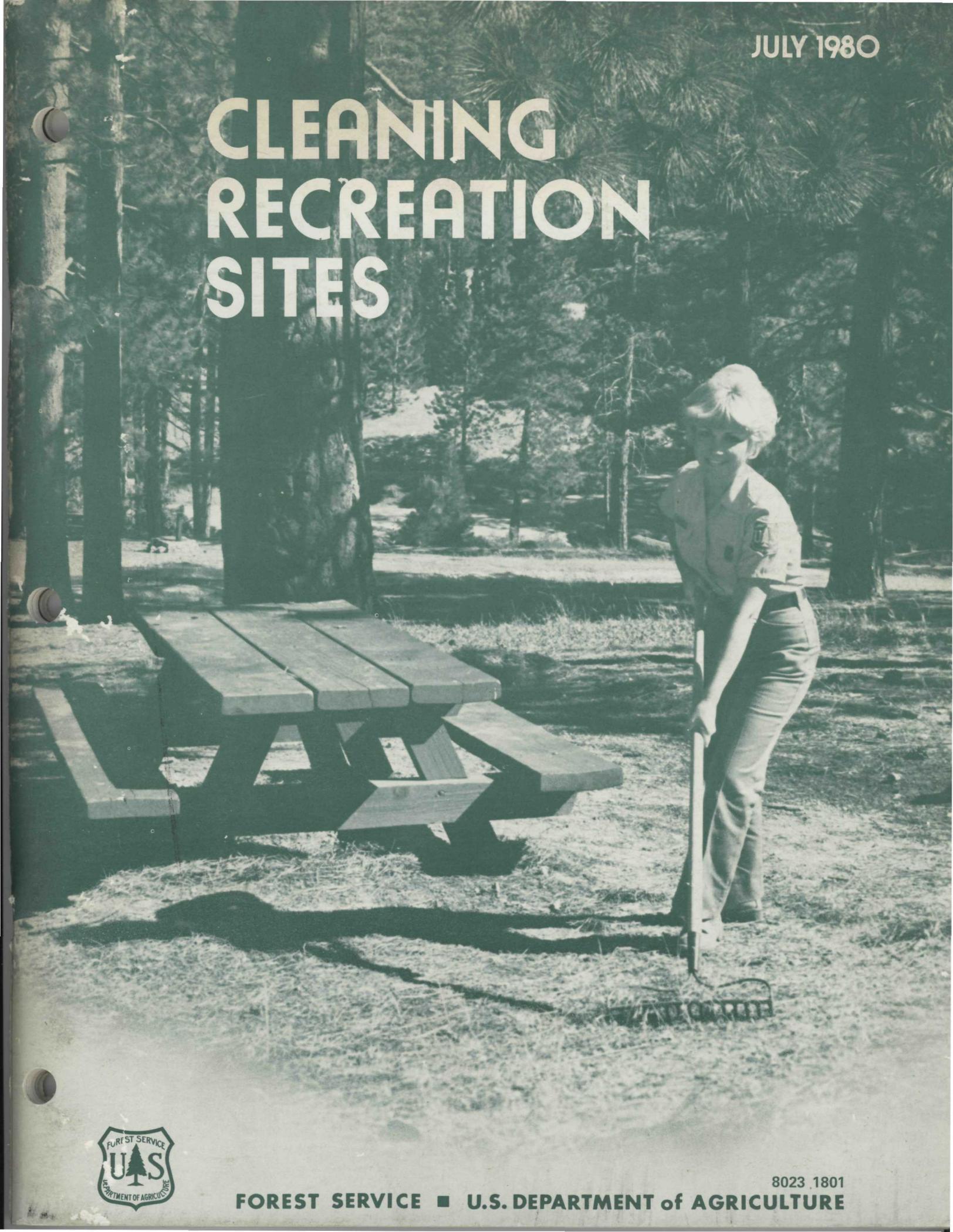


JULY 1980

# CLEANING RECREATION SITES



FOREST SERVICE ■ U.S. DEPARTMENT of AGRICULTURE

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# Cleaning Recreation Sites

ED&T 9009

Cleaning Recreation Sites Publication

FOREST SERVICE, U. S. Department of Agriculture  
Equipment Development Center, San Dimas, California 91773

JULY 1980

8023 1801

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# INTRODUCTION

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This publication is for the use of recreation managers, designers, aides, and other Forest Service personnel involved in recreation activities. Recreation managers can use this information to better organize tools, equipment, supplies, and procedures for recreation maintenance personnel. Recreation site designers can use this information along with other pertinent guidelines to satisfy all aspects of site development, construction, and use. Recreation aides and other Forest Service personnel can use this information to become more efficient and effective at cleaning and policing recreation sites.

There are several elements of recreation management that, when properly applied, can contribute to efficient and effective cleaning and policing. Some are briefly discussed below.

1. The location and design of a recreation site can have a considerable effect on cleaning and policing efficiency. Factors that are somewhat controllable at the time of site selection and design, such as crew travel time, job load on the site, use of easy-to-clean materials in building facilities, and location of facilities relative to equipment access, have considerable influence on cleaning and policing. Tradeoffs must be made as any design cannot just concentrate on optimizing cleaning and policing, but it should be a major consideration.

2. Modification and/or new design of existing recreation site facilities can often replace difficult-to-clean improvements with new, easier-to-clean systems. Sometimes this can be accomplished at a cost savings, such as the replacement of easily vandalized stainless steel vault toilet risers with the new vandal-resistant, less expensive, cross-linked polyethylene risers.

3. Properly selected materials for heavy maintenance can greatly ease the cleaning job. Examples are the use of hard, impervious coatings on toilet interiors and floors, and the restoration of wood tabletops with easy-to-clean fiberglass shells instead of using paint or stain.

4. Management techniques, such as the use of mechanized cleaning equipment, controlling the number of camp units open for use to the actual demand, proper sizing of crews, task organization, and many others, will have a great effect on cleaning and policing efficiency and effectiveness.

