (setouts on assumed collection frequency by all households/businesses).
4. Self haul and LANL material assumed to be taken direct to compost site at Baylo Canyon rather than Eco Park; no collections costs assumed.
5. Capital items all assumed debt-funded amortized to smooth costs; costs includes required new capital equipment (pails, cans, container), incremental/captial vehicle costs (capital deprec, fuel, and maintenance), and adde
6. Primary Transport starts the moment truck leaves collection route en route to the waste's first destination -- either Eco Station for transfer or direct to Bayo for composting.

February 2, 2022
File No. 01221112.00

MEMORANDUM

TO: Angelica Gurule, County of Los Alamos

FROM: Michelle Leonard, Greg McCarron, and Tracie Bills, SCS Engineers

SUBJECT: **Task 14:** Composting Programs Best Management Practices

INTRODUCTION

SCS prepared a list of Best Management Practices (BMPs), based on experience from around the country related to managing and regulating compost facilities and Anaerobic Digesters (AD). The BMPs include design, operational, and/or managerial features and programs, implemented by facility operators, for the purpose of minimizing potential off-site adverse impacts on adjacent land uses and/or the environment. BMPs include:

- pathogen and vector attraction reduction;
- off-site odor, dust and noise impacts;
- traffic impacts;
- spills;
- health and safety items;
- product quality testing and verification;
- vegetated buffer zones; and
- finished compost that does not meet market specifications

In general, consistent performance of composting systems requires that the blended feedstocks be correctly proportioned to achieve good chemical (C:N, pH, and moisture), physical (porosity, particle size) and biological properties and that process conditions (temperature, moisture, mixing) be controlled.

Anaerobic digestion (AD) facilities recover biogas from organic waste, as a by-product of the anaerobic digestion process. The material remaining after the anaerobic digestion process ("digestate") is usually composted and hence, AD facilities are usually coupled with a compost facility. An overview of AD facilities and associated BMPs is provided at the end of this memo.

COMPOST DESIGN BMPS

1. Site Layout: Besides having sufficient area for process operations, the site layout should maximize the distance to receptors and include vegetated buffer areas. Odors tend to disperse over distance. Buffer areas will mitigate visual, noise and dust impacts.

2. Traffic: Design site roadways to mitigate queuing of vehicles off-site and any unsafe traffic entrances and exits from the facility. Receive all feedstock in enclosed trucks or containers.

3. Water Management: Design systems and components to control surface water run-off and to manage contact water, including the method for treatment or disposal of contact water. Design surfaces to facilitate drainage as well as containment of contact water.

4. Efficient Process Layout: Compost operations require handling of large volumes of materials. Efficient handling and management is key to minimize operational costs. The site layout needs to promote materials management and preclude double handling of materials.

5. Stockpiles of Feedstocks and Finished Products: Design storage and stockpiles such that they do not exceed certain volume and height, with a minimum prescribed emergency access around each pile. Compost piles should probably be limited to 15-20 feet in height, depending on the age of the material. There is not a true volume restriction, just limited by physical space on the site.

    a. First-grind stockpiles are limited to a maximum pile height of 25 feet and base dimensions of 30 feet in width, with 10 feet minimum between piles. Aging of material (e.g., 30 days) helps with product quality. First-grind material should be ground a second time, or distributed for use, within 180 days of receipt.
    b. Second-Grind stockpiles are limited to a maximum pile height of 15 feet and base dimensions of 30 feet in width, with 10 feet minimum between piles. Aging of material (e.g., 30 days) helps with product quality. Second-grind material should be distributed for use within 90 days of receipt.

    Equipment operators should avoid compressing the second-grind stockpiles. Compressing the second-grind material hinders aeration, which can lead to elevated temperatures. In addition, the second grind is finer, so there is less airflow, and the risk of hot spots and fires increases. Temperatures and oxygen content may reach unsafe levels, and flash fires may ignite. Piles must be kept loose to foster aerobic conditions.

    Regular turning or restacking of the second-grind stockpiles is done based on temperature monitoring (i.e., when temperatures exceed 140 F). Regular turning will also minimize odor generation. Turning should be done under weather conditions that minimize offsite odor or dust impact

6. Process Design: The facility needs to be designed based on the feedstock that will be accepted. A plan for making a compostable mix of feedstock materials, which addresses moisture, density, and carbon to nitrogen (C:N) ratio, is needed. Testing of the feedstock may be needed, especially any new or unknown materials.

7. Receiving and Mixing: Depending on the types and quantities of feedstock, and the location of the facility, an enclosed area or building may be needed to control odors. Doors to any buildings should be kept closed, except when trucks are entering or exiting buildings. High-speed roll-up doors may be required. Buildings may require an active ventilation system and air treatment system.

8. For open windrow systems, sufficient area is needed for the following unit operations:
    a. Feedstock storage, processing and mixing
    b. Windrow turning, including turn-around areas.

c. Compost screening operations
d. Finished compost storage and loading.

9. For ASP systems, sizing of blowers and piping is key. Blowers need to be capable of providing sufficient flow and pressure to meet the process demands. Piping systems need to distribute the air evenly through the mixed materials. Control of the air flow to each ASP zone or bay is needed as the air demand will vary over the course of the process.

10. For in-vessel systems, treatment of odorous air may be required, depending on the specific system and layout.

11. Plans: Prepare and implement the following:
    a. Odor management plan.
    b. A log for odor and noise complaints.
    c. Daily materials management tracking plan.
    d. Operations and maintenance plan, including a contingency plan.

COMPOST OPERATIONAL BMPS

1. Operator Training: The County should require operators to get formal training through the U.S. Composting Council (USCC) or a similar organization. On-going training should be provided and recorded.

2. Equipment: Equipment must be sufficient to meet the operational requirements, and operator must provide for the routine maintenance of equipment. Examples would include a windrow turner, shredder, loader and screen.

3. Feedstock Recipe: There are three key parameters for making a compostable mix of feedstock materials: moisture, density, and carbon to nitrogen (C:N) ratio. These three parameters need to stay within certain ranges to promote efficient decomposition, as follows:

    a. Moisture: 50% to 65%.
    b. Density: 800 to 1000 pounds per cubic yard
    c. C:N ratio: 25 to 40

    The weight of each feedstock and the three mix parameters need to be measured and recorded on regular basis to check that compostable batches are being made.

4. Temperature Monitoring: Temperature should be measured on a regular basis, if not continuously (e.g., with a wireless temperature gauge). The recommended temperature range is 130 to 150 F. Temperature records are needed to document compliance with Process for Further Reduction of Pathogens (PFRP) and Vector Attraction Reduction (VAR) requirements, if applicable.

5. Method to aerate and remix: Air is needed to maintain aerobic conditions in the composting pile. Remixing/turning of the compost pile is beneficial to break up clumps of materials and to re-distribute moisture. For ASP, aeration is done semi-continuously, using time or temperature feedback loop. Remix for ASP usually occurs after the first 3-4 weeks. For open windrow, some states require Part 503 (i.e., biosolids regulations) turning schedule, which is

five, turns in 15 days. Without Part 503, initial turning schedule may be once per week, and then every other week after the first month. Open windrow turning provides aeration and mixing at the same time.

