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Technical Guide 197

Guide for Developing Integrated Solid Waste Management Plans at Army Installations

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PREFACE

Regulatory directions and public opinion are placing increased emphasis on solid waste management and recycling issues. Industry, consumers, and government entities are being forced to evaluate their solid waste management practices and increase the extent of their source reduction, recycling/resource recovery programs, and procurement of products with recovered materials. In most states, the counties are required to develop integrated solid waste management plans (ISWMPs). County plans sometimes include data for Army installations but do not provide a detailed assessment of solid waste management on the installations. Army regulations require each installation to develop an ISWMP. The process of developing the ISWMP requires thorough evaluation of all aspects of solid waste management, resulting in meaningful planning and goal setting.

"Integrated" solid waste management reflects the U.S. Environmental Protection Agency's pollution prevention (P2) hierarchy, which includes (in preferential order) source reduction, recycling, treatment, and disposal. The ISWMP addresses each of these components by–

- Identifying source reduction measures that may be used to reduce the waste stream;
- Defining the various elements of the waste stream and identifying the avenues of reuse, recycling, or disposal for each;
- Documenting correct procedures for all aspects of solid waste management, including storage, collection, segregation, transportation, treatment, recycling, and disposal;
- Presenting factors potentially affecting solid waste management and by listing alternatives and contingency plans for future consideration; and
- Assigning responsibilities and tasks to installation personnel for the effective execution of the solid waste programs.

The decisions involved in solid waste management today are diverse and far-reaching:

- Will recycling generate revenues or cost the installation money?
- Which recyclables should be included in the recycling program?
- How can the installation best meet Department of Defense (DOD) diversion goals for nonhazardous solid waste and construction and demolition waste?
- How can the installation motivate its personnel to recycle and implement source reduction practices?
- How can green procurement (GP) practices be used to minimize waste generation?

Although many installations are faced with such questions, it is beyond the scope of this technical guide to provide the necessary analysis and decision-making tools. Factors affecting solid waste decisions will vary with location, state legislation, recyclable markets, facility type, population, and mission, to name a few. This guide is meant to provide Army installations with a generic framework for developing a complete and effective ISWMP. Decision-making, policy, and planning factors are provided for consideration where applicable.

Finally, the following objectives should be kept in mind during ISWMP preparation:

- Comply with applicable Federal, state, local, and Army regulations regarding solid waste management and recycling.
- Achieve waste reduction goals set by the Army, DOD, Federal government, and respective state governments.
- Characterize the types and amounts of solid waste (including nonregulated or special wastes, potential recyclables, and construction debris) based on information obtained using standardized data collection procedures.
- Describe the storage, collection, transportation, and disposal for each category of solid waste identified.
- Demonstrate that alternate disposal mechanisms have been identified and evaluated prior to the selection of the preferred disposal method.
- Evaluate future disposal options based on changes in waste generation, governing regulations, and/or the availability of regional disposal facilities.
- Assess recycling and composting programs and identify ways to improve these programs.
- Identifying GP practices that reduce waste and conserve resources.

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GUIDE FOR DEVELOPING
INTEGRATED SOLID WASTE MANAGEMENT PLANS
AT ARMY INSTALLATIONS

1. GENERAL.

a. Basis for Guide. This technical guide (TG) was developed to assist Army installations in meeting the requirements defined in Army Regulation (AR) 420-1 for developing a written Integrated Solid Waste Management Plan (ISWMP). This TG reflects current U.S. Environmental Protection Agency (EPA) and Army regulations, guidelines, and philosophies and covers the relevant issues pertaining to solid waste management. This guide may be tailored to meet the needs of specific installations.

b. Guide Format. Beginning with Section 2, this TG is structured to mirror the organization of an ISWMP. An outline format is provided to facilitate converting the TG to an actual plan. Each section of the TG provides suggested information for inclusion in the ISWMP. 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 to develop the ISWMP and be referenced within the plan. A comprehensive list of state, Federal, and Army references on the subject of solid waste management is provided below. The list is not exhaustive, so it may be appropriate to include additional references. New regulations or guidance documents that have been published since the date of this TG's publication should also be included in the plan. Although Federal legislation has established national solid waste policy, individual states have primacy the authority to implement policy, 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.) Summarize any requirements that extend beyond Federal, Department of Defense (DOD) and Army requirements.

b. State Solid Waste Management Regulations. (Governing agency, regulation title, latest date of amendment, summary of requirements.) Summarize any regulations that extend beyond Federal, DOD, and Army regulations.

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, Affirmative Procurement (use of recovered materials), 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 guidance 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 guidance 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, groundwater 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 (P2) 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. Title 10, U.S. Code, Section 2577 (10 USC 2577), Disposal of Recyclable Materials. This regulation contains requirements for the distribution of monetary proceeds generated from installation recycling programs.

g. Military Construction Codification Act of 1982, Public Law 97-214, 12 July 1982. This act was the basis for establishing 10 USC 2577. It contains a provision allowing net proceeds generated from the sale of Qualifying Recycling Program (QRP) recyclables to be spent by installations for certain purposes.

h. Executive Orders (EOs).

(1) Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance, 5 October 2009. EO 13514 requires Federal Agencies to reduce waste generation, divert 50 percent of nonhazardous solid waste (excluding construction and demolition (C&D)) by the end of fiscal year (FY) 2015, divert 50 percent of C&D waste by the end of FY 2015, and increase diversion of compostable and organic material from the waste stream.

(2) Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 24 January 2007. EO 13423 requires Federal Agencies to increase solid waste diversion and maintain cost-effective waste prevention and recycling programs. The implementing instructions for this order require Federal Agencies to strive to meet the national 35 percent recycling goal established by the EPA. EO 13423 also strengthens green procurement (GP) 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.

i. Army Regulations and Policies.

(1) AR 420-1, Army Facilities Management, 12 February 2008. Chapter 23, Utility Services, requires implementation of integrated solid waste management, development of the ISWMP, implementation of source reduction programs for the solid waste stream, implementation of a QRP when cost effective, a 50 percent diversion of C&D waste from disposal, and a green waste management program.

(2) Memorandum, Assistant Chief of Staff for Installation Management, 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 of the Leadership in Energy and Environmental Design (LEED) rating system.

j. Department of Defense Requirements.

(1) Memorandum, Acting Deputy Under Secretary of Defense (Installations and Environment), 1 February 2008, subject: DOD Integrated (Non-Hazardous) Solid Waste Management Policy. This memorandum implements the solid waste and recycling requirements of EO 13423 by requiring all facilities to maintain waste prevention and recycling programs in the most cost-effective manner possible and to set solid waste diversion goals. The diversion goal for nonhazardous solid waste without C&D waste is 40 percent, and the goal for C&D waste is 50 percent and the memorandum states that these goals should have been achieved by 2010. The memorandum also includes guidelines for implementing integrated solid waste management. These guidelines recommend an initial solid waste characterization study to define the basis for diversion goals and an annual review of the status of solid waste generation from all sources. The guidelines also state that complying with GP practices will have a positive effect on source reduction.