There are several techniques and many types of equipment that can be combined to perform the required job. Different geographical areas have access to various equipment, materials, and supplies, and different people have numerous ideas on how to utilize them. Thus, the objective of this publication is to offer some cleaning and policing techniques that will result in performing the job satisfactorily and also to stimulate thought processes that will innovate even better techniques for cleaning and policing.

# PUBLIC SERVICE

Even though the Forest Service is a large organization with many employees, the average visitor will often judge the entire Forest Service based on the action of a single employee. If this employee is rude or inefficient, it will take considerable kindness and efficiency by other employees to overcome this one bad impression, and a bad experience may never be erased from the memory of some visitors.

Therefore, **YOU** become the most important member of the Forest Service more often than you realize. You are constantly in the view of visitors who may have no other contact with the Forest Service. What our visitors think of the Forest Service depends on the character of service rendered by you and your co-workers.

Not everyone can willingly, cheerfully, and effectively clean up another person's mess. Not everyone can cheerfully and tactfully withstand the public's diverse attitudes. Considerable time and effort has been spent selecting employees who will do recreation clean-up work. Be proud you have been selected.

You must always be a good host by being courteous and helpful to everyone at all times. You must also recognize that in the final analysis the public appreciates a busy employee. Leave the impression that you are friendly and helpful, but also a person with a busy schedule. Remember, visitor satisfaction depends on the service you and your co-workers provide.

**BE A GOOD HOST!**



## **PUBLIC SERVICE**

**Here are a few hints that, if followed, can help a Forest employee present himself/herself and the Forest Service to the public:**

**1. *How do you look to others?*** Employees should maintain a well groomed appearance with a neat haircut or style. Hair styles should be acceptable to wearing a hard hat. Clothes should be neat, well kept and clean within the limits of the job. Specific dress code will be given by each supervisor.

**2. *How do you act toward others?*** You are rendering a service when you help people. A Forest employee must have the attitude to render assistance when needed. Do this with a smile, be courteous, and try to help. When assistance has been provided, go back to your other duties promptly.

**3. *How is your housekeeping?*** Your equipment, supplies, and vehicle should be neat and orderly, and clean, when possible, within the limits of the job. The cab of your vehicle should always be clean and neat.

**4. *Do you practice what you preach?*** We can't make one rule for the public and another for ourselves. If we are going to enforce the rules, we must set an example. Watch speed limits and traffic control signs within and without recreation sites. They apply to you.

**5. *How do you answer questions?*** Forest employees must always answer questions cheerfully, courteously, and tactfully. Direct the person to someone else or admit you don't know, if you cannot answer the question. The wrong answer to a question can only lead to problems. Don't be argumentative.

**6. *How well do you serve the public?*** A complete first aid kit should be in the vehicle and you should have better than average knowledge of its use. A lot of questions can be answered by supplying various types of printed literature and area maps or making professional maps available to the public. Maintain a supply with you and *be familiar with their content* so you can fill a visitor's needs. Do not merely hand out literature. Point out where the needed information is found in the map or printed literature. Fire extinguishers should be kept in the vehicle and constantly checked to assure that they will be operative when needed.

**Most rule violations occur because people are not aware of the rule or cannot see the purpose it serves. Take the time to explain the reason for a particular rule or regulation—ask people to pass this along to other campers as a favor to you. Thank them for helping you in your job and, if possible, compliment them on a noticeably good point in their camp unit. Remember, most of our visitors have an urban background, which may give them a point of view or attitude that may be hard for us to understand. Build understanding. Teaching Forest etiquette will save many cleanup dollars in the long run.**

**You will receive complaints on the rehabilitation of campgrounds, closing of campground loops, and closing off of waterfront zones—these are common complaints that are caused mainly by a lack of information or understanding the problem. Oldtime campers remember the days, free of restrictions, when they could camp where they pleased, cut trees, toss garbage, and hunt and fish with little or no limits. This pioneering tradition dies hard.**

Times change. Conquest of the land and, conversely, land available for conquest, has come to an end because of population pressures, more leisure time available, and the growing popularity of outdoor recreation. In place of the pioneering tradition, try to encourage the "land ethic"—the love of land so that each action by a person in the woods is self-judged as to its potential harm or good to the land. By encouragement and example of the land ethic by schools, conservation education, outdoor clubs, etc., and you as the sole Forest Service representative to many visitors, in time, enforcement and explanation of rules and regulations may become less necessary.

Many levels of developed campgrounds are available to visitors. Sometimes campers get into a campground that doesn't suit their tastes. It is too primitive, or it is overdeveloped. What pleases the beginning camper may not please the "pro" at all. All levels of development are necessary to serve different tastes and needs. When you run into complaints about the appropriateness of a campground, try to explain, then recommend a campground more suitable to the camper's desires.

Campground caretakers and recreation aides are not to expound their personal views on Forest Service policy to the public if they are not in accord with that policy. If you have a gripe, let your supervisor know about it, not the public.

3. Toilet vaults
  - Toilet generally clean
  - Odorous effluvia removed
  - Structure tight, waterproof, and properly pitched
  - Vault not more than three-fourths full
  - Toilet generally free of dirt and grease
4. Shower, washbasin and sinks
  - Shower, washbasin and sinks are the safe and generally free of water
  - Large food deposits
  - Plastic garbage liners with caps, removed when full
  - Hotwater may not exceed 7 days, new liners to be changed weekly
5. Car and bin generally clean
  - All components of water and sanitation systems meet health and safety standards. (SIC may remain open)
  - Pre-season safety inspection and repair completed
  - All electrical wiring and equipment properly installed
  - Hazardous situations corrected as they occur, e.g., gas, loose equipment and parts, low fuel
  - Pedestals and bases straight and secure, and completely functional
  - Signs and posters needed to ensure public health and safety
6. Accelerated resource deterioration not occurring
  - Plastic liner half-full or less
  - Vault emptied within 7 days
  - Car and bin on the outside

# Cleaning & Policing Standards

Cleaning and policing should be performed with sufficient regularity at each developed site to give the overall appearance of being clean and sanitary, free of litter, neat in appearance, and well kept by minor maintenance.