6. Method to add moisture during the process: Depending on a number of factors, the moisture content of the mixed materials is likely to decrease during the first 2 to 3 weeks of processing. Water should be added to the mix to increase the moisture content back into the 50% to 65% range. Moisture is often measured with a hand-squeeze test; think compost snowball. If too wet, water will drip from the compost ball. If too dry, the compost will not hold together. For ASP, moisture is added at the beginning and during re-mix, if needed. For open windrow, water can be added during the turning process, using a water reel and nozzles built into the turner.

7. Record Keeping: Maintain records of all operations. Data to record:
    a. Feedstocks: tonnage/volume; density; moisture content; free air space; C:N ratio
    b. Compost process: time, temperature, aeration/mix schedule, moisture content, oxygen
    c. Finished compost: lab analysis – see USCC STA program; volume

   Equipment logs

8. Traffic: Traffic impacts can be mitigated with signage, scheduled deliveries during operating hours, and defined routing on neighborhood streets. Operator shall maintain barriers, fencing and gates to control access to the site.

9. Weather conditions: The operator should be aware of day-to-day weather conditions and avoid certain operations (e.g., turning of material) during adverse conditions (e.g., low wind or wind blowing in a certain direction).

10. Community outreach and education program: The operator should implement an outreach and education program to inform local residents and businesses.

11. Dust and noise: The operator should maintain well-vegetated buffer zones for dust and noise attenuation. A water truck or similar measure should be used to control dust. Heavy equipment warning alarms should be modified to suit the neighborhood. The operator should conduct noise surveys on a routine basis.

12. Product quality: A protocol is needed for routine product quality testing and verification. The U.S. Composting Council's (USCC) Seal of Testing Assurance (STA) program can be followed to assist with product quality. Product test results should be provided to the public and purchasers, upon request. If any product does not meet STA quality guidelines or self-imposed specifications, the material can be re-composted on site. Depending on the specifications not met, possible recommendations for finished compost would include:

    - Screen compost again to remove off-spec contaminants. Screening process may need to include air-lift separation to remove paper/plastic items.

    - Send material back through the compost process to meet stability and maturity specs.

- Stockpile material to provide more curing time to meet stability and maturity specs.

13. Spills: The operator should train its staff and implement a written spill prevention control, and countermeasure (SPCC) Plan.

14. Health and Safety: The operator should train its staff and implement a written health and safety (H&S) Plan. Monthly staff meetings should be held to discuss H&S, among other items. Appropriate H&S equipment should be provided to staff. For any process buildings, an indoor air quality management program should be implemented.

15. Residue Disposal: Prepare and implement a plan for routine disposal or processing of residue produced by operation of the facility, including the proposed location and/or method.

16. General maintenance: Operator must provide for routine maintenance and general cleanliness of the entire facility site, including control of wind-blown litter.

ANAEROBIC DIGESTION (AD) OVERVIEW AND BMPS

AD facilities are usually classified into low-solids or high-solids systems. Feedstock material for low solids (i.e., wet) systems are usually pulped and slurried to a consistency of less than 15 percent total solids. A high solids (i.e., dry) system has total solids ranging from 20 to 40 percent. The high-solids system can generally tolerate more contaminants than a low solids system. However, any contaminants will remain in the digestate and any subsequent compost product, which can be problematic.

The major sub-systems of an AD facility typically include the following:

- Feedstock receiving
- Anaerobic digestion system
- Digestate handling system
- Wastewater pretreatment system
- Biogas conditioning equipment
- Odor control equipment

Feedstock receiving BMPs are similar to those for compost systems, as noted above.

A design BMP for low solids AD system is to include a receiving tank to provide mixing and blending of feedstocks, as well as equalization. The receiving tank also provides a means to test feedstock combinations for digestibility prior to feeding to the AD tanks; thereby minimizing the potential for AD process upsets.

Biogas conditioning BMPs typically include design and operation of treatment systems to remove hydrogen sulfide (H_2S) and water as well as siloxanes and volatile organic compounds (VOC). Wastewater pretreatment BMPs depend on the requirements of the entity that operates the full treatment system (e.g., the local wastewater treatment plant). Digestate BMPs are equal to the compost BMPs noted above, presuming that the digestate will be composted.

Attachment A
Community Compost BMP's ILSR Document 2019

Attachment B

Food Waste Diversion Programs SWANA Document 2016

Los Alamos, NM
Scenario - Windrow & Drop Off Sites
Solid Waste Revenue Sufficiency Analysis

