

TG 197

Guide for Developing Integrated Solid Waste Management Plans at Army Installations



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GUIDE FOR DEVELOPING INTEGRATED SOLID WASTE MANAGEMENT PLANS AT ARMY INSTALLATIONS

1. GENERAL.

a. Basis for Guide. This technical guide was developed to assist Army installations in meeting the requirements for developing a written Integrated Solid Waste Management Plan (ISWMP). The guide reflects current U.S. Environmental Protection Agency (USEPA) and Army regulations, guidelines, and philosophies. This guide covers the relevant issues pertaining to solid waste management and has the flexibility to be tailored to specific installation needs.

b. Guide Format. This guide is structured to mirror the organization of an ISWMP, beginning with the following section, APPLICABLE REGULATIONS AND REFERENCES. An outline format is presented to facilitate conversion to an actual plan. Each section provides suggested information that the writer should include. Also included are text boxes containing additional useful information. It may be appropriate to include similar explanatory text in the ISWMP to strengthen the plan as an educational and promotional tool.

2. **APPLICABLE REGULATIONS AND REFERENCES.** Applicable laws, regulations, and published guidance should be used in the development of the ISWMP and referenced within the document. A comprehensive list of state, Federal, and Army references on the subjects of solid waste management, recycling, and Green Procurement is provided below. The list is not exhaustive, so it may be appropriate to include other references. Also, be sure to include new regulations or guidance documents that have been published since the publication of this guide. Though Federal legislation has established national solid waste policy, states have the lead for policy implementation, the right to issue more restrictive regulations, and the power of enforcement. State and local requirements are often the most stringent and dominating factors driving an installation's solid waste management program. The generic state regulations are therefore prioritized below, and local rules should be added when applicable.

a. State Solid Waste Management Act. (Title, Chapter, date of enactment, summary of requirements.)

b. State Solid Waste Management Regulations. (Governing Agency, regulation title, latest date of amendment, summary of requirements.)

c. Resource Conservation and Recovery Act (RCRA), Public Law 94-580, 21 October 1976. This law established standards and guidelines for the management of hazardous and nonhazardous solid wastes. The act introduced and encouraged the practices of waste minimization through source reduction, use of recovered materials (a component of Green Procurement), recycling, and conversion of waste to energy. The RCRA Section 6002 specifically requires the Federal government to promote standards and practices for the procurement of recycled and recovered materials. The act was codified in Title 40, Code of Federal Regulations (CFR) Parts 240-272. Pertinent sections are listed below:

(1) Part 240: Guidelines for the Thermal Processing of Solid Wastes - contains guidance for the operation of solid waste incinerators and thermal processing units.

(2) Part 241: Guidelines for the Land Disposal of Solid Wastes - contains guidance applicable to solid waste land disposal facilities.

(3) Part 243: Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste - establishes requirements and recommended practices for the storage, collection and management of solid waste, and for the operation of vehicles used in the collection, transport, and handling of waste.

(4) Part 246: Source Separation for Materials Recovery Guidelines - contains recycling requirements for the recovery of paper, corrugated containers, and other consumer goods.

(5) Part 247: Guidelines for Procurement of Products that Contain Recycled Material - contains requirements regarding "buy recycled" practices that will stimulate the recovered materials market.

(6) Part 257: Criteria for Classification of Solid Waste Disposal Facilities and Practices - contains criteria for determining whether disposal facilities meet minimum standards to protect human health and the environment.

(7) Part 258: Criteria for Municipal Solid Waste Landfills - establishes criteria and requirements for operating a municipal solid waste landfill, and includes location restrictions, operating criteria, design criteria, ground-water and explosive gases monitoring, and closure and post-closure requirements.

(8) Part 261: Identification and Listing of Hazardous Waste - contains the RCRA definition of a solid waste and lists the criteria for characterization as a hazardous waste.

d. Pollution Prevention Act of 1990, Public Law 101-508, 5 November 1990. The Pollution Prevention Act established a national policy to prevent or reduce waste generation through source reduction, reuse, recycling, and treatment. It introduced the pollution prevention hierarchy of waste management options that is the cornerstone of integrated solid waste management.

e. Federal Facilities Compliance Act, Public Law 102-386, 6 October 1992. This Act required Federal facilities to comply with substantive and procedural requirements of Federal, state, and local solid and hazardous waste regulations. It waived the immunity previously held by Federal facilities.

f. 10 U.S. Code 2577, "Disposal of Recyclable Materials." This regulation contains requirements for the distribution of proceeds generated from installation recycling programs.

g. Military Construction Codification Act of 1982 (Public Law 97-214). This Act was the basis for the regulation 10 U.S. Code 2577, and contains a provision allowing net proceeds

generated from the sale of Qualifying Recycling Program (QRP) recyclables to be used by installations for certain purposes.

h. Executive Orders (EOs).