Special attention should be given to making toilets clean and sanitary. It is the one common facility that receives the most use and the one common place most probable for disease transmission.

The Forest Service operates under the concept of differing levels of services. We strive to provide a full level of services to the public. However, budget constraints will sometimes not allow this to happen.

## Reduced Service Level (RSL)

The following minimum standards must be met, even at reduced service level, if the site remains open to public use. Many of these items relate to health and safety of visitors.

- Toilets generally clean
- Obscene graffiti removed
- Structure, units, walkways, and trails free of poisonous or stinging insects
- Tables generally free of dirt and grease
- Stoves, fireplaces and grills are fire safe and generally free of large food deposits
- Plastic garbage liners and/or bins emptied when full. Maximum holdover may not exceed 7 days
- Cans and bins generally clean
- All components of water and sanitation systems meet health and safety standards. (Site may remain open if water system does not meet standards—*provided* the water system is rendered inoperable)
- Pre-season safety inspection and hazard correction accomplished
- Hazardous situations corrected as they occur; i.e., glass, loose steps and boards, tree branches
- Signs and posters needed to ensure public health and safety are in place
- Accelerated resource deterioration not occurring.

## Full Service Level (FSL)

The following standards must be met in sites offering a full level of services to the public. These standards are necessary to ensure a pleasant recreation experience for the visitor.

1. *Toilets and showers, change rooms*

- Toilet bowls, risers, seats, seat covers, and urinals free of deposits on surfaces
- Building interiors free of dirt, trash, graffiti, insects (dead and alive), and spider webs
- Floors free of standing water
- Chromeware clean and bright
- Toilet paper, towels, and seat covers (where provided), stocked to last until next day and/or cleaning
- Unpleasant odors (both sewage and chemical) eliminated.

2. *Toilets and other buildings (exterior)*

- Walkways and trails clean and clear of obstructions
- Floor mats clean
- Exterior walls free of graffiti
- Roof generally free of leaves and branches
- Eaves free of wasp nests, bird nests, and spider webs.

3. *Toilet vaults*

- Vaults not more than three-fourths full
- During pumping, the vaults should be cleaned as thoroughly as possible to help prevent the production of odors.

4. *Tables*

- Tops and seats free of dirt, grease, and large carvings
- Under portion free of spider webs, etc.

5. *Fireplaces, char-grills, fire rings, and stoves*

- No more than half-full of ashes
- All ashes and partially burned wood confined to fireplace or grill
- Grill surface free of grease and food particles at time of ash removal
- Pedestals and bases straight and secure, and components functional
- Leftover firewood stacked beside unit.

6. *Garbage cans and depositories*

- Plastic liner half-full or less
- Emptied within 7 days
- Cans clean on the outside. All litter and debris picked up around cans or containers

# Cleaning & Polishing Standards

- Inside of cans/depositories sprayed with approved disinfectant and/or insecticide at each clean out or dumping as needed
- Containers leakproof
- Area around containers free of flies and stinging insects.

## **7. Hand-pumps, fountains, and hydrants**

- All units free of grease or residue
- All units secure and drip-free
- Catch basins (drains) free of food particles, soaps, grease, debris, standing water, and functioning properly
- All fixtures and facilities meet applicable standards. Threaded faucets removed
- Fixtures disinfected as necessary
- Water tests meet applicable standards.

## **8. Grounds**

- Generally free of trash, bottles, cans, glass, and obvious litter
- Family units free of all litter, including bottle caps, flip tops, and cigarette butts
- Trees free of nails, rope, wire, hazard branches, etc.
- Managed, planted lawns maintained according to O&M plan
- Steps, decks and ramps free of loose boards, loose nails, and slick spots
- All tripping hazards eliminated.

## **9. Signs, posters, and bulletin boards**

- All signs bright, straight, and secure
- Signs and bulletin boards free of holes, blemishes, random staples, nails, etc.
- Paper signs and posters fresh and up-to-date
- Area around sign posts free of weeds and brush, unless planned landscaping
- Posters kept to minimum. Only those necessary for regulation, health, safety, and required information are provided.

## Full Service Level (FSL)

# Maintenance

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All personnel should be alert for minor maintenance needs. Performing "on the spot" maintenance often prevents serious problems later. Examples of such projects are:

1. Replacing gaskets in leaky faucets.
2. Straightening a signpost.
3. Tightening door hinges.
4. Minor drainage work to protect the site.
5. Remove all nails, ropes, poles, and wire from trees and facilities.
6. Remove loose rocks and tripping hazards from paths and walkways.
7. Perform minor work to wood facilities to eliminate reoccurring splinters.

Major maintenance items that cannot be taken care of immediately should be reported to the appropriate authority.

# Frequency & Management

---

Frequency for performing the various cleaning and policing tasks must be determined by site managers. It is recognized that there will be times when, because of occupancy by the public, it will not be possible to clean or police a given facility. In these cases, considering the severity of the situation, treatment can be postponed until the next reasonable time. However, items of work needed for safety or sanitation should not be postponed. Thus, cleaning the living area of a camp unit will be postponed until the unit is next vacant. On the other hand, if a toilet needs cleaning, other work in the area should be done until the toilet is vacated, rather than postponing the cleaning until the next day. Site managers should maintain close contact with use patterns to vary the frequency of cleaning and policing treatment to meet the existing conditions. Managers can vary frequency of treatment by:

1. Adjusting number of personnel.
2. Adjusting amount of equipment (vehicles, garbage cans, etc.)
3. Adjusting length of stay of visitors.
4. Executing "variation clauses" in contracts, or if using force account, increasing cleaning visits.

5. Temporarily closing whole sites or portions of sites when use is light.
6. Permanently closing uneconomical and unneeded sites.
7. Utilizing the "pack-in/pack-out" method of trash removal. This concept has met with huge success when developed on a well planned basis including informing the public.

## How To Do The Job

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A recreation site that is clean and well maintained is easier to keep in that condition, since visitors are more cooperative when they are pleased with clean facilities. This also deters vandalism. At a recent vandalism symposium one of the conclusions drawn was that one of the target areas is "property that tends to be derelict, incomplete, or badly kept."