(2) Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety, and Environmental Health), 12 October 2004, subject: Revised Pollution Prevention and Compliance Metrics. This memorandum requires DOD facilities to establish a cost-effective solid waste management program that reduces solid waste generation, increases diversion rates, and optimizes cost avoidance.

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

It provides direction on conducting and reconciling sales and financial records, using net proceeds from the sale of recyclables, handling costs associated with recycling programs, and considering outsourcing opportunities.

(4) 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 memorandum defines the policy for recycling ammunition, explosives, and dangerous articles (AEDA) collected from firing ranges when installations directly sell the metals. Metals must be certified as safe before being processed by QRPs, and QRP personnel must be trained to recognize and segregate AEDA.

(5) DoDI 4715.4, Pollution Prevention, 18 June 1996. This DoDI establishes a requirement for installation QRPs, calls for Affirmative Procurement, and authorizes direct sales of recyclables.

k. Additional Sources of Information.

(1) EPA 530-F-11-005, Municipal Solid Waste Generation, Recycling, and Disposal in the United States: 2010 Facts and Figures. This report contains data on solid waste generation, recovery, and disposal; materials and products that are in the waste stream; per capita generation and discard rates; aggregate data on the infrastructure for solid waste management, including estimates of the number of curbside recycling programs, composting programs, and landfills in the US; and trends in solid waste management, including source reduction, recycling and composting, and disposal via combustion and landfilling.

(2) Unified Facilities Guide Specification (UFGS)-017419, Construction and Demolition Waste Management, January 2007. This specification covers the requirements for the management of nonhazardous C&D waste materials, to include details on the contents of a waste management plan, recordkeeping and reporting, and methods of waste management.

(3) UFGS-024100, Demolition and Deconstruction, October 2006. This specification provides requirements for demolition, deconstruction, dismantling, reconditioning, and disposal of existing building materials, equipment, and utilities as part of a new construction or renovation project.

(4) UFGS-015720, Environmental Protection, April 2006. This specification provides general requirements for solid waste handling, storage, and disposal. Also included are specifications for maintaining and submitting a Nonhazardous Solid Waste Diversion Report.

(5) Unified Facilities Criteria I-900-01, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Wastes, 1 December 2002. This publication provides guidance for the recovery and recycling of demolition waste and assists in determining the most feasible methods to reduce the quantity of C&D waste materials disposed of in landfills.

(6) Decision-Maker's Guide to Solid Waste Management, Second Edition, EPA 530-R-95-023, August 1995. This guide contains technical and economic information to help decision-makers meet the daily challenges of planning, managing, and operating municipal solid waste programs and facilities.

l. Web Sites.

(1) U.S. EPA Office of Solid Waste–provides guidance and information on a variety of solid waste topics. <http://www.epa.gov/osw>

(2) CalRecycle–This website maintained by the California Department of Resources Recycling and Recovery focuses on source reduction. <http://www.calrecycle.ca.gov/ReduceWaste/>

(3) Global Recycling Network–an electronic information exchange that specializes in the trade of recyclables reclaimed from solid waste streams, as well as the marketing of eco-friendly products. <http://grn.com/grn/home.htm>

(4) Earth 911–an online resource that lists local recycling opportunities for a wide variety of recyclables. <http://earth911.com>

3. PURPOSE. The ISWMP must have an explicit statement of purpose that includes the following elements, at a minimum:

a. To define and document the installation's current solid waste management program.

b. To set forth goals for improving solid waste management.

c. To specify the strategies and responsibilities for achieving those goals.

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 a level that meets or surpasses state, DOD, and Army waste reduction goals.

d. To reuse or recycle elements of the solid waste stream to the maximum extent possible.

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 helpful in order to gauge distances to recycling centers, vendors, or municipal disposal facilities.

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. Scope and Applicability. Indicate the scope and applicability of the ISWMP. Be sure to note if tenant organizations and family housing are subject to the ISWMP.

BACKGROUND INFORMATION
How Much Is Too Much?

The background information in the ISWMP should be installation-specific and relevant to some aspect of solid waste management. Lengthy descriptions of the installation's environmental setting are not necessary, but the ISWMP may include references to documents containing such information. Descriptions of past disposal practices or past disposal sites are not needed unless they warrant consideration in assessing current or future practices. Generally, the content should focus on current solid waste practices and programs as well as future plans. If available, a pie chart or table showing national or state waste generation rates and recycled material breakdowns would help set the stage for the installation's solid waste planning. The *State of Garbage in America provides current national and state generation rates.*

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

e. Population. State the current population of the military and civilian work force and the number of onpost residents. Also state the projected (10- and 20-year estimates) military and civilian work force and number of residents, if available.

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

g. Planning Factors. Briefly identify the major factors affecting solid waste management planning and decision-making at the installation. These should be discussed in greater detail in Section 16 but may be summarized here to provide an overall picture of the installation's solid waste situation and constraints. Such factors may be regulatory, economic, environmental, political, operational, or logistical, or may relate to the size, mission, location, or closure/realignment status of the installation.

6. RESPONSIBILITIES. Specify the responsibilities, both individual and organizational, for all aspects of solid waste management. The following paragraphs contain examples of the roles and responsibilities within the solid waste management program. Installations must tailor these to fit their particular needs. For example, at some installations the recycling program is managed by the Directorate of Public Works (DPW) and at others by the Directorate of Morale, Welfare and Recreation (MWR).

a. Garrison Commander.

(1) Establishes and/or maintains a functional organizational structure to plan, execute, and monitor the solid waste program.

(2) Provides command emphasis on solid waste reduction, materials reuse, recycling, GP, and composting.

(3) Formally establishes an installation recycling program or QRP (see text box) and designates the installation activity responsible for oversight of the program.

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

QRP OR NON-QRP?

A QRP is a recycling program that accounts for and distributes recycling proceeds for environmental, safety, and MWR programs. An installation may operate a non-QRP recycling program if a contractor collects separated recyclables as a service to the installation. In this case, recycling proceeds are most likely not returned to the installation unless the contract specifies otherwise. Other non-QRP recycling programs include the Defense Logistics Agency Disposition Services recovery of scrap materials, such as furniture.

(5) Ensures that the proceeds from the QRP are used in accordance with Public Law 97-214 (Military Construction Codification Act) and DoDI 7310.1 (Disposition of Proceeds from DoD Sales of Surplus Personal Property).

(6) Promotes participation in the installation's recycling program and designates the installation activity responsible for oversight of the program.

b. All Directors and Tenant Activities.

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

(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, GP, 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.

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

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

(3) Serves as the commander's expert representative for the management of solid wastes. Recommends changes in policies or procedures to improve program management to the commander in coordination with the solid waste manager.

(4) Ensures that all new contracts awarded, particularly C&D contracts, include recycling clauses stipulating the diversion of recyclable materials when feasible and cost-effective to the Federal Government. Additionally, ensures that C&D contracts specify that contractors submit C&D waste management plans and waste diversion data.

(5) Ensures that the ISWMP is updated every 5 years at a minimum or as necessary to reflect current solid waste handling and disposal practices.

d. Director of Resource Management.

(1) Ensures that proceeds from the recycling program are used in accordance with Public Law 97-214 and 10 USC 2577 and according to the commander's direction.