(1) Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 24 January 2007. EO 13423 requires Federal agencies to increase solid waste diversion and to maintain cost-effective waste prevention and recycling programs. The implementing instruction for this order requires Federal agencies to strive to meet the national 35 percent recycling goal established by the EPA. EO 13423 also strengthens green procurement by requiring Federal agencies to expand purchases of environmentally-sound goods and services, including biobased products. This EO also requires Federal agencies to follow certain guidelines when purchasing electronics and to reuse, donate, sell, or recycle 100 percent of electronic products using environmentally sound management practices.

(2) EO 12856, Federal Compliance With Right-To-Know Laws and Pollution Prevention Requirements, 3 August 1993. This order mandates Federal facility compliance with the Pollution Prevention Act.

(3) EO 12780, Federal Agency Recycling and Council on Federal Recycling and Procurement Policy, October 1991. This order encouraged Federal agencies to exercise waste reduction, recycling, and Green Procurement.

i. Army Regulations and Policies.

(1) AR 420-49, Utility Services, 28 April 1997. This regulation calls for the implementation of integrated solid waste management, development of the ISWMP, source reduction to reduce the waste stream, and implementation of a QRP.

(2) Assistant Chief of Staff for Installation Management (ACSIM) Memorandum, 6 February 2006, subject: Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities. This memorandum requires all military construction, renovation, and demolition projects to divert a minimum of 50 percent of C&D waste by weight from landfill disposal and requires that contract specifications will include submission of a contractor's C&D Waste Management Plan. In addition, this memorandum states that installations will achieve the silver level using the Leadership in Energy and Environmental Design (LEED) rating system.

(3) Department of the Army Memorandum, 22 November 2006, subject: Establishment of the Army Green Procurement Program. This policy requires that all Army organizations involved with contracting/procurement actions or credit card purchases comply with Federal Green Procurement requirements.

(4) Green Procurement Guide, August 2006. The U.S. Center for Health Promotion and Preventive Medicine prepared this guide for the Deputy Assistant Secretary of the Army (Policy and Procurement) and the Deputy Assistant Secretary of the Army (Environment, Safety, and

Occupational Health). This guide provides detailed instruction on implementing a Green Procurement program at an Army installation.

j. Department of Defense (DOD) Requirements.

(1) DOD Instruction (DODI) 4715.4, Pollution Prevention, 18 June 1996. This DODI establishes a requirement for installation QRPs, calls for Affirmative (Green) Procurement, and authorizes direct sales of recyclables.

(2) Memorandum, Office of the Under Secretary of Defense, 15 May 1998, subject: Recycling of Firing-Range Scrap Consisting of Expended Brass and Mixed Metals Gleaned from Firing-Range Clearance Through Qualified Recycling Programs. This defines policy for ammunition, explosives, and dangerous articles (AEDA) collected from firing ranges when installations directly sell the metals. Metals must be certified safe before being processed by QRPs, and QRP personnel must be trained to recognize and segregate AEDA.

(3) Assistant Deputy Under Secretary of Defense (Environment) Memorandum, 22 April 2003, Qualified Recycling Program Guidance. This memorandum supplements DOD Instruction 4715.4, paragraph 6.2.3.3 with guidance on QRPs.

(4) Assistant Deputy Under Secretary of Defense (Environment, Safety, and Environmental Health), 12 October 2004, subject: Revised Pollution Prevention and Compliance Metrics. This memorandum supersedes the 1998 DOD Measure of Merit (MoM), which required DOD facilities to ensure the diversion rate for nonhazardous solid waste was greater than 40 percent by the end of FY 05. The revised metric requires DOD facilities to establish a cost-effective solid waste management program that reduces solid waste generation, increases diversion rates, and optimizes cost avoidance. Diversion rates for C&D waste are measured separately from other non-hazardous solid waste diversion rates.