Results as of May 04, 2022

LOS ALAMOS
where discoveries are made

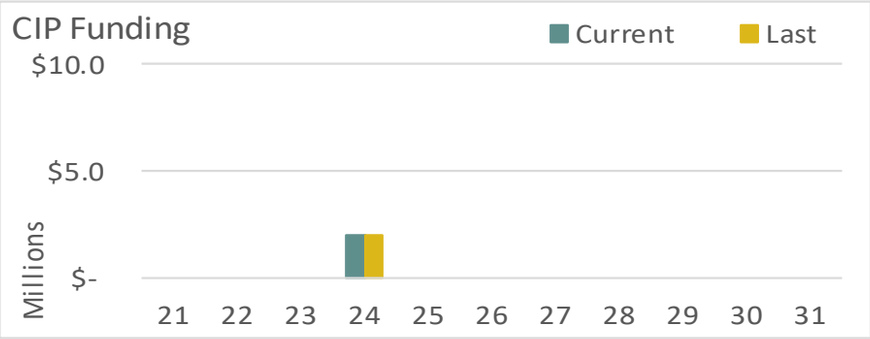
SCS ENGINEERS

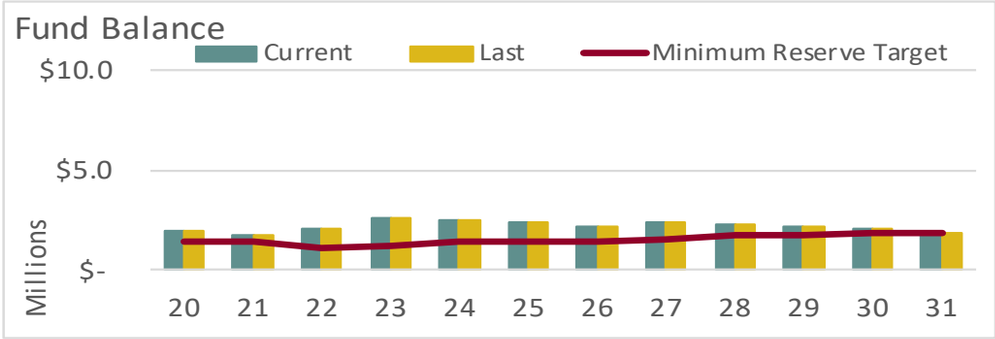
Management Services

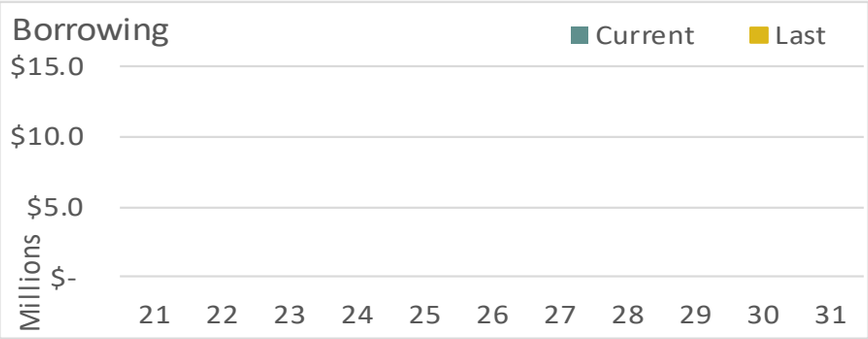
Schedule 1 - Model Results

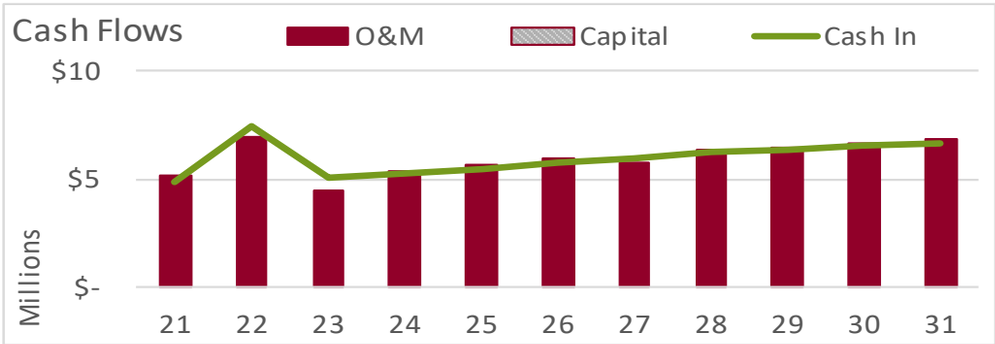
Los Alamos, NM
Solid Waste Revenue Sufficiency Analysis

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Revenue Adjustment $M	$0.00	$0.00	$0.17	$0.18	$0.19	$0.20	$0.21	$0.22	$0.11	$0.12	$0.12
Revenue Adjustment %	0.00%	0.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	3.00%	3.00%	3.00%
Average Residential Rate	$25.00	$25.00	$26.50	$28.09	$29.78	$31.56	$33.46	$35.46	$36.53	$37.62	$38.75
Average Commercial Rate/PU	$125.00	$125.00	$132.50	$140.45	$148.88	$157.81	$167.28	$177.31	$182.63	$188.11	$193.76









Schedule 2 - Model Assumptions & Inputs

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Growth											
Residential Growth	N/A	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%	-1.04%
All Growth	N/A	5.13%	5.13%	5.13%	5.13%	5.13%	5.13%	5.13%	5.13%	5.13%	5.13%
Working Capital Reserve Target											
Percent of Annual O&M Expense	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
Spending Execution Assumptions											
Personal Services	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Fixed Operations & Maintenance	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Capital Outlay	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Revenue/Expense Escalation Factors											
Rate Increase	N/A	0.00%	6.00%	6.00%	6.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Personal Services	N/A	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
O&M	N/A	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
CO	N/A	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
No Escalation	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest Assumptions											
Interest Earnings on Fund Balances	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Borrowing Assumptions											
Short-Term Debt Rate	1.41%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%

Short-Term Debt	
Debt Svc Coverage	0.00
Interest Only in 1st Year	N
Term	10
Debt Service Reserve (Years)	0
Cost of Issuance	2.00%

Schedule 3 - Trial Balances as of Jun 30, 2020

	Fund 600	Bond Reserve
Assets		
Cash & Cash Equivalents	$ 1,831,610	$ 760,245
Accounts Receivable	$ 559,099	$ -
Accrued Payroll/Benefits	$ (106,171)	$ -
Due from Other Governments	$ 310,510	$ -
Total Assets	**$ 2,595,048**	**$ 760,245**
Liabilities		
Accounts Payable	$ (255,774)	$ -
Accrued Payroll/Benefits	$ (106,171)	$ -
Deposits Payable	$ (12,600)	$ -
Contracts Payable	$ (241,494)	$ -
Due to Other Governments	$ -	$ -
Landill Closure Costs - Current	$ (58,077)	$ -
Interest Payable	$ -	$ -
Total Liabilities	**$ (674,117)**	**$ -**
Net Assets	**$ 1,920,931**	**$ 760,245**
Restricted Amount	$ -	$ -
Total Available Fund Balance	**$ 1,920,931**	**$ 760,245**

Schedule 4 - Cash In

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Rate Adjustment	0.00%	0.00%	6.00%	6.00%	6.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Rate Revenues											
Residential											
Residential Rate Revenue	$ 2,250,784	$ 2,227,446	$ 2,336,611	$ 2,451,127	$ 2,571,255	$ 2,620,932	$ 2,671,570	$ 2,723,185	$ 2,775,798	$ 2,829,427	$ 2,884,093
Commercial											
Commercial Rate Revenue	$ 658,640	$ 651,811	$ 683,755	$ 717,266	$ 752,418	$ 766,955	$ 781,773	$ 796,877	$ 812,273	$ 827,967	$ 843,963
Total Rate Revenues	**$ 2,909,423**	**$ 2,879,257**	**$ 3,020,367**	**$ 3,168,393**	**$ 3,323,673**	**$ 3,387,888**	**$ 3,453,343**	**$ 3,520,062**	**$ 3,588,071**	**$ 3,657,394**	**$ 3,728,056**
Other Operating Revenues											
3149 GROSS REC TAX-SPECIAL PUR	$ 1,243,008	$ 1,076,782	$ 1,141,389	$ 1,209,872	$ 1,282,465	$ 1,320,938	$ 1,360,567	$ 1,401,384	$ 1,443,425	$ 1,486,728	$ 1,531,330
4177 SALES OF TRASH BAGS	$ 1,967	$ 2,911	$ 3,085	$ 3,270	$ 3,467	$ 3,571	$ 3,678	$ 3,788	$ 3,902	$ 4,019	$ 4,139
5939 INTERFUND CHGS FOR SERV-O	$ 58,539	$ 55,044	$ 58,347	$ 61,848	$ 65,558	$ 67,525	$ 69,551	$ 71,637	$ 73,787	$ 76,000	$ 78,280
6991 INTEREST-DELINQUENT ACCTS	$ 5,970	$ 6,128	$ 6,496	$ 6,886	$ 7,299	$ 7,518	$ 7,744	$ 7,976	$ 8,215	$ 8,462	$ 8,715
6999 MISCELLANEOUS REVENUES-OT	$ 146,327	$ 159,451	$ 169,018	$ 179,159	$ 189,908	$ 195,606	$ 201,474	$ 207,518	$ 213,744	$ 220,156	$ 226,761
Total Other Operating Revenues	**$ 1,455,811**	**$ 1,360,316**	**$ 1,438,335**	**$ 1,521,035**	**$ 1,608,697**	**$ 1,655,158**	**$ 1,658,013**	**$ 1,707,303**	**$ 1,758,072**	**$ 1,810,364**	**$ 1,864,225**
Non-Operating Revenues											
6949 OTHER JUDGMENTS/SETTLEMEN	$ -	$ 210,078	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Non-Operating Revenues	**$ -**	**$ 210,078**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Interest Earnings											
Interest Earnings	$ 51,635	$ 53,679	$ 62,897	$ 66,976	$ 64,790	$ 59,556	$ 54,947	$ 54,692	$ 55,206	$ 55,318	$ 54,768
Total Interest Earnings	**$ 51,635**	**$ 53,679**	**$ 62,897**	**$ 66,976**	**$ 64,790**	**$ 59,556**	**$ 54,947**	**$ 54,692**	**$ 55,206**	**$ 55,318**	**$ 54,768**
Transfers In											
7601 OPER TRANSFERS IN FROM 01	$ 50,000	$ 2,400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Transfers In	**$ 50,000**	**$ 2,400,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Total Cash In	**$ 4,466,869**	**$ 6,903,330**	**$ 4,521,598**	**$ 4,756,404**	**$ 4,997,161**	**$ 5,102,602**	**$ 5,166,303**	**$ 5,282,058**	**$ 5,401,349**	**$ 5,523,076**	**$ 5,647,049**