(2) For QRPs, the Finance and Accounting Office establishes and maintains a clearing account for the deposits of proceeds and ensures that all collections are accumulated in that account.

e. Director of Logistics (DOL).

(1) Advises procuring activities on the availability of environmentally preferable products and GP requirements.

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

(3) Actively supports the environmental office in measuring progress to meet waste reduction goals and GP requirements.

(4) Communicates regularly with the Defense Logistics Agency (DLA) Disposition Services to maintain current information on markets for excess or unserviceable materials and recyclable materials.

f. Director of Contracting (DOC).

(1) Ensures that contracts include the appropriate specifications and clauses for source reduction and recycling, GP, and C&D waste, as listed below.

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

(b) Stipulates in contracts that paper products contain 30 percent recycled content paper or are produced from tree-free paper and that contractor documents be printed double-sided.

(c) Includes the requirement to follow the 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, ensures measures for the salvaging, reuse, and recovery of materials are incorporated by requiring contractors to provide and follow a waste management plan.

(2) For C&D contracts, include provisions for quantifying the materials diverted from the waste stream.

g. Contracting Officer's Representatives (CORs).

(1) Periodically review the solid waste management contracts for overall effectiveness and monitor the contractor's performance. Evaluate such factors as the number, size, and location(s) 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 GP and recycling in all contracts as appropriate. Examples of contract types 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 C&D contracts include submission of the contractor's C&D Waste Management Plan.

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

h. Chief, Environmental Division/Solid Waste Manager.

(1) Identifies 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 reviews and monitors compliance with all applicable state, Federal, and Army requirements for solid waste management and recycling. Ensures compliance at tenant activities and subinstallations.

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

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

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

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

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

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

(9) Maintains a liaison and coordinates as necessary with county and state solid waste regulators.

(10) Maintains a liaison with and requests support from the major command on solid waste related issues.

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

(12) Reviews solid waste management-related contracts for environmental compliance.

(13) Provides guidelines on source reduction strategies, yard waste management, P2, and recycling to onpost residents and installation personnel.

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

(15) Identifies the responsibilities and monitors the activities of all providers of solid waste management services, whether contractors or in-house personnel. Enforces, through the COR, compliance with contract specifications.

i. Recycling Program/QRP Manager.

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

(2) Hires and supervises personnel to accomplish recycling duties.

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

(4) Requests, justifies, and procures the equipment necessary to perform recycling operations.

(5) Develops and manages contracts in support of the program.

(6) Develops, implements, and updates standing operating procedures (SOPs) for the program's operation.

(7) Establishes and oversees both a recyclable materials accounting procedure to track the materials processed/sold and a financial accounting system for the receipt and disbursement of funds.

(8) Addresses customer complaints regarding the recycling program.

(9) Monitors participation in the program and implements corrective measures when participation is poor.

(10) Implements an aggressive promotional and educational campaign for the recycling program.

(11) Maintains a list of recycling points of contact (POCs) in each activity or building; coordinates the program's activities and changes through the POCs.

(12) Assists the solid waste manager in reporting recycling activities via the SWARWeb system.

(13) Reports on the status of the recycling program to the EQCC or installation forum that addresses solid waste management and recycling issues.

j. Environmental Quality Control Committee or Other Installation Forum. Includes solid waste management issues on the meeting agendas. These meetings will provide a forum for planning, identifying needs and objectives, and coordinating among various installation elements. Participants should include the garrison commander, recycling program manager, and representatives from the DPW, Environmental Office, DLA Disposition Services, MWR, DOC, DOL/Supply, Safety Office, Public Affairs, and Staff Judge Advocate.

k. Defense Logistics Agency Disposition Services.

(1) Accepts qualified recyclable materials from the QRP and reimburses installations with the designated proceeds from the sale of recyclables in accordance with current DLA policy and DLA financial management regulations.

(2) Accepts materials excluded from QRPs for recycling or other disposal, deposits the recycling proceeds, if any, to the U.S. Treasury, and reports material sales data to the QRP within the required reporting timeframe.

(3) Serves as the local representative of the DLA.

(4) Assists the recycling program manager by providing technical advice, performing market research, and selling recyclable commodities, when requested.

(5) Advises generating activities on the required turn-in procedures, including packaging, labeling, and transporting of materials to facilitate sales/recycling.

(6) Assumes accountability for materials properly turned in for disposal, resale, or recycling.

(7) Periodically conducts sales, and/or makes the DOD bidders list available to activities conducting direct sales of recyclables.

(8) Maintains records regarding the types and quantities of materials turned in and the proceeds from various resale/recycling activities.

l. Defense Finance and Accounting Service (DFAS). Processes financial documents and vouchers forwarded from the DLA Disposition Services or DOD components. The proceeds are deposited into the installation QRP account as directed in 10 USC 2577. DFAS also tracks DD Form 1348-1A (Issue Release/Receipt Document) and ensures timely and accurate financial recording of sales of recyclables.

m. All Installation Organizations, Units, and Tenant Activities.

(1) Reduce the amount of solid waste generated by procuring products with reduced or reusable packaging, buying only the amounts needed, investigating new recycling/reuse opportunities, and altering operations to reduce wastes (e.g., using double-sided copies).

(2) Support recycling by procuring items with recycled materials content.

(3) Ensure safe and effective solid waste management through the proper storage of solid wastes and recyclables.

(4) Support the recycling program by identifying, collecting, separating, and removing contaminants from all potential recyclable materials.

(5) Coordinate with the installation environmental office on all matters involving solid waste management, GP, recycling, or P2.

7. GENERATION OF SOLID WASTE AND RECYCLABLES.

The basis for all solid waste management decision-making is a characterization of the wastes generated. The characterization involves identifying each element of the waste stream, identifying the primary sources of each element, and measuring the amounts generated for each. This may be accomplished through in-house recordkeeping, a contractor survey, or by Army support agencies. Resources from which this data can be gathered include interviews with the entities that generate solid waste, solid waste removal/disposal contracts, waste hauler records, disposal facility records, turn-in documents, records from the environmental office and DLA Disposition Services, and interviews with key personnel. A waste characterization study may or may not have been performed at the installation and may be beyond the scope of developing the ISWMP.

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. Hazardous wastes generated at the installation are not included in the ISWMP but are addressed in the installation's Hazardous Waste Management Plan.

a. Waste Generation Rates. Although comprehensive waste characterization may be beyond the scope of developing the ISWMP, if a waste characterization study has not been performed, it is important to have some estimate of waste quantities. Waste quantities can typically be obtained from the installation's SWARWeb report. If not, the ISWMP should estimate generation rates in units of weight (pounds or tons) rather than volume (cubic yards), since it is Army policy to collect standardized data by weight.

ESTIMATING WASTE GENERATION RATES

There are several methods of measuring and recording the amounts of solid waste generated.

- One method of measuring overall 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.

- 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 (2008). Factors that must be considered in the study are seasonal and climatic variations, any large influx or exodus of families and Soldiers, and changes in recycling efforts. A field waste characterization study can be performed by the U.S. Army Public Health Command.

- 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.