(5) Under Secretary of Defense Memorandum, 27 August 2004, subject: Establishment of the DOD Green Procurement Program. This policy requires installations to implement their own Green Procurement plan and program to provide metrics to achieve the DOD Green Procurement goals.

k. *Additional Sources of Information.*

(1) Decision-Maker's Guide to Solid Waste Management, Second Edition, EPA 530-R-95-023, August 1995.

(2) Unified Facilities Guide Specification (UFGS), UFGS-015720, Environmental Protection, April 2006 - provides general requirements for solid waste handling, storage, and disposal. Also included are specifications for maintaining and submitting a “Non-Hazardous Solid Waste Diversion Report.”

- d. To meet the Army requirement to develop an ISWMP.

4. PROGRAM OBJECTIVES. The plan should set forth major program objectives to include at least the following:

- a. To effectively manage solid waste in a manner that protects human health and the environment.
- b. To comply with applicable Federal, state, local, and Army solid waste management regulations.
- c. To reduce the volume of solid waste generated to meet or surpass state, DOD, and Army waste reduction goals.
- d. To reuse or recycle elements of the solid waste stream to the maximum extent possible.
- e. To integrate elements of the installation Green Procurement Plan affecting waste generation rates.

5. BACKGROUND INFORMATION. Provide background information about the installation to include the following.

- a. Location. Identify the state, county, and municipality. Briefly discuss the solid waste management options in the region (e.g., use of landfills, incinerators, and recycling programs). More detailed information should be provided under "Planning Factors." The distances to nearby cities may be notable in order to gauge distances to recycling centers, vendors, or municipal disposal facilities. Descriptions of the climate, physiographic location, and natural borders to the installation (rivers, mountains, etc.) may also be useful.

- b. Current Land Use. Summarize the land use within the installation boundaries, such as percent housing, administration, industrial, disposal/transfer facilities, training, firing ranges/impact areas, and wetlands.

- c. Mission. State the current and future mission(s) of the installation.

- d. Population.

- (1) Current. State the population of the military and civilian work force and number of on-post residents.

- (2) 10- and 20-Year Projection. State the projected military and civilian work force, and number of residents, if available.

- e. Master Plan. Report any planned major constructions, demolitions, or alterations in land use which could affect solid waste generation.

(4) Chair the Environmental Quality Control Committee (EQCC) or other installation forum that addresses solid waste management and recycling issues.

(5) Ensure that the proceeds from the QRP are used in accordance with Public Law 152 and DOD Instruction 7310.1.

(6) Support recycling programs by ensuring that the Green Procurement requirements of Executive Order 13423 are met, and designate the installation activity responsible for oversight of the program.

b. All Directors.

(1) Advise directorate activities of state, Federal, and Army requirements for managing and reducing solid wastes, recycling, and Green Procurement.

(2) Monitor directorate activities for compliance with state, Federal, and Army solid waste management requirements, and recommend changes in policies or procedures to improve program management when necessary.

(3) Support and emphasize the practices of waste reduction, Green Procurement, recycling, and yard waste composting.

(4) Ensure that all required training is approved, resourced, accomplished, and documented.

(5) Participate in the EQCC or installation forum that addresses solid waste management and recycling issues.

c. Director of Public Works (DPW).

(1) Ensure that solid waste storage, collection, transportation, and disposal are conducted in accordance with state, Federal, and Army regulations.

(2) Program, budget, and support the resource requirements to manage the solid waste program, to comply with Federal, state, and Army regulations, and to achieve state and DOD waste reduction goals.

(3) Serve as the Commander's expert representative for the management of solid wastes. Recommend changes in policies or procedures to improve program management to the Commander in coordination with the Solid Waste Manager.

d. Director of Resource Management (DRM).

(1) Ensure that proceeds from the recycling program are used in accordance with Public Law 152 and U.S. Code 2577 and according to the Commander's direction.

(2) For QRPs, the Finance and Accounting Office will establish and maintain a clearing account for the deposits of proceeds and ensure that all collections are accumulated in that account.

e. Director of Community Activities (DCA).

(1) Actively promote the recycling program based on input from the QRP manager.

(2) Ensure that Comprehensive Procurement Guidelines are followed in applicable purchase requests and purchasing contracts.

f. Director of Logistics (DOL).

(1) Advise procuring activities on the availability of environmentally preferable products and Green Procurement requirements.

(2) Seek ways to reuse and reduce packaging and packing materials.