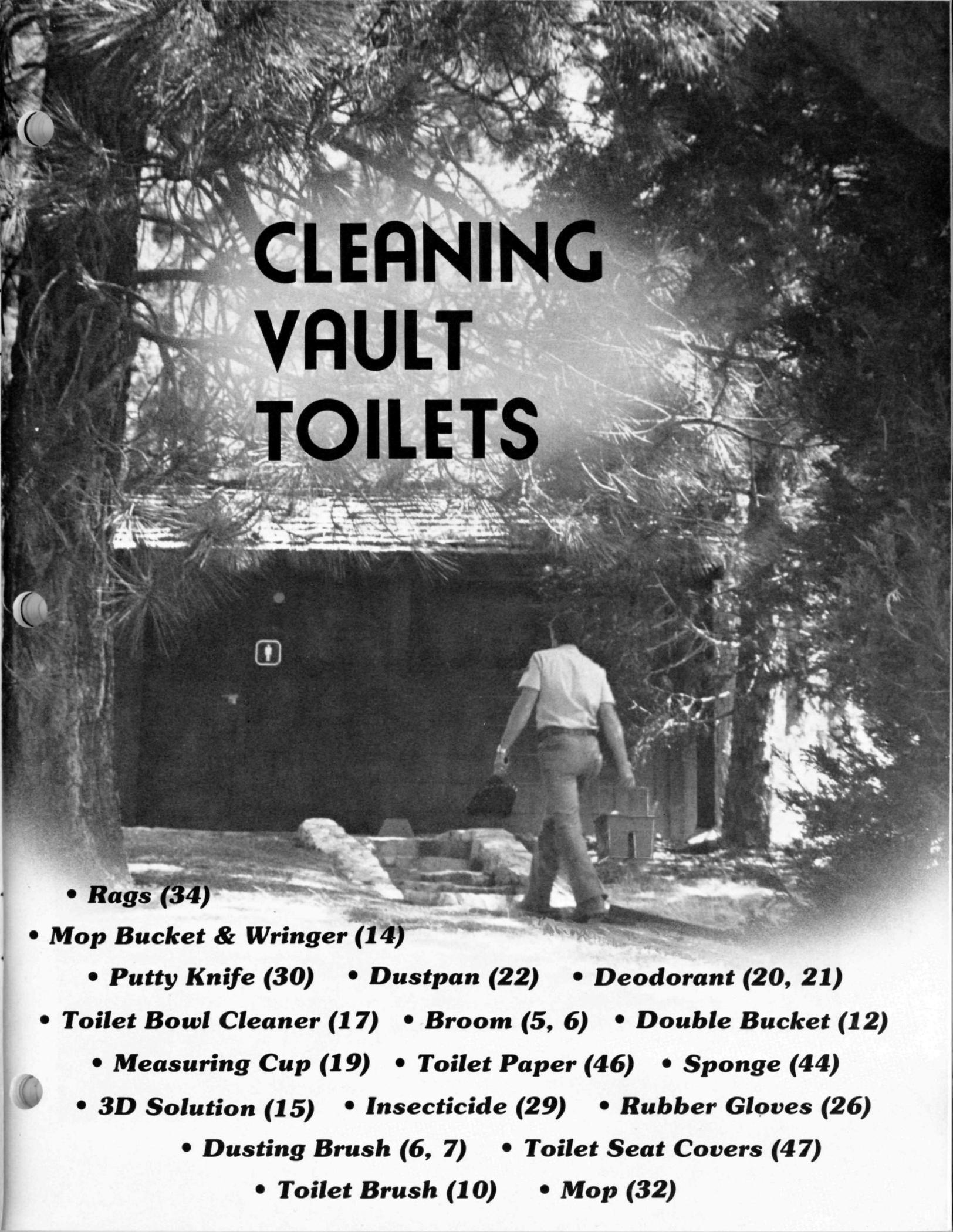
Facilities have been divided into two classes to separate the tools and materials into two kits, Class A—Waste Facilities and Class B—Other Facilities. The tools, materials, and procedures that follow have been derived from Servicewide sources and from professional janitorial firms and have been demonstrated to do a superior job. Deviations should be carefully considered for their potential effect on safety, effectiveness, sanitation, and cost and should not be applied unless there is overwhelming evidence that they represent improvement.

## Disposing of chemicals

During the cleaning process throughout each site there will be cleaning agents and chemicals to dispose of. Each site's waste disposal practice and the landscape around each site is different, so no standard guideline is given for the disposal of cleaning agents and various chemicals. The Forest Recreation Staff Officer, in conjunction with the Engineering Staff, should establish what types of cleaners and chemicals and the concentrations to be used in all of the required tasks and where these cleaners and other chemicals should be disposed of. Indiscriminate dumping of these cleaners or chemicals into toilets or vaults might upset entire treatment plants and/or septic tank leach field systems.

## NOTICE

THE LEAD-IN PAGE OF EACH SUBSECTION CONTAINS A LIST OF SUGGESTED TOOLS AND MATERIALS TO DO THE JOB. THE NUMBER(S) IN PARENTHESES ( ) FOLLOWING EACH TOOL OR MATERIAL IS A LOCATOR FOR A MORE DETAILED DESCRIPTION OF THE ITEM IN APPENDIX I.



# CLEANING VAULT TOILETS

- **Rags (34)**
- **Mop Bucket & Wringer (14)**
  - **Putty Knife (30)** • **Dustpan (22)** • **Deodorant (20, 21)**
- **Toilet Bowl Cleaner (17)** • **Broom (5, 6)** • **Double Bucket (12)**
  - **Measuring Cup (19)** • **Toilet Paper (46)** • **Sponge (44)**
- **3D Solution (15)** • **Insecticide (29)** • **Rubber Gloves (26)**
  - **Dusting Brush (6, 7)** • **Toilet Seat Covers (47)**
  - **Toilet Brush (10)** • **Mop (32)**

# CLASS A-WASTE FACILITIES

Since these facilities (toilets and garbage cans) are potentially contaminated with disease causing bacteria, they should be cleaned separately, using different tools and materials than those used for Class B Facilities. An effective method to alert maintenance personnel to use the right tools for the right job is to color code all tools. Also, using the right tools will help to eliminate the possibility of cross-contamination of the Class B Facilities.