- Another way to estimate quantities of specific wastes is to compare them to 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 characterization information for the following solid waste categories.

(1) Residential Waste. Residential waste usually consists of paper, glass, metal, plastics, food wastes, bulky items, furniture, and yard waste. Indicate the number of households or buildings serviced. Estimate the amounts of refuse disposed from onpost residents and the amounts of each material recycled. *(Note: If family housing has been privatized, waste and recyclables will not be reported in the SWARWeb report).*

(2) Commercial and Institutional Waste. Typical commercial and institutional waste includes paper, food wastes, cardboard, packaging materials, clothing and

textiles, and furniture. List the major generators of commercial and institutional waste, and identify the recyclable materials. Estimate the amounts of refuse and recyclable materials generated.

RESIDENTIAL, COMMERCIAL, AND INSTITUTIONAL WASTE

In some cases, this type of waste is removed by a solid waste contractor and disposed of in an offpost 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 generator survey. Generators may include administrative offices, commissaries, food service operations, medical facilities (not including regulated medical wastes), warehouses, post exchanges, schools, and laboratories.

(3) Industrial (Nonhazardous) Waste. Industrial wastes may include materials discarded from industrial operations and manufacturing processes, such as scrap metals, nonhazardous solvents, greases, and oils. List the types and quantities, locations generated, and special handling/disposal requirements.

INDUSTRIAL WASTE

The best way to characterize and measure these wastes is to perform a generator survey. Examples of facilities that produce industrial waste are: motor pools, paint shops, service stations, maintenance shops, craft shops, and auto craft shops.

(4) C&D Waste. Identify ongoing and planned C&D projects and the parties responsible for the management of C&D debris. Include existing C&D waste quantity data, and evaluate future provisions (through contracts) for obtaining C&D waste management data.

C&D WASTE

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. Typical wastes include lumber, timber, reinforcing steel, pipes, wires, concrete, brick, plaster, metal, wallboard, roofing, insulation materials, and asphalt. Since most major construction/demolition projects are performed by contractors, the best way to obtain information on the associated waste streams is by reviewing the contracts or contacting the COR. Every effort should be made to salvage materials for sale/reuse or recycle them in lieu of landfilling or incineration.

(5) Yard Waste. Estimate the quantity of yard wastes generated by groundskeeping activities and residential yard maintenance.

YARD WASTE

If yard wastes are composted in a municipal compost facility, the data may be available at that facility or may be maintained by the DPW groundskeeping activity. If yard wastes are not segregated from the waste stream, it is difficult to estimate generation rates.

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

SPECIAL WASTES

Commercial and industrial activities on the installation can result in the generation of certain nonhazardous solid wastes 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 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.

8. SOURCE REDUCTION. Document all of the source reduction practices at the installation and the strategies for further waste reduction. Also describe any occurring or planned procurement efforts or programs. Source reduction may include

WHY SOURCE REDUCTION?

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

procurement programs, innovative buying policies, P2, material reuse, donation, process alterations, and management practices that minimize waste generation.

a. Green Procurement.

(1) Green Procurement 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 (GPP) to meet the requirements of the EPA's "Buy Recycled" Program and the U.S. Department of Agriculture's (USDA's) "BioPreferred" Program. The GPP includes the following categories: recovered materials; biobased; energy- and water-efficient; alternative fuels and fuel efficiency; environmentally preferable; non-ozone depleting substances; priority chemicals; Electronic Product Environmental Assessment Tool-registered electronic products; and sustainable buildings.

THE ROLE OF GREEN PROCUREMENT IN INTEGRATED SOLID WASTE MANAGEMENT

Green procurement 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. Choosing products such as those with reduced packaging or lower toxicity favorably impacts the rates of waste generation, the disposal methods, and the cost of disposal. Although many GP practices do not intrinsically reduce the amounts of wastes generated, GP is considered a key component of integrated solid waste management. Buying products with recycled content completes the circle by stimulating the market for recycled materials, conserving natural resources, and saving energy otherwise used to make products from virgin materials.

(2) Green Procurement Mandates. The DOD issued its original GP policy in 2004 and issued the updated strategy document in December 2008. The GP policy reaffirmed a goal of 100 percent compliance with Federal laws and EOs requiring the procurement of green products and services and the strategy document outlines steps for meeting those requirements and contains metrics for measuring progress. In November 2006, the U.S. Army published its GP policy formalizing the Army's commitment to GP compliance. The revised *Army Installation Green Procurement Program Implementation Guide*, published in December 2010, provides detailed instructions for implementing a GPP at an Army installation. Further guidance can be found in the Federal Acquisition Regulation, Part 23 (48 CFR); EO 13423; and in the Farm Security and Rural Investment Act of 2002 (FSRIA). The Comprehensive

Procurement Guidelines (CPG) in 40 CFR 247 include a list of EPA-designated products from which Federal purchasers must buy products containing recovered material. Title IX (Energy) of the FSRIA requires Federal Agencies to show preference for biobased products as part of their GPPs. The USDA designates items that must contain biobased content. EPA- and USDA-designated product lists are available on the internet at http://www.epa.gov/cpg/ and http://www.biobased.oce.usda.gov/fb4p/, respectively.

(3) ISWMP Input. Briefly summarize the installation's GPP and reference the GP Plan (if one exists). If an installation does not have a formal GPP, briefly describe any efforts being made and recommend that a GPP be developed. 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 increase source reduction and/or improve recycling markets such as procuring materials with less packaging, purchasing materials that are recyclable, purchasing materials that are reusable, or procuring products made with recovered material.

b. Pollution Prevention. Reference the installation's P2 plan, and briefly list the methods by which the toxicity or quantity of wastes generated on the installation is reduced, such as material substitutions, process changes, or other means.

POLLUTION PREVENTION

The Pollution Prevention Act of 1990 established P2 as a national objective for 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, use of raw materials, procurement policies, or process changes. Most 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 nonhazardous 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.

c. Reuse. Identify areas where materials may be reused rather than discarded. Examples include the reuse of packaging material, to include styrofoam peanuts, bubble wrap, and cardboard boxes in good condition. If not already in place, include plans for creating a waste exchange within the installation where activities can transfer usable items to other activities.

d. Management Practices. Identify everyday management practices currently in use (or planned) that reduce wastes. Describe how personnel are informed of these practices. Examples are shown in the box on the next page.

ADMINISTRATIVE WASTE REDUCTION PRACTICES

- *Eliminate stockpiling materials; order only what will be used.*
- *Use e-mail in place of written memos whenever possible.*
- *Save e-mail messages to files rather than printing out.*
- *Send mail in reusable "shotgun" envelopes.*
- *Reuse file folders (put stick-on labels over previous folder labels).*
- *Use routing slips in place of multiple copies.*
- *Use old documents for scratch paper.*
- *Use word processing features to condense pages, using less paper.*
- *Use "print view" features to reduce printing mistakes and paper waste.*
- *Return toner cartridges for remanufacturing.*
- *Make double-sided copies.*
- *Provide proper maintenance for copiers and printers.*
- *Use reusable materials rather than disposable materials.*

9. INSTALLATION RECYCLING PROGRAM. A list of possible topics to be addressed in the ISWMP pertaining to recycling follows. Information regarding recycling facilities can be found in paragraph 13f.

a. Program Status. Indicate whether the program is a QRP.