(3) Actively support the environmental office in measuring progress to meet waste reduction goals and Green Procurement requirements.

(4) Communicate regularly with the DRMO to maintain current information on markets for excess or unserviceable materials and recyclable materials.

g. Director of Contracting (DOC).

(1) Ensure that construction and procurement contracts meet Federal Green Procurement requirements and source reduction strategies, as follows:

(a) Require the use of environmentally preferable products where applicable, including those containing recycled or biobased content, using less energy, and/or containing less or reusable packaging.

(b) Stipulate in contracts that paper products contain 30% recycled content paper or are printed on tree-free paper, and that contractor documents be printed double-sided.

(c) Include the requirement to follow Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings as specified in EO 13423, and specify that new construction achieve a LEED rating of silver or higher.

(d) For building deconstruction (demolition) contracts, ensure measures for the salvaging, reuse, and recovery of materials are incorporated by requiring contractors to provide and follow a waste management plan.

(2) For construction and demolition contracts, include provisions for quantifying the materials diverted from the waste stream.

h. Contracting Officer's Representatives (CORs).

(1) Periodically review the solid waste management contracts for overall effectiveness and monitor the performance of the contractor. Evaluate such factors as number, size, and location of pickup stations, truck routes, types of equipment, scheduling, supervision, and effective use of manpower.

(2) Coordinate with the QRP manager to develop strategies for improved recycling and, if necessary, modify contracts to implement those strategies.

(3) Include provisions for Green Procurement and recycling in all contracts as appropriate. Example of types of contracts include: construction, deconstruction, janitorial, supply/procurement, engineering/design, and utilities.

(4) Ensure that all military construction, renovation, and demolition projects include contract performance requirements for a 50 percent minimum diversion of C&D waste, by weight, from landfill disposal.

(5) Ensure that all construction and demolition contractors submit a C&D Waste Management Plan.

(6) Periodically review recycling contracts for overall effectiveness and monitor the performance of the contractor.

i. Chief, Environmental Division (and/or Solid Waste Manager).

(1) Identify a person to be responsible for managing the solid waste program. The solid waste manager may also be designated to assume any or all of the responsibilities listed below.

(2) Periodically review and monitor compliance with all applicable state, Federal, and Army requirements for solid waste management and recycling. Ensure compliance at tenant activities and subinstallations.

(3) Determine the most cost-effective and efficient means of source reduction, recycling, and waste storage, collection, treatment, and/or disposal.

(4) Recommend changes in policies or procedures to improve program management when necessary.

(5) Advise all waste-generating activities of Federal, state, and Army requirements for managing solid wastes, including requirements for permitting, reporting, and recordkeeping.

(6) Serve as the installation point of contact for questions, complaints, or other notification regarding solid waste management and recycling.

(7) Ensure sufficient funding levels to comply with regulatory requirements and support waste reduction initiatives.

(8) Oversee all aspects of the solid waste program including source reduction, resource recovery, and recycling.

(9) Maintain liaison and coordinate as necessary with county and state solid waste regulators.

(10) Maintain liaison with and request support from the major command on solid waste related issues.

(11) Report solid waste management activities to the major command using the Solid Waste Annual Reporting Web-based system (SWARWeb).

(12) Review contracts related to solid waste management for environmental compliance.

(13) Provide guidelines on source reduction strategies, yard waste management, pollution prevention, and recycling to on-post residents and installation personnel.

(14) Report to the EQCC or other installation forum on a regular basis on issues related to solid waste management and recycling.

(15) Identify and monitor responsibilities of all providers of solid waste management services, whether contractors or in-house personnel. Ensure that formal procedures are followed to for performance assessment. Enforce, through the COR, compliance with contract specification.

j. Recycling Program/QRP Manager.

(1) Oversee daily operation of the recycling facility and all recycling operations.

(2) Hire and supervise personnel to accomplish recycling duties.

(3) Ensure proper training of facility personnel. Training may include AEDA certification if the installation operates a QRP that handles firing range scrap.

(4) Request, justify, and procure equipment necessary to perform recycling operations.

(5) Develop and manage contracts in support of the program.

(6) Develop, implement, and update SOPs for operation of the program.