Schedule 5 - Cash Out

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Personal Services											
8111 REGULAR WAGES	$ 785,006	$ 761,510	$ 784,355	$ 807,886	$ 832,123	$ 857,086	$ 882,799	$ 909,283	$ 936,561	$ 964,658	$ 993,598
8112 STABILITY PAY	$ 4,000	$ 4,200	$ 4,326	$ 4,456	$ 4,589	$ 4,727	$ 4,869	$ 5,015	$ 5,165	$ 5,320	$ 5,480
8113 ANNUAL LEAVE TAKEN	$ 51,595	$ 49,450	$ 50,934	$ 52,462	$ 54,036	$ 55,657	$ 57,326	$ 59,046	$ 60,818	$ 62,642	$ 64,521
8114 HOLIDAY PAY	$ 39,824	$ 46,544	$ 47,940	$ 49,378	$ 50,859	$ 52,385	$ 53,957	$ 55,575	$ 57,243	$ 58,960	$ 60,729
8115 SICK LEAVE TAKEN	$ 27,020	$ 34,627	$ 35,666	$ 36,736	$ 37,838	$ 38,973	$ 40,143	$ 41,347	$ 42,587	$ 43,865	$ 45,181
8118 SPECIAL PAID LEAVE	$ 8,367	$ 4,642	$ 4,782	$ 4,925	$ 5,073	$ 5,225	$ 5,382	$ 5,543	$ 5,710	$ 5,881	$ 6,057
8121 COMP TIME TAKEN	$ 13,528	$ 2,220	$ 2,287	$ 2,355	$ 2,426	$ 2,499	$ 2,574	$ 2,651	$ 2,730	$ 2,812	$ 2,897
8141 PAID OVERTIME-STRAIGHT TI	$ -	$ 14	$ 14	$ 15	$ 15	$ 15	$ 16	$ 16	$ 17	$ 17	$ 18
8142 PAID OVERTIME-TIME AND HA	$ 8,578	$ 19,603	$ 20,191	$ 20,797	$ 21,421	$ 22,064	$ 22,726	$ 23,407	$ 24,109	$ 24,833	$ 25,578
8211 MEDICARE	$ 13,108	$ 12,647	$ 13,026	$ 13,417	$ 13,820	$ 14,234	$ 14,661	$ 15,101	$ 15,554	$ 16,021	$ 16,501
8235 LAC-9% COUNTY	$ 82,961	$ 81,114	$ 83,547	$ 86,054	$ 88,635	$ 91,294	$ 94,033	$ 96,854	$ 99,760	$ 102,753	$ 105,835
8237 PERA	$ 90,335	$ 88,324	$ 90,973	$ 93,703	$ 96,514	$ 99,409	$ 102,391	$ 105,463	$ 108,627	$ 111,886	$ 115,242
8239 RETIREE HEALTH CARE	$ 18,436	$ 18,025	$ 18,566	$ 19,123	$ 19,697	$ 20,288	$ 20,896	$ 21,523	$ 22,169	$ 22,834	$ 23,519
8255 UNEMPLOYMENT COMPENSATION	$ 2,174	$ 2,225	$ 2,292	$ 2,361	$ 2,432	$ 2,505	$ 2,580	$ 2,657	$ 2,737	$ 2,819	$ 2,904
8257 WORKERS COMPENSATION	$ 32,376	$ 28,663	$ 29,523	$ 30,409	$ 31,321	$ 32,261	$ 33,229	$ 34,226	$ 35,252	$ 36,310	$ 37,399
8271 DENTAL INSURANCE	$ 9,653	$ 9,566	$ 9,853	$ 10,149	$ 10,453	$ 10,767	$ 11,090	$ 11,423	$ 11,765	$ 12,118	$ 12,482
8273 LAC-LIFE/ADD/SID	$ 2,116	$ 2,003	$ 2,063	$ 2,125	$ 2,189	$ 2,255	$ 2,322	$ 2,392	$ 2,464	$ 2,538	$ 2,614
8274 LIFE INSURANCE	$ 451	$ 393	$ 405	$ 417	$ 429	$ 442	$ 455	$ 469	$ 483	$ 497	$ 512
8275 MEDICAL INSURANCE	$ 150,599	$ 156,407	$ 161,099	$ 165,932	$ 170,910	$ 176,037	$ 181,319	$ 186,758	$ 192,361	$ 198,132	$ 204,076
8278 VISION INSURANCE	$ 1,556	$ 1,567	$ 1,614	$ 1,663	$ 1,713	$ 1,764	$ 1,817	$ 1,871	$ 1,927	$ 1,985	$ 2,045
8149 PAID OVERTIME-FLSA	$ 3	$ 216	$ 222	$ 229	$ 236	$ 243	$ 250	$ 258	$ 265	$ 273	$ 282
8355 PROF SERVICES TECHNICAL	$ 4,507	$ 7,338	$ 7,558	$ 7,784	$ 8,018	$ 8,258	$ 8,506	$ 8,761	$ 9,024	$ 9,295	$ 9,574
Subtotal Personal Services	**$ 1,346,196**	**$ 1,331,299**	**$ 1,371,238**	**$ 1,412,375**	**$ 1,454,746**	**$ 1,498,389**	**$ 1,543,340**	**$ 1,589,641**	**$ 1,637,330**	**$ 1,686,450**	**$ 1,737,043**
Personal Services Execution	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Total Executed Personal Services	**$ 1,319,272**	**$ 1,304,673**	**$ 1,343,813**	**$ 1,384,128**	**$ 1,425,651**	**$ 1,468,421**	**$ 1,512,474**	**$ 1,557,848**	**$ 1,604,583**	**$ 1,652,721**	**$ 1,702,302**
Fixed Operations & Maintenance											
8283 CELL-MOBILE PHONE ALLOWAN	$ 760	$ 608	$ 623	$ 638	$ 654	$ 671	$ 687	$ 705	$ 722	$ 740	$ 759
8288 UNIFORM ALLOWANCES	$ 1,920	$ 640	$ 656	$ 672	$ 689	$ 706	$ 724	$ 742	$ 761	$ 780	$ 799
8339 REPAIRS/MAINTENANCE	$ -	$ 1,145	$ 1,173	$ 1,203	$ 1,233	$ 1,263	$ 1,295	$ 1,327	$ 1,361	$ 1,395	$ 1,430
8349 CONSTRUCTION SERVICES	$ 127,029	$ 90,253	$ 92,509	$ 94,822	$ 97,193	$ 99,622	$ 102,113	$ 104,666	$ 107,282	$ 109,964	$ 112,714
8359 PROFESSIONAL SERVICES-OTH	$ 17,310	$ 74,760	$ 76,629	$ 78,544	$ 80,508	$ 82,521	$ 84,584	$ 86,698	$ 88,866	$ 91,087	$ 93,364
8369 CONTRACTUAL SERVICES	$ 1,105,721	$ 1,181,937	$ 1,211,486	$ 1,241,773	$ 1,272,817	$ 1,304,638	$ 1,337,254	$ 1,370,685	$ 1,404,952	$ 1,440,076	$ 1,476,078
8419 COMMUNICATIONS/FREIGHT-OT	$ 463	$ 601	$ 616	$ 631	$ 647	$ 663	$ 680	$ 697	$ 714	$ 732	$ 750
8429 ADVERTISING	$ 8,070	$ 7,619	$ 7,810	$ 8,005	$ 8,205	$ 8,410	$ 8,620	$ 8,836	$ 9,057	$ 9,283	$ 9,515
8459 MEMBERSHIPS AND DUES	$ 1,255	$ 1,500	$ 1,538	$ 1,576	$ 1,615	$ 1,656	$ 1,697	$ 1,740	$ 1,783	$ 1,828	$ 1,873
8469 PRINTING AND BINDING	$ 741	$ 1,311	$ 1,344	$ 1,377	$ 1,412	$ 1,447	$ 1,483	$ 1,520	$ 1,558	$ 1,597	$ 1,637
8489 TRAVEL AND TRAINING COSTS	$ 576	$ 17,919	$ 18,367	$ 18,826	$ 19,297	$ 19,779	$ 20,274	$ 20,781	$ 21,300	$ 21,833	$ 22,378
8499 OTHER SERVICES/EXPENSES	$ 14,084	$ 10,219	$ 10,474	$ 10,736	$ 11,005	$ 11,280	$ 11,562	$ 11,851	$ 12,147	$ 12,451	$ 12,762
8549 SUPPLIES-OFFICE	$ 549	$ 703	$ 721	$ 739	$ 757	$ 776	$ 795	$ 815	$ 836	$ 857	$ 878
8557 SUPPLIES-UNIFORMS/BADGES/	$ 8,525	$ 10,451	$ 10,712	$ 10,980	$ 11,254	$ 11,535	$ 11,824	$ 12,119	$ 12,422	$ 12,733	$ 13,051
8559 SUPPLIES-OTHER OPERATIONA	$ 129,926	$ 169,326	$ 173,559	$ 177,898	$ 182,346	$ 186,904	$ 191,577	$ 196,366	$ 201,275	$ 206,307	$ 211,465
8568 WAREHOUSE WITHDRAWAL-INVE	$ 5,278	$ 6,142	$ 6,296	$ 6,453	$ 6,614	$ 6,780	$ 6,949	$ 7,123	$ 7,301	$ 7,483	$ 7,670
8589 COMPUTER SOFTWARE	$ -	$ 504	$ 517	$ 530	$ 543	$ 557	$ 571	$ 585	$ 599	$ 614	$ 630
8659 I/F-COMBINED UTILITY BILL	$ 3,335	$ 4,682	$ 4,799	$ 4,919	$ 5,042	$ 5,168	$ 5,297	$ 5,430	$ 5,565	$ 5,704	$ 5,847