RECYCLING PROGRAMS–THE QRP

Section 2e of Executive Order 13423 mandates that each Agency increase diversion of solid waste, as appropriate, and maintain a cost-effective waste prevention and recycling program in its facilities. This takes the form of a QRP when funds received from the sale of recyclables are returned to the installation's recycling account and, in turn, distributed to environmental, safety, and MWR programs. The EO also requires that each installation has a designated recycling coordinator.

b. Program Structure. Indicate the proponent organization and general type of recycling program (i.e., curbside, mixed or segregated collection, labeled dumpsters, or drop-off centers).

c. Recycled Materials. Identify all of the materials that are recycled on the installation and the mechanism by which they are recycled. For example, indicate that paper and cardboard are recycled through the QRP, and batteries and tires are recycled through the DLA Disposition Services. Identify recyclable materials that may be added in the future.

d. Segregation, Storage, and Collection Procedures. Indicate how recyclable materials are stored and collected. Some or all of this information may be documented in the solid waste storage and collection section of the plan.

(1) List the turn-in or preparation requirements for all recyclables.

(2) Specify container and labeling requirements for all recyclables collected.

(3) If recyclables are commingled with other solid wastes, indicate how and where the segregation/processing will occur.

(4) If firing-range scrap is collected and processed through the QRP, include the following: a list of personnel authorized to certify firing-range scrap from range clearance as safe; procedures and responsibilities for identification, collection, and processing of firing-range scrap; and procedures for turning in other AEDA scrap to the DLA Disposition Services.

e. Contracted Operations. Identify whether the collection, processing, or sale of recyclables is performed by a contractor. Indicate how revenue is returned to the installation (i.e., direct payment, contract discounts, or rebates).

f. Facilities, Equipment, and Personnel. Describe the facilities, equipment, and personnel directly involved in operating the QRP. Include plans for new or expanded facilities, new equipment, or personnel changes.

g. Regulations, Policies, and Procedures. List the installation regulations, policies, and procedures established for the recycling program. These may be incorporated into an installation regulation, policy, or SOP. It may be appropriate to include some or all of these documents as appendices in the ISWMP.

h. Publicity and Promotion. Identify the mechanisms for promoting the recycling program to installation elements, tenant organizations, and onpost residents. Details on promoting the QRP may be documented as a separate section (see Section 14).

i. Market Research. Identify who is responsible for investigating local and national markets for recycled materials. Briefly describe the procedures for researching markets and locating vendors.

j. Funding and Financial Accountability. Describe funding mechanisms and procedures for operating the recycling program. Briefly describe the accounting procedures associated with the sale of recyclables and the distribution of proceeds.

k. Calculation of Diversion Rate. Outline the method for calculating the solid waste diversion rate (see text box).

DIVERSION RATE CALCULATION

The diversion rate is the rate at which nonhazardous solid waste is diverted from entering a disposal facility. Disposal facilities include landfills (both solid waste and inert) and incinerators. Composting, mulching, recycling, reuse, and donation are generally-accepted waste diversion methods. The diversion rate is calculated as follows:

*(R/(R+L))*100 = diversion rate (percentage)*

R = amount (in tons) of nonhazardous solid waste (including construction and demolition debris) that is composted, mulched, recycled, reused, donated, or otherwise diverted from a disposal facility.

L = amount (in tons) of solid waste (including construction and demolition debris) transferred to a disposal facility.

l. Relationship with Local Recycling Programs. Indicate whether recycling programs have been established in the local community and to what extent the installation is participating or plans to participate. Section 705 of EO 13101 states that government agencies shall consider cooperative ventures with state and local governments to promote recycling and waste reduction in the community. Army policy prohibits using onpost facilities for acceptance of offpost materials or waste.

m. Recordkeeping. Describe the documentation procedures associated with management of the QRP, to include financial management.

10. COMPOSTING. The ISWMP should describe the current composting activities and should address any plans for new or expanded composting.

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 composting program exists, indicate whether it occurs on or off the installation. State the quantity of yard wastes collected, the frequency of collection, the size of the compost area, the management procedures used, the equipment used to aerate the piles, and the end uses for the material.

THE DIRT ON COMPOSTING

Composting is an aerobic degradation process that decomposes plant and other organic waste under controlled conditions. A composting program may include yard wastes only (leaves and grass clippings) or may be a compostable municipal solid waste program that includes yard wastes, food wastes, and other degradable organic matter. Composting procedures include collecting wastes, forming wastes into piles, and aerating the material until an organic-rich material is produced. Backyard composting is operated by individual homeowners with little or low-technology equipment. Centralized programs are accomplished at a centralized location and are operated by installation personnel using mechanical equipment to turn over (aerate) the pile. End uses include mulches and soil conditioners used in landscaping and gardens.

(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 14).

(6) Determine the 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 (MSW) Composting.

(1) Describe the facility used, including building size, mechanical equipment, and storage and processing areas.

(2) Describe the operating procedures and include the SOP as an appendix to the ISWMP.

(3) State the facility's capacity in cubic yards, and determine the monthly or annual tons of input and product.

MUNICIPAL WASTE COMPOSTING

Municipal solid waste 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. Municipal solid waste composting usually involves the construction of "digesters" or in-vessel systems or enclosed chambers for windrow piles with mechanical turning equipment.

(4) Provide details about the waste process stream, including any pre-processing for recyclables and noncompostable materials, and the MSW composting digester (in-vessel) systems or chambers for windrow piles.

(5) Describe the end uses for the materials, and identify additional end uses if surplus compost exists.

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

(7) Describe the educational and promotional programs associated with composting, or reference the section on Program Promotion (see Section 14).

11. SOLID WASTE AND RECYCLABLES STORAGE, COLLECTION, AND DISPOSAL. This section is organized according to the major waste types because the various wastes are often stored, collected, or disposed of 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 to the ISWMP.

(2) List the types, sizes, and locations of solid waste/recycling containers.

(3) Include the collection schedules as an appendix to the plan.

(4) If collection is accomplished using in-house resources, describe the equipment and personnel associated with the service.

(5) Detail the procedures for closing, cleaning, and maintaining the containers, or describe the inspection program if the responsibility lies with a contractor.

(6) List any specific storage requirements such as segregation or preparation of recyclables, segregation of yard wastes, or segregation of bulky wastes.

(7) Describe the recordkeeping procedures associated with solid waste collection. Haulers should be required to measure the wastes collected, either by using a truck scale or estimating the amounts of wastes during each pickup (Department of the Army (DA) Form 3916, Daily Log of Truck Trips for Refuse Collection and Disposal and DA Form 3917, Refuse Collection and Disposal). (See paragraph 15c for more information.)

(8) State the disposal method for the wastes.

b. Office and Other Facility Wastes and Recyclables. These waste types may be addressed along with the residential wastes if their storage and collection procedures are similar (e.g., performed by the same contractor).

(1) State whether office wastes and recyclables are collected using in-house resources or by contract. If contracted, include a copy of the collection contract as an appendix to the plan.