(7) In coordination with Resource Management personnel, establish and oversee a recyclable materials accounting procedure to track the materials processed/sold and a financial accounting system for the receipts and disbursements of funds.

have been performed at the installation, and is usually beyond the scope of developing the ISWMP. Provide generation rates in units of weight (pounds or tons) rather than volume (cubic yards), since it is an Army policy to collect standardized data by weight.

DEFINITION OF SOLID WASTE

Solid waste, as defined in RCRA, is any garbage, refuse, sludge, or other discarded material resulting from industrial, commercial, institutional, and residential activity. Discarded materials include those that are disposed of, abandoned, recycled, or are inherently waste-like. Hazardous wastes are solid wastes that meet specific RCRA or state criteria involving hazardous characteristics or the presence of listed constituents. For the purposes of this ISWMP, hazardous wastes are not included. Hazardous wastes generated at the installation are addressed in the Hazardous Waste Management Plan.

a. Estimating or Measuring Waste Generation Rates. There are several methods of measuring or estimating the amounts of solid waste generated. Waste generation rates should be documented in the IWSMP using available data or by estimating using the following procedures.

(1) A field waste characterization study will provide relatively accurate data on solid waste and recyclables generation rates. It involves direct measurement of waste generation and should follow a systemic, standardized approach such as the ASTM standard D5231-92 (2003). Factors that must be considered in the study are seasonal and climatic variations, large influx or exodus of families and soldiers, and changes in recycling efforts. A field waste characterization study can be performed by the USACHPPM. Call (410) 436-2024 for information.

(2) A method of measuring total solid waste generation (excluding recyclables) is weighing refuse collection vehicles as they enter and leave the installation. Unfortunately, most installations do not have truck scales. Collection vehicles are typically weighed at disposal sites; however, a given load may include wastes from sources other than the installation. Therefore, waste hauler records may not accurately reflect an installation's generation rate. Also, no material specific data are obtained.

(3) Many installations measure solid wastes by converting container volumes to weights. While this may be one of the easiest methods, drawbacks include the inability to accurately estimate the container fullness and the fact that different waste types have different volume/weight ratios. These factors, if not taken into consideration, reduce the accuracy of using this conversion process to obtain the data.

(4) Another way to estimate quantities of specific wastes is to make the estimates based on typical municipal waste stream breakdowns. This method can only be used for a few waste categories, and may not accurately address the unique wastes generated on Army installations.

b. Waste Characterization. The ISWMP should include types and quantities of various wastes generated in the following categories.

Residential waste typically includes wastes from single and multi-family dwellings, BOQ's, and troop housing. This waste may be the most easily characterized and measured, and usually consists of paper, glass, metal, plastics, food wastes, bulky items, furniture, electronics, and yard waste. In most cases, recyclable materials are segregated from other wastes for separate collection.

COMMERCIAL AND INSTITUTIONAL WASTE

In some cases, this type of waste is removed by a solid waste contractor and disposed of in an off-post landfill. Waste hauler records or landfill logs should provide estimates, although these may not be accurate. The best way to characterize and measure these wastes is to perform a waste characterization study (dumpster dive). Facilities include administrative offices, commissaries, food service operations, medical facilities (not including regulated medical wastes), warehouses, post exchanges, schools, and laboratories. Typical wastes include paper, food wastes, cardboard, clothing and textiles, furniture, computers and other electronics, and packing materials.

INDUSTRIAL WASTE

The best way to characterize and measure these wastes is to perform a waste characterization study (dumpster dive). Wastes may include materials discarded from industrial operations and manufacturing processes, such as scrap metals, non-hazardous solvents, greases and oils. Examples of activities that are sources of industrial waste are: motor pools, paint shops, service stations, maintenance shops, craft shops, and auto craft shops.

Army policy calls for minimizing the amount of disposal of solid wastes in landfills or incinerators, and promoting the use of environmentally preferable construction materials including those with recovered content. The selective method of disassembling buildings to preserve and separate potentially recyclable materials is called deconstruction.

(5) Yard Waste. Estimate the quantity of yard wastes generated by grounds keeping activities and residential yard maintenance or indicate results of waste characterization study.

(6) Other Special Wastes. Indicate the types and quantities of non-hazardous, special wastes generated (wastes that are not disposed as refuse and are not handled through the recycling program).