8699 I/F-RECLASSIFICATION/DIST	$ 52,969	$ 57,784	$ 59,229	$ 60,709	$ 62,227	$ 63,783	$ 65,377	$ 67,012	$ 68,687	$ 70,404	$ 72,164
8719 IDC-ADMINISTRATION	$ 271,050	$ 292,850	$ 300,171	$ 307,676	$ 315,367	$ 323,252	$ 331,333	$ 339,616	$ 348,107	$ 356,809	$ 365,730
8739 IDC-BUILDING MAINTENANCE	$ 92,393	$ 85,480	$ 87,617	$ 89,807	$ 92,053	$ 94,354	$ 96,713	$ 99,131	$ 101,609	$ 104,149	$ 106,753
8769 IDC-VEHICLES	$ 642,876	$ 613,080	$ 628,407	$ 644,117	$ 660,220	$ 676,726	$ 693,644	$ 710,985	$ 728,759	$ 746,978	$ 765,653
8779 IDC-GENERAL INSURANCE	$ 54,064	$ 64,148	$ 65,752	$ 67,395	$ 69,080	$ 70,807	$ 72,578	$ 74,392	$ 76,252	$ 78,158	$ 80,112
9871 LANDFILL CLOSURE COST ADJ	$ 929,236	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Fixed Operations & Maintenance	**$ 3,468,130**	**$ 2,693,661**	**$ 2,761,002**	**$ 2,830,027**	**$ 2,900,778**	**$ 2,973,297**	**$ 3,047,630**	**$ 3,123,821**	**$ 3,201,916**	**$ 3,281,964**	**$ 3,364,013**
Fixed Operations & Maintenance Execution	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Total Executed Fixed Operations & Maintenance	**$ 3,294,724**	**$ 2,558,978**	**$ 2,622,952**	**$ 2,688,526**	**$ 2,755,739**	**$ 2,824,633**	**$ 2,895,248**	**$ 2,967,630**	**$ 3,041,820**	**$ 3,117,866**	**$ 3,195,812**
Variable Operations & Maintenance											
Processing Scenario - Staffing	$ -	$ -	$ -	$ 176,109	$ 181,393	$ 186,834	$ 192,439	$ 198,213	$ 204,159	$ 210,284	$ 216,592
Processing Scenario - Equipment Maintenance	$ -	$ -	$ -	$ 78,797	$ 80,767	$ 82,786	$ 84,856	$ 86,977	$ 89,151	$ 91,380	$ 93,665
Processing Scenario - Utilities	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Processing Scenario - Env Compliance and Engineering	$ -	$ -	$ -	$ 1,051	$ 1,077	$ 1,104	$ 1,131	$ 1,160	$ 1,189	$ 1,218	$ 1,249
Residential Scenario - Collection	$ -	$ -	$ -	$ 3,780	$ 3,875	$ 3,972	$ 4,071	$ 4,173	$ 4,277	$ 4,384	$ 4,494
Residential Scenario - Transport	$ -	$ -	$ -	$ 64,116	$ 65,719	$ 67,362	$ 69,046	$ 70,773	$ 72,542	$ 74,355	$ 76,214
Residential Scenario - Transfer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Residential Scenario - Education	$ -	$ -	$ -	$ 18,911	$ 19,384	$ 19,869	$ 20,365	$ 20,874	$ 21,396	$ 21,931	$ 22,480
Commercial Scenario - Collection	$ -	$ -	$ -	$ 233,323	$ 239,156	$ 245,134	$ 251,263	$ 257,544	$ 263,983	$ 270,583	$ 277,347
Commercial Scenario - Transport	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commercial Scenario - Transfer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commercial Scenario - Education	$ -	$ -	$ -	$ 5,253	$ 5,384	$ 5,519	$ 5,657	$ 5,798	$ 5,943	$ 6,092	$ 6,244
Subtotal Variable Operations & Maintenance	**$ -**	**$ -**	**$ -**	**$ 581,341**	**$ 596,755**	**$ 612,580**	**$ 628,829**	**$ 645,512**	**$ 662,641**	**$ 680,228**	**$ 698,285**
Variable Operations & Maintenance Execution	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Executed Variable Operations & Maintenance	**$ -**	**-**	**-**	**581,341**	**596,755**	**612,580**	**628,829**	**645,512**	**662,641**	**680,228**	**698,285**
Capital Outlay											
8571 EQUIPMENT <$5,000	$ -	$ 2,400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8573 FURNITURE <$5,000	$ -	$ 1,287	$ 1,319	$ 1,352	$ 1,386	$ 1,421	$ 1,456	$ 1,493	$ 1,530	$ 1,568	$ 1,607
8575 COMPUTER EQUIPMENT <$5,00	$ -	$ 178	$ 182	$ 187	$ 192	$ 197	$ 201	$ 206	$ 212	$ 217	$ 222
8579 OTHER TOOLS/FURN/EQUIP <$	$ -	$ 119	$ 122	$ 126	$ 129	$ 132	$ 135	$ 139	$ 142	$ 146	$ 149
8833 EQUIP-COMPUTER HDWE >$5,0	$ -	$ 10,535	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8834 CAPITAL ASSET RELATED SER	$ -	$ 4,433	$ 4,544	$ 4,657	$ 4,774	$ 4,893	$ 5,015	$ 5,141	$ 5,269	$ 5,401	$ 5,536
8839 EQUIPMENT-OTHER >$5,000	$ 175,000	$ 17,928	$ 18,376	$ 18,835	$ 19,306	$ 19,789	$ 20,283	$ 20,791	$ 21,310	$ 21,843	$ 22,389
Vehicle Replacement Plan	$ -	$ 354,778	$ 195,404	$ 124,553	$ 268,770	$ 522,669	$ 115,743	$ -	$ -	$ -	$ 23,116
Subtotal Capital Outlay	**$ 175,000**	**$ 2,789,258**	**$ 219,947**	**$ 149,711**	**$ 294,556**	**$ 549,100**	**$ 142,835**	**$ 27,769**	**$ 28,463**	**$ 29,175**	**$ 53,020**
Capital Outlay Execution	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Executed Capital Outlay	**$ 175,000**	**$ 2,789,258**	**$ 219,947**	**$ 149,711**	**$ 294,556**	**$ 549,100**	**$ 142,835**	**$ 27,769**	**$ 28,463**	**$ 29,175**	**$ 53,020**
Debt Service											
Senior Lien Debt											
Existing Senior Lien Debt Service	$ 329,954	$ 330,489	$ 330,489	$ 330,489	$ 330,488	$ 330,488	$ 330,488	$ 330,489	$ 330,489	$ 330,488	$ 330,488
New Senior Lien Debt Service	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Senior Lien Debt	**$ 329,954**	**$ 330,489**	**$ 330,489**	**$ 330,489**	**$ 330,488**	**$ 330,488**	**$ 330,488**	**$ 330,489**	**$ 330,489**	**$ 330,488**	**$ 330,488**
Subordinate Debt											
Existing Subordinate Debt Service	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