Pick up all scrap paper and refuse on the trail to the toilet and on the toilet floor. *Never throw scrap paper or refuse into the vault.* The constant addition of these items in the vault significantly increases the difficulty of pumping.

*CLEANING VAULT TOILETS*

Dust window sills, window louvers, rafters, tops of partitions, and other flat surfaces. Remove all cobwebs and insect nests.



Carefully sweep the floor, paying particular attention to the corners. Pick up all material with a dustpan. Do not sweep small litter, etc., out the door or throw it into the vault.

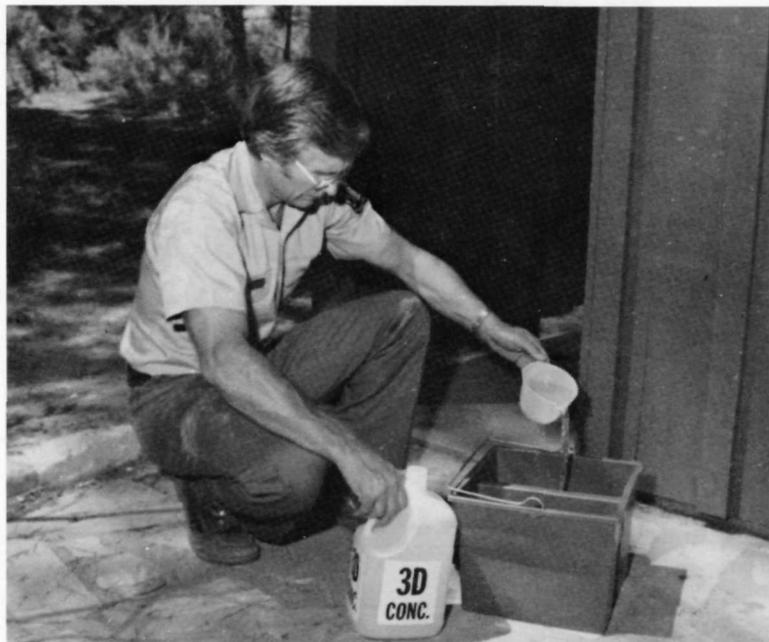
**CLEANING VAULT TOILETS**



**Scrape gum, etc., from floor with putty knife.**



**Replace space deodorant as needed.**



Mix a solution of disinfectant, deodorant, and detergent (3D) in one side of a double bucket. Have clear water in the other side. Use a measuring cup to measure the proper amount of 3D concentrate recommended by the manufacturer. Dilutions vary from 1:20 to about 1:120, depending on the amount of soil encountered and the disinfection desired. However, always use the measure, because unneeded detergent or disinfection will not do a better job—it will be wasted and make your job more difficult. *Always read the label and follow instructions for proper use and safety to the user and the public.*

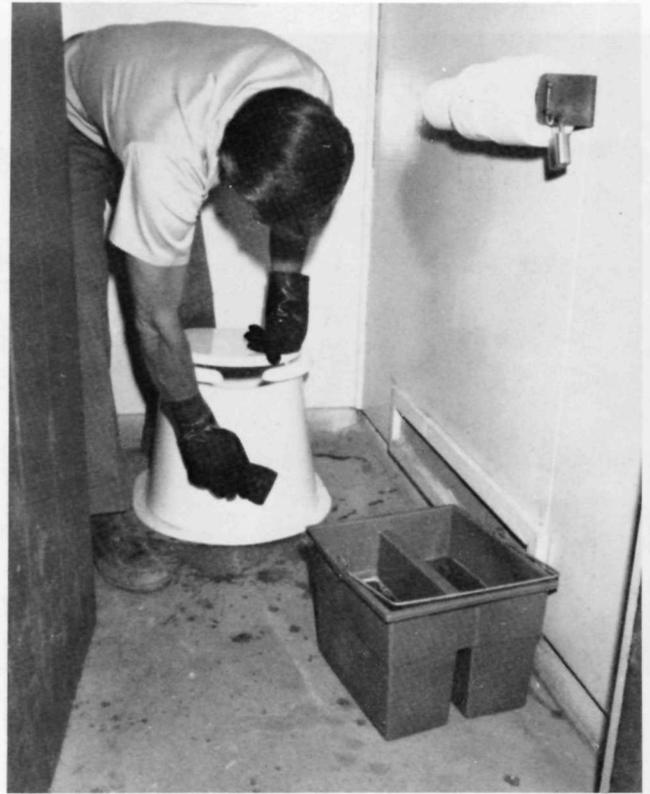
Wipe or scrub (as needed) all walls, using a 3D soaked sponge. Use the abrasive side of the sponge where necessary on stubborn marks after the detergent has had a chance to loosen the mark. Rinse the sponge in clear water before dipping it into the 3D solution again. This step will keep the 3D solution clean and effective. It is not necessary to rinse the 3D solution from the walls unless soil is heavy. It will provide residual disinfection and deodorant action. If wash basins are provided, use the fresh 3D solution to clean the basins first, but do not use the same sponge for the walls and toilets.



## CLEANING VAULT TOILETS

At each visit use a sponge soaked in 3D solution to scrub the outside of the toilet riser and both sides of the seat and cover. Pay particular attention to the hinge area. Remember do not use this sponge for cleaning wash basins or Class B Facilities.

The toilet seats and covers should always be free of stains and soil marks. Replace or repaint seats and covers if noticeable marks cannot be removed.



Use a long-handled brush or swab soaked with 3D solution or toilet bowl cleaner to clean the inside of the toilet riser. It is important to keep the interior of the riser clean for sanitary reasons and to help prevent odors. The toilet riser shown in the illustrations is an alternative to the previously used stainless steel riser. For information on this riser, refer to *Equip Tips 2300*, "Cross-Linked Polyethylene Vault Toilet Riser," July 1978.