Commercial and industrial activities on the installation can result in the generation of certain non-hazardous solid waste that cannot be disposed of as general refuse. Information on management of these wastes can be obtained from either the solid waste program manager or the hazardous waste program manager. Some examples of special wastes are: computers and other electronics, waste oil, absorbents with petroleum products, tires, ash, photographic chemicals, scrap metal, adhesives, non-RCRA cleansers, latex paint, water treatment/wastewater treatment sludges, dead animals, pallets, batteries, antifreeze, asbestos, kitchen grease, pesticide containers, pollution control residuals, and septic tank wastes.

In the Pollution Prevention Act of 1990, EPA designated source reduction as the highest priority for effectively managing the solid waste stream. Benefits are derived from reducing solid waste in the form of natural resource conservation, reduction in treatment/disposal costs, and removal of risks and liabilities associated with disposal. Source reduction differs from recycling in that it focuses on reducing the waste stream at the source, to include procurement policies (environmentally preferable purchasing) and the way products are used (and reused). Source reduction, according to the EPA definition, also includes the reuse of materials with little or no "processing" involved. Planning and implementing source reduction measures play a vital role in meeting waste reduction goals.

(1) GP Overview. Green Procurement is the purchase of environmentally beneficial products and services in accordance with one or more of the established Federal procurement preference programs. Federal Agencies are required to establish a GP Program to meet the requirements of the EPA “Buy Recycled” program and the Department of Agriculture “BioPreferred” program. The GP program includes the following categories: recovered materials, environmental preferable, energy and water efficient, biobased, alternative fuels and fuel efficiency, non-ozone depleting substances, priority chemicals, Electronic Product Environmental Assessment Tool-registered electronic products, and sustainable buildings.

GP has many environmental benefits, including creating markets for recycled and biobased materials, conserving resources, saving energy, saving landfill space, and reducing pollution. The types and amounts of wastes generated on an installation are a direct result of the products purchased and used. Making better choices of products, such as those with reduced packaging or lower toxicity, impact the rates of generation, disposal methods, and cost of disposal. Although a many GP practices do not actually reduce amounts of wastes generated, GP is considered a key component of integrated solid waste management. Buying products with recycled content "completes the circle," stimulating the market for recycled materials, conserving natural resources, and saving energy otherwise used to make products from virgin materials.

percent compliance with Federal laws and EOs requiring the procurement of green products and services. The policy was accompanied by a strategy document that outlines steps for meeting those requirements and contains metrics for measuring progress. The Army also published a GP policy in November 2006 formalizing the Army commitment to GP compliance. The Army Green Procurement Guide provides detailed instruction on implementing a GP Program at an Army installation. The primary regulatory drivers are the Resource Conservation and Recovery Act Section 6002, the Federal Acquisition Regulations (FAR) Part 23, EO 13423, and the 2002 Farm Security and Rural Investment Act (FSRIA). 40 CFR 247 contains the Comprehensive Procurement Guidelines (CPG), which include a list of products designated by the EPA, for which Federal purchasers must buy products containing recovered material. Title IX of the FSRIA requires Federal Agencies to show preference for biobased products as part of their GP programs. The U.S. Department of Agriculture designates items that must contain biobased content. EPA- and USDA-designated product lists are available on internet at <http://www.epa.gov/cpg/> and <http://www.biobased.oce.usda.gov/fb4p/>, respectively.

(3) ISWMP Input. Briefly summarize the installation's GP program and reference the GP Plan (if one exists). If the installation does not have a formal GP program, briefly describe any efforts being made and recommend that actions be taken to develop a GP program. Detailed GP guidance or plans are beyond the scope of the ISWMP. Provide examples of the installation's current and planned buying practices that will accomplish source reduction and/or improve recycling markets such as:

- (a) Procuring materials with less packaging.
- (b) Purchasing materials that are recyclable.
- (c) Purchasing items that are reusable.
- (d) Procuring products made with recovered material.

b. Pollution Prevention. Reference the installation's pollution prevention plan, and briefly list the ways that material substitutions, process changes, or other methods are used to reduce the toxicity or quantity of wastes generated.

POLLUTION PREVENTION

The Pollution Prevention Act of 1990 established P2 as a national objective in reducing wastes at the source. This is achieved by lessening the toxicity and/or the quantity of the waste generated, through such tools as material substitution, procurement policies, or process changes. Many of the P2 measures taken will effectively reduce the generation of solid waste. In some cases, however, reducing the use of hazardous constituents in a process results in the creation of more non-hazardous solid waste. This is an acceptable trade-off. The installation should maintain a separate P2 plan (possibly as part of the Hazardous Waste Management Plan) in accordance with Army requirements.