New Subordinate Debt Service	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Subordinate Debt	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Short-Term Debt																		
Existing Short-Term Debt Service	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Short-Term Debt Service	$ -	$ -	$ -	$ -	$ -	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078	$ 216,078
Subtotal Short-Term Debt	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**	**$ 216,078**
Total Debt Service	**$ 329,954**	**$ 330,489**	**$ 330,489**	**$ 546,567**	**$ 546,566**	**$ 546,566**	**$ 546,566**	**$ 546,567**	**$ 546,567**	**$ 546,566**	**$ 546,566**							
Cash Funded Capital																		
Cash Funded Capital	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Cash Funded Capital	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Total Cash Out	**$ 5,118,949**	**$ 6,983,397**	**$ 4,517,202**	**$ 5,350,272**	**$ 5,619,267**	**$ 6,001,300**	**$ 5,725,952**	**$ 5,745,325**	**$ 5,884,074**	**$ 6,026,555**	**$ 6,195,986**							

Schedule 6 - Pro Forma

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Rate Adjustment	0.00%	0.00%	6.00%	6.00%	6.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Rate Revenues											
Residential											
Residential Rate Revenue	$ 2,250,784	2,250,784	2,227,446	2,336,611	2,451,127	2,571,255	2,620,932	2,671,570	2,723,185	2,775,798	2,829,427
Revenue from Growth	-	(23,338)	(23,096)	(24,227)	(25,415)	(26,660)	(27,175)	(27,701)	(28,236)	(28,781)	(29,337)
Revenue Before Rate Increase	**$ 2,250,784**	**2,227,446**	**2,204,350**	**2,312,384**	**2,425,712**	**2,544,595**	**2,593,757**	**2,643,869**	**2,694,949**	**2,747,017**	**2,800,090**
Revenue from Rate Increase	-	-	132,261	138,743	145,543	76,338	77,813	79,316	80,848	82,411	84,003
Total Residential Rate Revenue	**$ 2,250,784**	**2,227,446**	**2,336,611**	**2,451,127**	**2,571,255**	**2,620,932**	**2,671,570**	**2,723,185**	**2,775,798**	**2,829,427**	**2,884,093**
Commercial											
Commercial Rate Revenue	$ 658,640	658,640	651,811	683,755	717,266	752,418	766,955	781,773	796,877	812,273	827,967
Revenue from Growth	-	(6,829)	(6,758)	(7,090)	(7,437)	(7,802)	(7,952)	(8,106)	(8,263)	(8,422)	(8,585)
Revenue Before Rate Increase	**$ 658,640**	**651,811**	**645,052**	**676,666**	**709,829**	**744,617**	**759,003**	**773,667**	**788,615**	**803,851**	**819,382**
Rate Increase	0.00%	0.00%	6.00%	6.00%	6.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Revenue from Rate Increase	-	-	38,703	40,600	42,590	22,339	22,770	23,210	23,658	24,116	24,581
Total Commercial Rate Revenue	**$ 658,640**	**651,811**	**683,755**	**717,266**	**752,418**	**766,955**	**781,773**	**796,877**	**812,273**	**827,967**	**843,963**
Total Rate Revenues	**$ 2,909,423**	**2,879,257**	**3,020,367**	**3,168,393**	**3,323,673**	**3,387,888**	**3,453,343**	**3,520,062**	**3,588,071**	**3,657,394**	**3,728,056**
Plus: Other Operating Revenues	$ 1,893,680	1,859,021	1,937,040	2,019,740	2,107,402	2,153,863	2,156,718	2,206,008	2,256,777	2,309,069	2,362,930
Operating Income	**$ 4,803,103**	**4,738,277**	**4,957,407**	**5,188,133**	**5,431,075**	**5,541,751**	**5,610,060**	**5,726,070**	**5,844,848**	**5,966,463**	**6,090,986**
Less: Operating Expenses											
Personal Services	$ (1,319,272)	(1,304,673)	(1,343,813)	(1,384,128)	(1,425,651)	(1,468,421)	(1,512,474)	(1,557,848)	(1,604,583)	(1,652,721)	(1,702,302)
Fixed Operations & Maintenance	(3,294,724)	(2,558,978)	(2,622,952)	(2,688,526)	(2,755,739)	(2,824,633)	(2,895,248)	(2,967,630)	(3,041,820)	(3,117,866)	(3,195,812)
Total Operating Expenses	**$ (4,613,996)**	**(3,863,651)**	**(3,966,765)**	**(4,653,994)**	**(4,778,145)**	**(4,905,634)**	**(5,036,551)**	**(5,170,989)**	**(5,309,044)**	**(5,450,814)**	**(5,596,400)**
Net Operating Income	**$ 189,108**	**874,627**	**990,641**	**534,139**	**652,930**	**636,117**	**573,509**	**555,081**	**535,804**	**515,649**	**494,586**
Plus (Less): Non-Operating Income in Debt Service Coverage Test											
Non-Operating Revenue	$ -	210,078	-	-	-	-	-	-	-	-	-
Transfers In	50,000	2,400,000	-	-	-	-	-	-	-	-	-
Interest Earnings	51,635	53,679	62,897	66,976	64,790	59,556	54,947	54,692	55,206	55,318	54,768
Capital Outlay	(175,000)	(2,789,258)	(219,947)	(149,711)	(294,556)	(549,100)	(142,835)	(27,769)	(28,463)	(29,175)	(53,020)
Total Non-Operating	**$ (73,365)**	**(125,501)**	**(157,051)**	**(82,735)**	**(229,766)**	**(489,543)**	**(87,888)**	**26,923**	**26,743**	**26,143**	**1,748**
Net Income Before Debt Service	**$ 115,743**	**749,126**	**833,591**	**451,404**	**423,165**	**146,573**	**485,621**	**582,004**	**562,547**	**541,792**	**496,334**