# Odor Control

Mop floor at least once a week with 3D solution or as often as necessary to maintain a clean smear-free floor. Dry mop, squeegee or wet-vacuum the floor to leave it as dry as possible. Change mop bucket 3D solution often as dirty solution loses its effectiveness.



Use a *clean* rag to polish and dry the toilet riser seat and cover.

## *CLEANING VAULT TOILETS*



Check toilet paper supply and replace as necessary. Also, some serious consideration should be given to the selection of toilet paper dispensers. Empty dispensers give rise to vandalism. Too much consumption is uneconomical, wasteful, difficult for the sewage pumper to remove, and difficult for biological treatment systems to digest. Multiple dispensers that do not allow the roll of paper to rotate will solve most of the problems and still give the user an adequate amount. The use of individual tissue dispensers is not recommended. Also not recommended is the placing of partially used rolls on top of newly installed rolls because they either end up missing or thrown into the vault. A lock-bar toilet paper dispenser similar to the one illustrated is now available; see appendix II (item 12).

# Odor Control

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**TOILET VAULTS**—Most odor problems are associated with vault or pit-type toilets. The construction, type, size or material of the vault is unimportant, with the exception of concrete. (Concrete vaults are porous and absorb and retain odors.) What is important is that there are many square feet of waste surface plus the exposed waste, usually left on the vault walls, under the large opening of the toilet riser. The vent system is often too small and cannot overcome the draft up through the toilet riser, so strong, unpleasant odors enter the toilet compartment. For details on methods to improve vault construction and venting techniques, refer to *ED&T Report 2300-13, "Updated Vault Toilet Concepts,"* August 1978, and "Vault Toilets . . . design and maintenance considerations," February 1976.

Odor is caused by bacterial action on the waste mass. There are two forms of bacterial action, anaerobic and aerobic. Anaerobic action is typical of septic tanks and takes place in the *absence of oxygen*. Aerobic action is typical of aerated sewage treatment plants and *requires oxygen*. Anaerobic action is characterized by strong odors whereas aerobic action is relatively odorless.

It is impractical to introduce enough oxygen into the concentrated waste mass to create an aerobic condition. Temperatures and pH, also difficult to control, are important environmental factors in the growth of bacteria. Therefore, additions of aerobic bacteria or enzymes can only be of negligible benefit to the surface of the waste mass and should not be used.

Suppression of odor by using chemicals to kill all bacterial action is not recommended because of the chemicals negative effect on the final treatment process. Many treatment plant operators will not even accept chemically treated wastes. Also, strong, unpleasant chemical odors often result from the use of bactericides.

## CLEANING VAULT TOILETS

*Odor control with deodorants is recommended. There are two general types of deodorants that suppress odor by working on the odor molecule. One masks the odor and the other combines with the bad odor to form a new more pleasant odor or neutralizes it entirely. Both are effective in making the toilet compartment more pleasant.*



Two deodorants that maintain a record of success in toilet vaults are listed in appendix I (item 21). There are many chemicals on the market for use in vault-type toilets. When considering the purchase of deodorants be guided by your nose, the total cost of the treatment, method of application, and be certain that the product is truly a deodorant. Dosages and frequency of application should be determined from manufacturers instructions, from a good deal of experience, and *constant checking with the nose.*

**TOILET COMPARTMENTS**—Space deodorants in an appropriate diffuser should be used in toilet buildings including flush toilets. Diffusers should be placed out of reach, and if possible, out of sight. Sometimes a heavy wire screen will have to be used to protect the diffusers from theft or vandalism. A list of satisfactory deodorants appears in appendix I (item 20).

## Insect Control

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Flies can be more objectionable than odor in vault and pit-type toilets. Every effort should be made to eliminate flies. According to information from the field, maintaining a water level in the vault instead of allowing the waste material to mound up is an effective method to reduce flies.

The "No-Pest" strips provide easy, safe, and effective control. One of the strips, removed from its cardboard diffuser, cut in half, and tacked high in the rafters of the toilet compartment should provide adequate control of flies. Another method of using the strip is to attach it to the bottom of the toilet riser with a stiff wire so that it hangs into the vault but away from the waste impact pattern.

A substance known as "Malvex" dry fly bait contains the same ingredients as the No-Pest strips, but adds sugar to physically attract the flies to the source of the lethal chemical.



Both the No-Pest strips and the fly bait should always be handled with gloves on. Follow all precautions carefully. The No-Pest strips can be obtained at almost all local stores, but the fly bait must be ordered; the address is contained in appendix II (item 8).

Insect type and population vary across the country. Directions and procedures for other insects (wasps, yellow jackets, hornets, etc.) should be available on a local level for the maintenance personnel.

# Safety & Sanitation

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Watch for splinters, protruding nails, torn screen or hardware cloth, loose screws on door hinges and toilet paper dispensers, tripping hazards on walkways and around site, etc., while performing routine maintenance.

Correct hazards as you go along.

The 3D solution in proper strength is not hazardous to handle, but most toilet bowl cleaners are. Read the labels of all chemicals, follow instructions, and pay particular attention to disposing of used and unused cleaning agents and chemicals. Always install insecticide and deodorant blocks where children cannot reach them.

These same precautions pertain to flush, recirculating and chemical toilets.

# CLEANING FLUSH TOILETS



• **Mop Bucket & Wringer (14)**

• **Measuring Cup (19)**

• **Dustpan (22)**

• **Double Bucket (12)**

• **Putty Knife (30)**

• **Toilet Bowl Cleaner (17)**

• **3D Solution (15)**

• **Toilet Paper (46)**

• **Sponge (44)**

• **Rubber Gloves (26)**

• **Toilet Brush (10)**

• **Dusting Brush (6, 7)**

• **Rags (34)**

• **Broom (5, 6)**

• **Mop (32)**

## CLEANING FLUSH TOILETS

The procedure for cleaning flush toilet buildings is similar to any other toilet building. The large paper pieces and debris should be picked up and placed in a trash can, all horizontal surfaces should be dusted, and the floors should be swept with special attention given to corners and concealed areas. Gum, etc., should be scraped from the floor with a putty knife.