(2) Describe the janitorial service provided for refuse and recyclables collection.

(3) List the types, sizes, and locations of solid waste/recycling containers and include the list as an appendix to the plan.

(4) Include the collection schedules as an appendix to the plan.

(5) If collection is accomplished using in-house resources, describe the equipment and personnel associated with the service.

(6) Detail the procedures for closing, cleaning, and maintaining the containers, or describe the inspection program if the responsibility lies with a contractor.

(7) Describe the mechanism for evaluating whether containers are the correct size and whether wastes are collected at appropriate frequencies. Examples are performing routine inspections of containers just prior to waste pickups or requiring the waste hauler to record any problems with waste storage.

(8) List any specific storage requirements such as segregation or preparation of recyclables or segregation of bulky wastes.

(9) Describe the recordkeeping procedures associated with solid waste collection. Haulers should be required to measure the collected waste by either using a truck scale or estimating the amounts of waste during each pickup (DA Forms 3916 and 3917).

(10) State the disposal method for the wastes.

c. Yard Wastes. Describe the procedures for segregating, containerizing, and collecting yard wastes. Specify the number and sizes of containers, and include the collection schedule as an appendix to the plan. Address both residential yard waste

handling and installation-wide facilities groundskeeping waste handling if these are handled differently. State whether or not yard wastes are composted.

d. Construction/Demolition Wastes and Recyclables. Describe the equipment and procedures used for the storage and collection of C&D wastes. Identify any recyclables that are separated from the waste materials. For construction projects, determine if procurement guidelines are being followed for EPA-designated items required to contain recovered materials. If not, the installation should plan for how this can be accomplished and document it in the ISWMP. If the installation operates a construction/demolition landfill, include information about it in the ISWMP (see Section 13).

e. Special Wastes. Describe the storage and handling of the special wastes identified in paragraph 7b(6). Identify any special wastes that are recycled and by which mechanism they are recycled (e.g., under contract to the environmental office, through DLA Disposition Services, through the QRP). For special wastes that are not recycled, state how and where the materials are disposed of. Include any plans for the future recycling of special wastes currently being disposed of. Special wastes include computers and other electronics, waste oil, absorbents contaminated with petroleum products, tires, scrap metal, adhesives, non-RCRA cleansers, latex paint, water treatment/wastewater treatment sludge, dead animals, pallets, batteries, antifreeze, asbestos, kitchen grease, pesticide containers, pollution control residuals, and septic tank wastes.

12. 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 percent diversion rate, submission of a contractor's C&D Waste Management Plan, and attainment of a LEED rating of silver or above. Recordkeeping and reporting requirements are addressed in paragraph 15b. 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 that contain the following elements, as described in UFGS-017419:

a. Names of individuals on the Contractor's staff who are responsible for waste prevention and management.

b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure their awareness and participation.

c. Description of the regular meetings to be held to address waste management.

d. Descriptions of the specific approaches to be used in recycling/reusing the various materials generated, including the areas onsite 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 there will 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 of 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 projects, salvaged and stored for reuse on a future project, or recycled. Identify the name, location, and phone number of each recycling facility to be used, and provide 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 (if the materials will be site-separated and self-hauled to designated centers, or a waste hauler will collect mixed materials and remove them from the site).

l. Anticipated net cost savings, as determined by subtracting the Contractor program management costs and the cost of disposal from the sum total of the proceeds generated by the sale of the materials and the incineration and/or landfill cost avoidance.

13. SOLID WASTE MANAGEMENT FACILITIES. The ISWMP should include descriptions of any solid waste management facilities used by the installation. Provide the types of information listed below:

DISPOSAL FACILITIES

After planning for optimal source reduction and recycling on the installation, the ISWMP must address disposal of what remains of the waste stream. These may be regional, local, or onpost facilities and may include landfills, incinerators, or waste-to-energy plants. (Note: AR 420-1 states that Army policy is to use offsite land disposal facilities rather than expanding existing or constructing new facilities on Army property. Such projects will not be programmed where a municipal or regional system is available until all alternatives are explored.)

a. Onpost Solid Waste Landfills (Sanitary Landfills).

(1) Landfill Description. Describe the landfill to include its size in acres, the slope of the site, and the soil and groundwater conditions.

(2) Landfill Location. Include a map showing the location of the landfill. Reference the grid coordinates, road intersections, or other identifying information.

(3) Permit Status. Describe the type of landfill permit, permit number, administering agency, and expiration date.

(4) Current Disposal Rate and Capacity. Indicate the number of tons received each month, number of cells or trenches (full and remaining), and projected life expectancy of the landfill. Attach a copy of the landfill's permit and operational standards as appendices to the plan.

(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's life expectancy based on current versus proposed lower disposal rates.

(6) Types of Wastes Accepted/Excluded. List the waste types that are accepted by 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.

(7) Landfill Operation and Environmental Controls. As of 9 October 1993, new and existing 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 to the plan.

(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 are 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 (i.e., fencing or manned guard house). 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 to 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.

(i) Utilities. Indicate whether the site is serviced with water, electricity, rest rooms, etc.

(j) Groundwater Monitoring and Corrective Action. Describe the groundwater sampling and analysis program, statistical analysis of results, and the detection/ assessment monitoring plan as required by 40 CFR 258.

(8) Closure/Post-Closure. Indicate whether the installation has a landfill closure and post-closure care plan that addresses final cover, operation of the leachate collection system, and groundwater/methane monitoring.

(9) New Landfills and Lateral Expansions. If new landfills or lateral expansions are approved, briefly describe the plans and indicate conformance with the design criteria in the Federal regulations (40 CFR 258, Subpart D).

(10) Percentage of Waste Stream. Determine the percentage of the installation's waste stream currently being disposed of in the onpost sanitary landfill.

b. Municipal/County/Regional Landfills. For all municipal/county/regional landfills, provide the following information (available from the state or county solid waste agency, or the landfill operators). Refer to paragraph 13a for further explanations of the following subheadings.

(1) Landfill Description.

(2) Landfill Location.

(3) Permit Status.

(4) Disposal Rate, Capacity, and Life Expectancy.

(5) Types of Wastes Accepted/Excluded.

(6) Percentage of Waste Stream.

c. C&D Debris Landfills. Although requirements for construction debris landfills vary with each state, Federal regulations (40 CFR 257) contain general requirements. The following elements should be addressed in the ISWMP for onpost or offpost construction debris landfills. (If the landfill is located onpost, also address the 10- and 20- year disposal rates and capacities, landfill operation, and environmental controls.) Refer to paragraph 13a for further explanations of the following subheadings.

(1) Landfill Description.

(2) Landfill Location.

(3) Permit Status.

(4) Current Disposal Rate and Capacity.

(5) Types of Wastes Accepted/Excluded.

(6) Percentage of Waste Stream.

d. Incinerators/Waste-to-Energy Plants. This category includes incinerators and waste conversion plants, and falls under the EPA definition of volume reduction processes. Provide the following information (available from the plant or the state/county solid waste agency). Refer to paragraph 13a for further explanations of the following subheadings.

(1) Facility Description.