THE DIRT ON COMPOSTING

Composting is an aerobic degradation process that decomposes plant and other organic waste under controlled conditions. Programs may consist of yard wastes only (leaves and grass clippings) or may be a compostable municipal solid waste program, using yard wastes, food wastes, and other degradable organic matter. Composting procedures include collecting wastes, forming wastes into windrows or placing in a vessel, and aerating the material until an organic-rich material is produced. Backyard composting is operated by individual homeowners with little or low technology equipment. End uses include mulches and soil conditioners used in landscaping and gardens. For more information about composting, refer to CHPPM Technical Information Paper #38-001-1203.

a. Yard Waste Composting.

(1) State whether any "backyard" composting is performed by residents. Estimate the quantity of yard waste diverted from disposal and the number of participants.

(2) If a centralized program exists, state the quantity of yard wastes collected, the frequency of collection, the size of the compost area, the management procedures used, the equipment used for aeration, and end uses for the material.

(3) Identify alternative end uses for the compost product if a surplus exists.

(4) Describe any state permit/operational requirements for composting and discuss how they are implemented and monitored.

(5) Describe educational and promotional programs associated with composting or reference the section on Program Promotion (see Section 13).

(6) Determine cost avoidance associated with the diversion of yard waste from the solid waste stream and with the reduced purchasing of compost products from outside sources.

b. Municipal Solid Waste Composting.

MUNICIPAL WASTE COMPOSTING

MSW composting is a developing waste management technology and may not be in use at most installations. A large amount of manual and mechanical pre-processing may be required to segregate the compostable portion from the waste. The compostable portion (yard wastes, food wastes, and paper) can comprise from 30 to 60 percent of the waste stream. Removal of other recyclables may take place at the source, in a curbside collection, or as a pre-screening stage. MSW composting usually involves the construction of "digesters" or in-vessel systems or enclosed chambers for windrow piles with mechanical turning equipment.

- (1) Describe the facility used to include building size, mechanical equipment, storage and processing areas.
- (2) Provide the permit number and pertinent permit specifications.
- (3) Describe the operating procedures and include the SOP as an appendix.
- (4) State the facility's capacity in cubic yards and determine the monthly or annual tons of input and product.
- (5) Provide details on the waste process stream, including any pre-processing for recyclables and non-compostable materials, and the MSW composting digester (in-vessel) systems or chambers for windrow piles.
- (6) Describe end uses for the materials and identify additional end uses if surplus compost exists.
- (7) Determine cost avoidance associated with the diversion of yard waste from the solid waste stream and with the reduced purchasing of compost products from outside sources.
- (8) Describe educational and promotional programs associated with composting or reference the section on Program Promotion (see Section 13).

11. CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT. Include a description of how the installation is meeting or will meet the Army requirements for sustainable management of C&D waste. This includes requirements for achieving a 50% diversion rate, attainment of a LEED rating of silver or above, and submission of a contractor's C&D Waste Management Plan. Recordkeeping and reporting requirements are addressed in paragraph 15.b. Determine if existing C&D contracts contain requirements for C&D waste management procedures, plans, and reporting. If in compliance, briefly describe the procedures in place to ensure compliance with the Army C&D waste management policies. If not in compliance, indicate plans to make the necessary procedural changes to achieve compliance and include these as action items. Army policy requires C&D Waste Management Plans as described in UFGS-017419 and containing the following elements:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.
- c. Description of the regular meetings to be held to address waste management.
- d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of wastes.

- e. Characterization, including estimated types and quantities, of the waste to be generated.
- f. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- g. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity. Include the name, location, and phone number for each reuse facility to be used, and provide a copy of the permit or license for each facility.
- h. List of specific waste materials that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Recycling facilities that will be used shall be identified by name, location, and phone number, including a copy of the permit or license for each facility.
- i. Identification of materials that cannot be recycled/reused with an explanation or justification, to be approved by the Contracting Officer.
- j. Description of the means by which any waste materials identified in item (h) above will be protected from contamination.
- k. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).
- l. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

12. SOLID WASTE AND RECYCLABLES STORAGE, COLLECTION, AND DISPOSAL. This section is organized according to the major waste types because the different waste types are often stored, collected, or disposed in different ways.