Keep in mind, recent studies have shown that during the flushing action, bacteria are carried out of the toilet bowl in a fine aerosol spray and deposited on and around the toilet. The area surrounding the toilet may appear to be clean, but in fact can be very contaminated.

The selection of the toilet bowl cleaner is very important. A caustic substance used daily in small dosages in a number of toilets could easily upset a septic tank leach field system or a small extended aeration system.

Using a long-handled brush and a toilet bowl cleaner, thoroughly clean the interior of the bowl making certain that up under the rim and the throat of the bowl are clean. The holes around the bowl rim should be periodically checked and reamed out to prevent reduction of flushing action.



Using a 3D solution, clean *both sides* of the seat, the hinge area, and the outside of the toilet. If the toilet uses a flush valve, use the 3D solution to clean the valve. Polish and dry all surfaces of the toilet seat, toilet exterior, and flush valve.

Urinals should be thoroughly cleaned with a 3D solution. The inside may require the use of a toilet bowl cleaner if stains and soil are excessive. Again, be sure that all chrome is clean and left polished and dry. It is not necessary to dry the interior of the urinal.



Wash the walls with a 3D soaked sponge. It is not necessary to rinse the 3D solution from the walls unless they are heavily soiled. The solution will provide a residual disinfectant and deodorant action.



Use a 3D soaked sponge (not the one used for the toilet) to thoroughly clean the sink and faucet. Stubborn stains may require a light application of scouring powder or the use of the nylon scrubbing pad on the sponge. Rinse and polish dry. All chrome surfaces and mirrors should be cleaned and free from stains and smears.

## CLEANING FLUSH TOILETS

The procedure for cleaning flush toilets includes the use of large paper gloves and disinfectant. The floor should be mopped.



The floor should be mopped frequently with a 3D solution to prevent any accumulation of bacteria resulting from the aerosol carry-over during the flushing action and to maintain a clean smear-free floor. Dry mop, squeegee or wet vacuum the floor to leave as dry as possible. The remaining contents of a mop bucket should not be dumped into the toilet unless it has been determined they will not adversely affect the sewage disposal system.

# CLEANING CHEMICAL RECIRCULATING TOILETS

- *Measuring Cup (19)* • *Dusting Brush (6, 7)*
- *Rubber Gloves (26)* • *3D Solution (15)* • *Toilet Brush (10)*
- *Sponge (44)* • *Double Bucket (12)* • *Squeegee (45)*
- *Putty Knife (30)* • *Toilet Paper (46)*
- *Dustpan (22)*
- *Rags (34)*



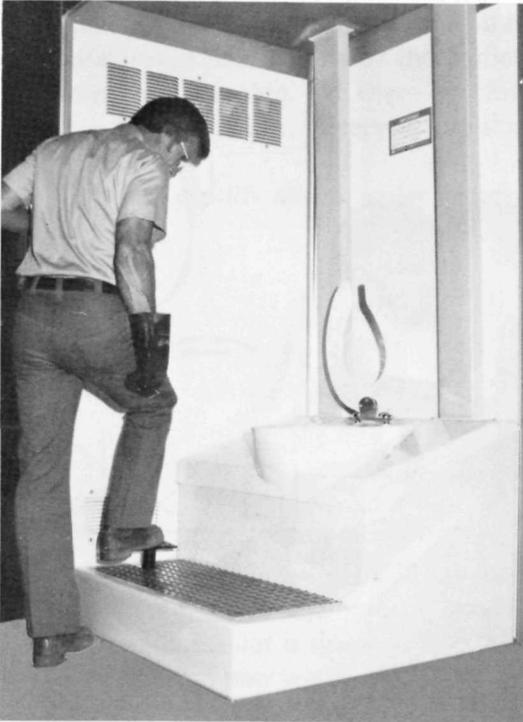
# Chemical Recirculating Toilets

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Chemical recirculating toilets can be electric, air-operated, foot-pedal operated, or hand-lever operated. The principle is all the same. The holding tank is precharged with a predetermined amount of chemical and water. When the toilet is flushed, a mixture of precharged chemical, water, and waste material (a colored dye helps to visually obscure small waste particles) is recirculated in the bowl to discharge the new waste material. With each flush some systems dispense a small amount of chemical in addition to the precharged chemical. When the holding tank is full, the contents have to be removed by pumping or discharging into a lower larger container.



## CLEANING CHEMICAL RECIRCULATING TOILETS



Flush the toilet once or twice to help loosen any accumulated fecal matter on the bowl.



Sweep the interior clean.



Pick up all large paper pieces and miscellaneous trash on floor.



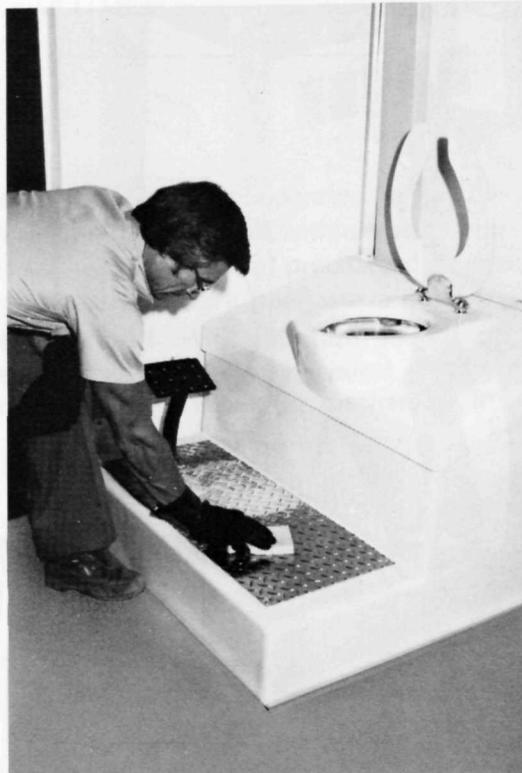
Use a stiff brush with a 3D solution to thoroughly clean the bowl area. Use a 3D solution to clean the toilet seat, surrounding platform, and particularly the seat hinge area.