(2) Facility Location.

(3) Permit Status

(4) Processing Rate and Capacity.

(5) Waste Types Accepted/Excluded.

(6) Percentage of Waste Stream.

IS INCINERATION CONSIDERED WASTE DIVERSION?

The DOD considers incinerators/waste-to-energy plants to be disposal facilities. The wastes processed are not considered as having been diverted from the waste stream and are not included in the installation's diversion rate. However, some states provide a fixed-percentage credit toward reduction goals when waste conversion is used in lieu of landfill disposal.

e. Transfer Stations. Transfer stations are centralized facilities where waste is unloaded from smaller collection vehicles and loaded into larger vehicles that haul the waste to more distant processing, volume reduction, or disposal facilities. If the installation uses either an onpost or offpost transfer station, provide the following information in the ISWMP. (If the transfer station is located onpost, also address the projected storage capacity, facility operation, environmental controls, and the segregation and storage of recyclables.) Refer to paragraph 13a for further explanations of the subheadings.

(1) Facility Description.

(2) Facility Location.

(3) Permit Status.

(4) Existing Storage Capacity.

(5) Percentage of Waste Stream.

f. Recycling Facilities. Onpost recycling facilities are described in Section 9. In this section, provide information about offpost recycling facilities used by the installation, to include the following:

(1) Facility Description.

(2) Facility Location.

(3) Permit Status.

(4) Processing Rate and Capacity.

(5) Recyclable Materials Accepted/Excluded.

(6) Percentage of Waste Stream.

14. PROGRAM PROMOTION AND TRAINING.

a. Promotional Tools. List all of the tools that will be used to promote various aspects of the solid waste program. Some examples are fliers, posters, fact sheets, electronic mail bulletin boards and messages, articles in newspapers and magazines, marquee advertisements, closed-circuit television advertisements, school visits, promotional events (e.g., participation in Earth Day and America Recycles Day), and new employee and new resident orientation programs.

PROMOTING THE PROGRAM

All aspects of the solid waste management program require some amount of education and/or promotion. Rather than addressing promotion throughout the ISWMP, address it in a single section as a separate management function. Education and publicity are essential elements of a successful solid waste program. Promotion is particularly important in the areas of waste reduction, recycling, composting, and GP; therefore, identify how these will be promoted and by whom. The ISWMP should detail all of the ways that information and advertisements can be communicated to the installation's employees and onpost residents.

b. Public Awareness. Discuss how the installation will heighten public awareness of its solid waste programs. Assign responsibilities for outreach programs to the appropriate personnel or activities. Some examples follow.

(1) Public Meetings. Document plans to attend and/or conduct public meetings on solid waste management issues related to health, safety, or other environmental concerns at the facility or in the surrounding community.

WHY PUBLIC AWARENESS?

Public education is an integral part of any solid waste management program, particularly a recycling program. On most Army installations, the public interacts with the Soldiers and civilians who work there. Waste-generating operations directly affect both the workers and surrounding communities. Legislation such as the Emergency Planning and Community Right to Know Act has reinforced the need for installations to keep their neighbors informed of waste management activities and initiatives and has heightened the general awareness of the public sector.

(2) Community Events. Describe the installation's involvement in community-sponsored events such as Earth Day celebrations, America Recycles Day, and P2 fairs.

(3) Media Information. Identify potential sources for news releases. Sources may include installation or local newspapers, closed-circuit or local television stations, and/or magazines. *(Note: Recycling initiatives, elimination of a waste stream, attainment of waste reduction goals, or positive progress in the recycling program are examples of newsworthy items.)*

(4) Student Outreach Programs. Identify current outreach programs and any potential opportunities to participate in local school functions such as science fairs, presentations, poster/coloring contests, recycling drives, and mentoring programs.

c. Promotional Strategies by Program Area. This section should identify the activities or individuals that are responsible for promoting each of the following program areas: source reduction, recycling, and composting. Also, for each program area, identify other offices that will assist and support the dissemination of information and advertisements. Detail the promotional methods specific to each program area. Examples of specific methods for different program areas include using building POCs (monitors) to disseminate recycling instructions, advertising free compost mulch to onpost residents, and providing housing occupants with a list of consumer source reduction measures.

d. Training. Proper and relevant training is integral to the success and safety of solid waste management operations and recycling programs. Training programs may be in the form of formal training courses, correspondence courses, hands-on applications, or attendance at seminars and conferences. The ISWMP should:

(1) Identify the jobs in solid waste management that require job-specific training and describe how such training is accomplished and tracked.

(2) Document the current or planned training events or programs associated with solid waste management.

(3) Describe the aspects of solid waste management that are addressed in new employee and new resident orientation programs.

(4) Provide training sources that may be beneficial to installation solid waste management personnel. Some examples follow.

(a) Solid Waste and Recycling. Training the recycling manager keeps him/her informed of new technologies and opportunities to recycle or otherwise reduce wastes. A recommended training course is the Air Force Institute of Technology Course, WENV 160 Qualified Recycling Program Management, which is approved by the Interservice Education Review Board for all DOD components. Recommended conferences for obtaining current information are the Environment, Energy, and Sustainability Symposium and Exposition, the National Recycling Coalition's annual conference, and the Solid Waste Association of North America's annual conference (WasteCon).

(b) Construction and Demolition Waste Management Training. A C&D waste management course is sponsored by Fort Campbell, Kentucky, through a United States Army Corps of Engineers contract. The course provides information on how to comply with C&D debris diversion and reduction requirements in accordance with Army policy. Further details about the training may be requested by contacting the Fort Campbell DPW Environmental Division's Solid Waste and Recycling Program at http://www.campbell.army.mil/campbell/directorates/DPW/envdiv/Pages/default.aspx.

(c) New Employee Training. Training programs for new employees may include instruction on source reduction, recycling, GP, and overall environmental awareness. The U.S. Army Logistics University offers basic environmental training courses at www.almc.army.mil.

(d) Specific Job Training. Specific training and/or certification may be required for certain job descriptions, such as asbestos work, solid waste handling, operation of machinery (such as balers or crushers), and transportation of wastes.

15. RECORDKEEPING AND REPORTING.

a. Solid Waste Annual Reporting Web-Based System. SWARWeb is a DOD system that tracks and reports installation solid waste and recycling data. The system also compares data with DOD metrics and provides trend analysis capabilities. SWARWeb can be accessed through the Army Knowledge Center and the Installation Management Application Resource Center.

(1) Identify the person(s) responsible for compiling SWARWeb information and ensure proper training is received for the person(s) responsible for tracking/inputting SWARWeb information.

(2) Identify the installation elements (e.g., DPW, MWR, and contractors) that need to provide input so that all installation-generated wastes, waste diversion, and recycling quantities are captured and submitted into the SWARWeb database.