- a. Residential Wastes/Recyclables.
 - (1) State whether residential wastes and recyclables are collected using in-house resources or by contract. If contracted, include a copy of the collection contract as an appendix.
 - (2) List the types, sizes, and locations of solid waste/recycling containers.
 - (3) Include the collection schedules as an appendix.
 - (4) If collection is accomplished using in-house resources, describe the equipment and personnel associated with the service.

(4) Current Disposal Rate and Capacity. Indicate number of tons received each month, number of cells or trenches (full and remaining), and projected life expectancy.

(5) 10- and 20-Year Disposal Rates. Project future disposal rates using both the present disposal rate and future disposal rate (allowing for increased recycling and waste stream reduction). Compare the difference in the landfill life expectancy based on current versus proposed lower disposal rates.

(6) Types of Wastes Accepted/Excluded. List the waste types that are accepted and excluded from the landfill. For example, hazardous wastes and bulk liquid wastes (greater than household quantities) must be excluded from the landfill except where permit specifications allow them. Many states also have restrictions or bans on landfilling certain types of waste.

(7) Landfill Operation and Environmental Controls. Solid waste landfills must meet the operating criteria specified in 40 CFR 258, Subpart C. Describe the landfill operation by indicating how the installation complies with the following requirements. Include a copy of the landfill SOP as an appendix.

(a) Excluding the Receipt of Hazardous Wastes. Describe the procedures for random inspections, recordkeeping, and training of landfill personnel to recognize potential hazardous wastes.

(b) Cover Material. Describe the daily cover procedure. The current standard is 6 inches of earthen cover at the end of each working day.

(c) Disease Vector Control. Indicate the methods for controlling insects and animals at the landfill.

(d) Explosive Gases Control. Indicate if there is any gas venting or monitoring systems in place.

(e) **Air Release Control.** Indicate if any open burning is conducted and describe the permitting procedure associated with this activity. Open burning at solid waste landfills is severely restricted. Federal regulations (40 CFR 258.24(b)) allow burning of land clearing debris. State restrictions must be followed where applicable.

(f) Access Control. Indicate how the installation controls public access to the site (fencing, manned guard house, etc.). Restricted access is required to prevent illegal dumping and other unauthorized activities.

(g) Run-on/Run-off Control. Describe the run-on/run-off control structures at the landfill. A system must be in place to restrict water from entering the active portion of the landfill and control water running off the active portion of the landfill.

(h) Recordkeeping Requirements. Describe the recordkeeping that is performed relative to management of the landfill. Requirements specified in 40 CFR 258.29 must be met.

- b. Provide an up-to-date list of POC's at commercial waste hauling or disposal facilities.
- c. List Federal (EPA), state and local solid waste management office and contacts.
- d. List POC's at other military installations within reasonable distance of the installation, particularly those operating onsite landfills. (Note: it is Army policy that installation-operated landfills not accept wastes from outside sources. This is provided for emergency/contingency planning only).

WHAT IF...?

The ISWMP should evaluate the adequacy of current disposal mechanisms and contain provisions for alternate disposal mechanisms in the event that the present facilities fail to meet disposal needs. It is recommended that prior arrangements or agreements be made with regional or local disposal facilities to confirm that a backup option exists. Participation in local planning boards may further secure the installation's interests in disposal contingency planning.

18. SOLID WASTE MANAGEMENT ACTION ITEMS. List suggested actions in order of priority to achieve the solid waste management goals and objectives. The following are examples of action items:

- a. (example) Address implementation of this ISWMP at EQCC meetings or other installation forums. Use these meetings and/or EMS functional team meetings as forums to discuss issues regarding solid waste management, recycling, or green procurement.
- b. (example) Develop procedures to educate all purchasing activities, including government credit card holders, in environmentally preferable buying practices.
- c. (example) Set up a waste exchange, by electronic bulletin board, newsletter, or other method. Activities generating potentially reusable items will advertise the excess materials so they may be reused by another activity.
- d. (example) Enhance public education on waste management and recycling issues through public meetings, community events, school programs, and use of the media.
- e. (example) Report solid waste management data using SWARWeb. Include computation of the waste diversion rate resulting from implementation of the QRP.
- f. (example) Include provisions for the reuse or recycle of excess or waste materials associated with construction and demolition projects.
- g. (example) Initiate a low-technology compost operation for the management of yard wastes. Account for all diversion of wastes due to this operation.

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