Debt Service & Coverage											
Existing Senior Lien Debt Service	$ 329,954	330,489	330,489	330,489	330,488	330,488	330,488	330,489	330,489	330,488	330,488
Total Senior Lien Debt Service	**$ 329,954**	**330,489**	**330,489**	**330,489**	**330,488**	**330,488**	**330,488**	**330,489**	**330,489**	**330,488**	**330,488**
Senior Lien Debt Service Coverage	0.35	2.27	2.52	1.37	1.28	0.44	1.47	1.76	1.70	1.64	1.50
Total Debt Service	**$ 329,954**	**330,489**	**330,489**	**546,567**	**546,566**	**546,566**	**546,566**	**546,567**	**546,567**	**546,566**	**546,566**
Net Income After Debt Service	**$ (214,211)**	**418,637**	**503,102**	**(95,163)**	**(123,401)**	**(399,993)**	**(60,945)**	**35,437**	**15,980**	**(4,774)**	**(50,232)**
Fund Balance											
Balance at Beginning of Fiscal Year	$ 1,920,931	1,706,720	2,125,357	2,628,459	2,533,296	2,409,895	2,009,902	1,948,957	1,984,394	2,000,374	1,995,599
Net Cash Flow	(214,211)	418,637	503,102	(95,163)	(123,401)	(399,993)	(60,945)	35,437	15,980	(4,774)	(50,232)
Total Funds Available	**$ 1,706,720**	**2,125,357**	**2,628,459**	**2,533,296**	**2,409,895**	**2,009,902**	**1,948,957**	**1,984,394**	**2,000,374**	**1,995,599**	**1,945,367**
Less: Planned Cash Funded Capital	-	-	-	-	-	-	-	-	-	-	-
Balance of Working Capital	**$ 1,706,720**	**2,125,357**	**2,628,459**	**2,533,296**	**2,409,895**	**2,009,902**	**1,948,957**	**1,984,394**	**2,000,374**	**1,995,599**	**1,945,367**
Less: Working Capital Reserve Target	(1,384,199)	(1,159,095)	(1,190,030)	(1,396,198)	(1,433,444)	(1,471,690)	(1,510,965)	(1,551,297)	(1,592,713)	(1,635,244)	(1,678,920)
Surplus/Deficit of Working Capital	**$ 322,521**	**966,262**	**1,438,429**	**1,137,098**	**976,451**	**538,211**	**437,991**	**433,097**	**407,660**	**360,355**	**266,448**
Less: Additional Cash Funded Capital	-	-	-	-	-	-	-	-	-	-	-
Add Back: Working Capital Reserve	1,384,199	1,159,095	1,190,030	1,396,198	1,433,444	1,471,690	1,510,965	1,551,297	1,592,713	1,635,244	1,678,920
Balance at End of Fiscal Year	**$ 1,706,720**	**2,125,357**	**2,628,459**	**2,533,296**	**2,409,895**	**2,009,902**	**1,948,957**	**1,984,394**	**2,000,374**	**1,995,599**	**1,945,367**

Schedule 7 - Capital Improvement Plan

	Escalate	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Scenario Capital	N	$ -	$ -	$ -	$ 811,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Scenario Equipment	N	$ -	$ -	$ -	$ 1,200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Projects		**$ -**	**$ -**	**$ -**	**$ 2,011,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Execution %		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Escalation %		100.0%	102.9%	105.9%	109.0%	112.1%	115.4%	118.7%	122.2%	125.7%	129.4%	133.1%
Total Executed Projects		**$ -**	**$ -**	**$ -**	**$ 2,011,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Schedule 8 - Borrowing

Senior Lien Borrowing

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Required Proceeds	$ -	-	-	-	-	-	-	-	-	-	-
Sources of Funds											
Par Amount	-	-	-	-	-	-	-	-	-	-	-
Other Sources	-	-	-	-	-	-	-	-	-	-	-
Total Sources of Funds	**$ -**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Uses of Funds											
Proceeds	$ -	-	-	-	-	-	-	-	-	-	-
Cost of Issuance	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-	-
Other Costs	-	-	-	-	-	-	-	-	-	-	-
Total Uses of Funds	**$ -**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cumulative Annual Payment	**$ -**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Subordinate Borrowing

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Required Proceeds	$ -	-	-	-	-	-	-	-	-	-	-
Sources of Funds											
Par Amount	-	-	-	-	-	-	-	-	-	-	-
Other Sources	-	-	-	-	-	-	-	-	-	-	-
Total Sources of Funds	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Uses of Funds												
Proceeds	$	-	-	-	-	-	-	-	-	-	-	-
Cost of Issuance		-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve		-	-	-	-	-	-	-	-	-	-	-
Other Costs		-	-	-	-	-	-	-	-	-	-	-
Total Uses of Funds	**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cumulative Annual Payment	**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Short-Term Borrowing

		FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Required Proceeds	$	-	-	-	2,011,000	-	-	-	-	-	-	-
Sources of Funds												
Par Amount		-	-	-	2,052,041	-	-	-	-	-	-	-
Other Sources		-	-	-	-	-	-	-	-	-	-	-
Total Sources of Funds	**$**	**-**	**-**	**-**	**2,052,041**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Uses of Funds												
Proceeds	$	-	-	-	2,011,000	-	-	-	-	-	-	-
Cost of Issuance		-	-	-	41,041	-	-	-	-	-	-	-
Debt Service Reserve		-	-	-	-	-	-	-	-	-	-	-
Other Costs		-	-	-	-	-	-	-	-	-	-	-
Total Uses of Funds	**$**	**-**	**-**	**-**	**2,052,041**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cumulative Annual Payment	**$**	**-**	**-**	**-**	**216,078**	**216,078**	**216,078**	**216,078**	**216,078**	**216,078**	**216,078**	**216,078**