(3) Use data from SWARWeb to develop Section 7 of the ISWMP.

b. C&D Resource Recovery Reporting. Describe any recordkeeping and reporting mechanisms used internally by the installation. Indicate if recordkeeping and reporting requirements established by Army policy are being met. Section 1.7 (Records) of UFGS 017419 specifies the information that must be documented regarding waste generation, diversion, and disposal and how the records must be maintained and submitted. Requirements for reporting C&D waste management data are detailed in Section 1.8 (Reports) of UFGS 017419. For Army projects, quarterly and final reports must be submitted to the SWARWeb coordinator. All reports shall include the project name; information on waste generated per quarter and cumulative totals for the project; supporting documentation, to include manifests, weight tickets, receipts, and invoices specifically identifying the project and waste material; and timber harvest and demolition information, if any. Section 3.8 (Nonhazardous Solid Waste Diversion Report) of UFGS 015720 requires that an inventory of nonhazardous solid waste diversion and the disposal of C&D debris be maintained and reported quarterly to the Contracting Officer.

c. Refuse Collection and Recycling Reporting. Identify the procedures and person(s) responsible for completing the following reports required by AR 420-1. These responsibilities may be assigned in-house or contracted.

(1) DA Form 3916 (Daily Log of Truck Trips for Refuse Collection and Disposal). Entries recording refuse weight (tons) will be made daily by collection truck drivers. All entries will be totaled monthly on DA Form 3917 by collection supervisors.

(2) DA Form 3917 (Refuse Collection and Disposal). Quantities of refuse collected and disposed will be reported in units of weight (tons) (see TM 5-634, Solid Waste Management).

16. FACTORS AFFECTING SOLID WASTE MANAGEMENT DECISION-MAKING. List the installation-specific factors that have affected or could affect solid waste management decision-making. Examples of factors and considerations follow.

a. Limitations of Current Disposal Capacities. Summarize the potential for onpost/local/regional landfills to either close or further restrict the acceptance of installation-generated wastes. Indicate whether other disposal facilities (e.g., incinerators or conversion plants) are expected to cease operation or restrict acceptance of installation-generated wastes.

b. Potential for Future Facilities. Include projections for the construction of new waste management, recycling, or composting facilities (e.g., cooperative or regional facilities).

c. Mission. The installation's mission affects the types and quantities of wastes and recyclables generated. Mission changes or base closure/realignment should be considered in the development of the ISWMP.

d. Size and Population. The size and population of the installation are directly related to the amount of solid waste and recyclables generated. Projected changes in the size or population should be noted in the ISWMP, to include the impact of the changes on all aspects of solid waste and recyclables management. Identify plans for changes in major command, garrison reorganization, or relocation of tenant activities since these can affect the workforce or residential population.

e. Recyclable Commodities Markets. Another important factor is the strength of recyclable markets, which may vary considerably and may determine whether or not an item is recycled. Details on recycling markets should be included in Section 9.

f. Community Relations. Describe any relevant public opinions or political pressures that may affect the installation's management of solid waste and recyclables.

g. Environmental Setting. Installations that are located in environmentally sensitive areas may encounter additional restrictions on the management of wastes. These additional restrictions should be discussed in the ISWMP to justify associated decision-making.

h. Regulatory Requirements. State and local regulations play an important role in solid waste management planning. The ISWMP must identify and reference all applicable state and local regulations. It may be useful to identify state or local requirements that are more stringent than the Federal standards or are believed to be unique to that locale.

i. Cost. A long-term comparative cost analysis of all feasible waste management options should be included in the ISWMP. Some factors to be considered are:

(1) Long-term (life cycle) costs associated with onpost landfills, such as routine operations, maintenance, equipment, groundwater and methane monitoring, permit renewals, site expansions, reporting and recordkeeping, closure, post-closure care, potential corrective actions, and future liabilities.

(2) Offpost disposal costs, such as tipping fees, collection and transport, vehicle maintenance (if performed with in-house resources), reporting and recordkeeping; and the need for alternative disposal methods for wastes excluded at the disposal site.

(3) Cost avoidance, such as the reduced costs of waste collection and disposal associated with starting or expanding a recycling program.

j. Legal Factors. Issues such as liability and future property ownership and land use may also factor into solid waste management decision-making. Any possible legal hindrances to the various solid waste management options should be identified in the ISWMP.

17. CONTINGENCY PLANNING. List information necessary in the event that current management or disposal options should fail, such as:

a. All disposal/transfer facilities within a 50-mile range of the installation;

b. An up-to-date list of POCs at commercial waste hauling or disposal facilities;

c. Federal (EPA), state, and local solid waste management offices and contacts; and

d. POCs at other military installations within a reasonable distance of the installation, particularly those operating onsite landfills. *(Note: This item is included for emergency/contingency planning only. It is Army policy that installation-operated landfills not accept wastes from outside sources.)*

WHAT IF…?

The ISWMP should evaluate the adequacy of current disposal mechanisms and evaluate 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 the actions to be taken to achieve the solid waste management goals and objectives. Identify the primary organization/POC completing each task. Attach a timetable for task completion. The following are *examples* of action items:

a. Address implementation of this ISWMP at EQCC meetings or other installation forums. Use these meetings as forums to discuss concerns regarding solid waste management, recycling, or procurement issues.

b. Set up a waste exchange by electronic bulletin board, newsletter, or other means. Activities generating potentially reusable items will advertise the excess materials so they may be reused by another activity.

c. Enhance public education on waste management and recycling issues through public meetings, community events, school programs, and use of the media.

d. Report solid waste management data annually using SWARWeb. Include computation of the waste diversion rate resulting from implementation of the QRP.

e. Include provisions for the reuse or recycle of any excess or waste materials associated with C&D projects.

f. Initiate a low-technology compost operation for the management of yard wastes. Account for all waste diversion resulting from this operation.

g. Review the ISWMP every 5 years or periodically under certain conditions. Examples of conditions that would warrant reevaluation of the plan are regulatory changes, changes in the types or quantities of wastes generated, reductions in the waste stream due to successful minimization/recycling programs, changes in the availability of regional disposal facilities, and new or amended contracts that affect the installation's solid waste management program and/or practices.

APPENDIX A
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GLOSSARY

ACRONYMS AND ABBREVIATIONS

AEDA	ammunition, explosives, and dangerous articles
AR	Army Regulation
ASTM	American Society for Testing and Materials
C&D	construction and demolition
CFR	Code of Federal Regulations
COR	Contracting Officer's Representative
DA	Department of the Army
DFAS	Defense Finance and Accounting Service
DLA	Defense Logistics Agency
DoD/DOD	Department of Defense
DoDI	Department of Defense Instruction
DOC	Director of Contracting
DOL	Director of Logistics
DPW	Directorate of Public Works
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EQCC	Environmental Quality Control Committee
FAR	Federal Acquisition Regulation
FSRIA	Farm Security and Rural Investment Act
FY	fiscal year
GP	Green Procurement
GPP	Green Procurement Program
ISWMP	Installation Solid Waste Management Program
LEED	Leadership in Energy and Environmental Design
MSW	municipal solid waste
MWR	Morale, Welfare, and Recreation

P2	pollution prevention
POC	point of contact
QRP	Qualifying Recycling Program
RCRA	Resource Conservation and Recovery Act
SOP	standing operating procedure
SWAR	Solid Waste Annual Reporting
TG	technical guide
UFGS	Unified Facilities Guide Specification
USC	United States Code
USDA	U.S. Department of Agriculture

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