Schedule 9 - Summary of Funds

Fund 600	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Balance at Start of FY	$ 1,920,931	$ 1,706,720	$ 2,125,357	$ 2,628,459	$ 2,533,296	$ 2,409,895	$ 2,009,902	$ 1,948,957	$ 1,984,394	$ 2,000,374	$ 1,995,599
Cash In	$ 4,868,462	$ 7,363,714	$ 4,972,765	$ 5,203,491	$ 5,446,434	$ 5,557,109	$ 5,625,419	$ 5,741,429	$ 5,860,207	$ 5,981,821	$ 6,106,344
Interest	$ 36,277	$ 38,321	$ 47,538	$ 51,618	$ 49,432	$ 44,198	$ 39,589	$ 39,334	$ 39,848	$ 39,960	$ 39,410
Cash Out	$ (5,118,949)	$ (6,983,397)	$ (4,517,202)	$ (5,350,272)	$ (5,619,267)	$ (6,001,300)	$ (5,725,952)	$ (5,745,325)	$ (5,884,074)	$ (6,026,555)	$ (6,195,986)
Planned Cash Funded CIP	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal	**$ 1,706,720**	**$ 2,125,357**	**$ 2,628,459**	**$ 2,533,296**	**$ 2,409,895**	**$ 2,009,902**	**$ 1,948,957**	**$ 1,984,394**	**$ 2,000,374**	**$ 1,995,599**	**$ 1,945,367**
Less: Restricted Funds	$ (1,384,199)	$ (1,159,095)	$ (1,190,030)	$ (1,396,198)	$ (1,433,444)	$ (1,471,690)	$ (1,510,965)	$ (1,551,297)	$ (1,592,713)	$ (1,635,244)	$ (1,678,920)
Amount Available for Projects	**$ 322,521**	**$ 966,262**	**$ 1,438,429**	**$ 1,137,098**	**$ 976,451**	**$ 538,211**	**$ 437,991**	**$ 433,097**	**$ 407,660**	**$ 360,355**	**$ 266,448**
Less: Amount Paid for Projects	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Amount Available After Projects	**$ 322,521**	**$ 966,262**	**$ 1,438,429**	**$ 1,137,098**	**$ 976,451**	**$ 538,211**	**$ 437,991**	**$ 433,097**	**$ 407,660**	**$ 360,355**	**$ 266,448**
Plus: Restricted Funds	$ 1,384,199	$ 1,159,095	$ 1,190,030	$ 1,396,198	$ 1,433,444	$ 1,471,690	$ 1,510,965	$ 1,551,297	$ 1,592,713	$ 1,635,244	$ 1,678,920
Available at End of FY	**$ 1,706,720**	**$ 2,125,357**	**$ 2,628,459**	**$ 2,533,296**	**$ 2,409,895**	**$ 2,009,902**	**$ 1,948,957**	**$ 1,984,394**	**$ 2,000,374**	**$ 1,995,599**	**$ 1,945,367**

Bond Reserve	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Balance at Start of FY	$ 760,245	760,245	760,245	760,245	760,245	760,245	760,245	760,245	760,245	760,245	760,245
Cash In	-	-	-	-	-	-	-	-	-	-	-
Interest	15,358	15,358	15,358	15,358	15,358	15,358	15,358	15,358	15,358	15,358	15,358
Cash Out	-	-	-	-	-	-	-	-	-	-	-
Payment of Debt Service	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**$ 775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**	**775,603**
Less: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Less: Interest Used for Cash Flows	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)	(15,358)
Amount Available for Projects	**$ 760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**
Less: Amount Paid for Projects	-	-	-	-	-	-	-	-	-	-	-
Amount Available After Projects	**$ 760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**
Plus: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Available at End of FY	**$ 760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**	**760,245**

Schedule 10 - Additional Employees

Position	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
	-	-	-	-	-	-	-	-	-	-	-
Yearly Salary Totals											
	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Salary	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Schedule 11 - Vehicle Replacement Program

Vehicle	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
3003 Dump Trailer	-	1.00	-	-	-	-	-	-	-	-	-
Grapple Unit	-	1.00	-	-	-	-	-	-	-	-	-
1016 Roll Off Truck	-	1.00	-	-	-	-	-	-	-	-	-
3064 Grinder	-	1.00	-	-	-	-	-	-	-	-	-
3147 High Lift Loader	-	-	1.00	-	-	-	-	-	-	-	-
1223 Side Loader	-	-	1.00	-	-	-	-	-	-	-	-
1260 Pick Up Truck	-	-	-	1.00	-	-	-	-	-	-	-
1237 Front Load (Commercial)	-	-	-	1.00	-	-	-	-	-	-	-
3189 Air Compressor	-	-	-	1.00	-	-	-	-	-	-	-
1269 Side Loader	-	-	-	-	1.00	-	-	-	-	-	-
2061 Plow	-	-	-	-	1.00	-	-	-	-	-	-
1073 Fuel Truck	-	-	-	-	1.00	-	-	-	-	-	-
Water Tank	-	-	-	-	1.00	-	-	-	-	-	-
3252 Forks for loader	-	-	-	-	-	1.00	-	-	-	-	-
3212 Dump Trailer	-	-	-	-	-	1.00	-	-	-	-	-
1287 F150 Pick UP	-	-	-	-	-	1.00	-	-	-	-	-
3213 Loader (T-Rex)	-	-	-	-	-	1.00	-	-	-	-	-
1270 Side Loader	-	-	-	-	-	1.00	-	-	-	-	-
1271 Side Loader	-	-	-	-	-	1.00	-	-	-	-	-
1285 Roll Off	-	-	-	-	-	-	1.00	-	-	-	-
1265 New Fork Truck	-	-	-	-	-	-	1.00	-	-	-	-
3316 New Plow	-	-	-	-	-	-	1.00	-	-	-	-
3298 Skidsteer	-	-	-	-	-	-	-	-	-	-	1.00

Vehicle Cost Totals

3003 Dump Trailer	$ -	$ 7,995	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Grapple Unit	$ -	$ 56,215	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1016 Roll Off Truck	$ -	$ 105,812	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3064 Grinder	$ -	$ 184,756	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3147 High Lift Loader	$ -	$ -	$ 85,498	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1223 Side Loader	$ -	$ -	$ 109,906	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1260 Pick Up Truck	$ -	$ -	$ -	$ 14,117	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1237 Front Load (Commercial)	$ -	$ -	$ -	$ 101,446	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3189 Air Compressor	$ -	$ -	$ -	$ 8,990	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1269 Side Loader	$ -	$ -	$ -	$ -	$ 104,458	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2061 Plow	$ -	$ -	$ -	$ -	$ 4,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1073 Fuel Truck	$ -	$ -	$ -	$ -	$ 154,386	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Water Tank	$ -	$ -	$ -	$ -	$ 5,803	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3252 Forks for loader	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3212 Dump Trailer	$ -	$ -	$ -	$ -	$ -	$ 5,681	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1287 F150 Pick UP	$ -	$ -	$ -	$ -	$ -	$ 19,464	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3213 Loader (T-Rex)	$ -	$ -	$ -	$ -	$ -	$ 282,154	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1270 Side Loader	$ -	$ -	$ -	$ -	$ -	$ 107,685	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1271 Side Loader	$ -	$ -	$ -	$ -	$ -	$ 107,685	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1285 Roll Off	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,020	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1265 New Fork Truck	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,020	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3316 New Plow	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,704	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3298 Skidsteer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,116
Total Cost	**$ -**	**$ 354,778**	**$ 195,404**	**$ 124,553**	**$ 268,770**	**$ 522,669**	**$ 115,743**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 23,116**