**CLEANING CHEMICAL RECIRCULATING TOILETS**



Use a 3D solution for cleaning the wall of the enclosure.

Polish and dry all surface areas.



Rinse well and sponge dry.



Use a scrub brush and 3D solution to clean the small floor area.



Make sure toilet paper dispensers are securely fastened and refill with paper as needed. Toilet paper dispensers should be the type that discourages excessive use.

Cleaning the waste material from the holding tanks is critical for maintaining a reasonably odor-free toilet. Some of the earlier model chemical recirculating toilets had small access holes for pumping. If these systems are still in use, consider making special adaptors for pumping the tanks. Every effort should be made to do a thorough cleaning job.

The new top lift allows easier access and a very positive bottom discharge system.

## Chemical Toilets

---

A chemical toilet is simply a holding tank with a toilet seat on the top and no bowl between the seat and the waste material. The system is precharged with chemical and water and requires the same cleaning procedures as do chemical recirculating toilets.

During chemical toilet use, no additional chemical is added mechanically. Therefore the precharged chemical may not remain effective for the time it takes to fill the holding tank. Pump-out schedules may have to be based on odor production rather than when the tank is full unless measures are taken to periodically add chemicals or modify the venting system. The toilet contents are pumped through the toilet seat opening. Care should be taken not to contaminate the interior of the building during pumping.

# CLEANING GARBAGE CANS



- **File (24)** • **Bucket (13)** • **Insecticide (29)**
- **3D Solution (15)** • **Rags (34)** • **Scrub Brush (8)**
- **Wrench (50)** • **Pliers (33)** • **Hammer (27)**
- **Sandpaper (37)** • **Plastic Liners (3)**

## CLEANING GARBAGE CANS



It is recommended that all cans be thoroughly steam cleaned prior to the beginning of the season. Use plastic liners to help prevent dirty garbage cans. Consider the fact that an empty can weighs approximately 30 lb and the average weight of waste in a full can is approximately 27 lb. By using appropriate plastic liners, a lot of lifting is saved at each can. Three-mil thick plastic bags are recommended in lieu of double-bagging.

Pick up all litter and garbage immediately surrounding the can. Gloves are recommended.



Before hauling, tie-off plastic liners or cover the load with a tarp. Don't allow the litter and garbage to scatter while in transit.



Scrub (as needed) garbage cans inside and out to remove caked and dried garbage. Check the underside of the can for grease and garbage. Check with your supervisor concerning procedures for dumping detergents, chemicals, and washed-out garbage in the area of garbage cans. Cleaning at each garbage can location may result in a garbage residue buildup, vegetation damage, or possible stream contamination. At some sites it may be necessary to clean all garbage cans at a central location.

Pound out all bullet holes and other tears in the metal to prevent tearing the plastic liner and user's clothing.



## CLEANING GARBAGE CANS



Spray with an insecticide at least once a week or use a product like the previously mentioned fly bait.



Install a clean plastic liner and use a small stone (as shown) or stick to twist the liner tight around the can, then tuck the stone or stick up under the liner to hold it secure.

# Safety & Sanitation

Tie-down (or otherwise secure) cans to prevent vandalism, unauthorized removal, and animals from tipping them over. (Note stone in final position for tightening liner around can.)



If the garbage cans are continually overflowing, increase the number of cans, consider larger capacity bins or increase the frequency of service.

# Multi Unit Bins

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The procedure for maintaining bins is the same as for garbage cans. Some recreation managers prefer the bins because:

1. They maintain a neater overall appearance.
2. They resist animal pilferage and damage.
3. The side opening permits easy removal of the plastic liners, unlike lifting the liner straight out of the can.
4. The public is less likely to move them about because of the added weight.



# Dumpsters

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Centrally located dumpsters are beginning to replace individually spaced garbage cans. Public acceptance and economics are major factors in their use. Dumpsters are too big to use plastic liners so they become dirty and caked with garbage very quickly. Fly and odor suppression should be a high priority in the daily maintenance of these containers. Cleaning the dumpsters should be done on an as-needed basis and at a central location where a steam cleaner or pressure washer can be used and where the detergent and/or chemical cleaner mixed with the waste garbage can be properly disposed of.

Some consideration should be given to the prevailing wind direction when dumpsters are located in a recreation site so that potential odors do not drift into use areas.

# Safety & Sanitation

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Plastic liners should be lightly lifted to check their weight before removing from the container. Double-bagging may be necessary for heavy or torn liners—get help! Watch out for plastic liners containing toilet wastes and/or broken glass. Use heavy work gloves and handle with care. Stay alert to sharp edges on cans, bins, and dumpsters and correct hazards when found. Replace badly damaged cans, bins, and dumpsters and ones that will no longer accept a tight fitting lid. Stabilize dumpsters so they will not turn over.

# CLEANING TABLES



- **Rake (35)**
- **3D Solution (15)**
- **Sandpaper (37)**
- **Double Bucket (12)**
- **Squeegee (45)**
- **Scrub Brush (9)**
- **Sponge (44)**
- **Rags (34)**

# CLASS B—OTHER FACILITIES

Facilities in this group must not be cleaned with tools or materials used for cleaning Class A Facilities, as those tools and materials are contaminated.



Pick up all litter under and around the table. (Wet litter is messy to handle.) Apply a liberal amount of the 3D solution to the table top and benches. Let the detergent work for a minute or so.

Scrub the table top and benches with a scrub brush to remove the soil or stain. Pay attention to possible soiling between the planks.

*CLEANING TABLES*



Use as little water as possible to effectively rinse off the 3D solution and the soil. Too much water will result in a muddy soil condition around and/or under the table.



Squeegee excess rinse water from the table top and benches to allow the table to dry quickly and prevent spotting.



With a sponge or clean rag, wipe excess water from plank edges and wet spots that the squeegee missed. Wet spots will occur under and around the tables from water and cleaning solution splashing or draining off the tables during the cleaning process. These wet spots should be raked through to dissipate them more quickly.

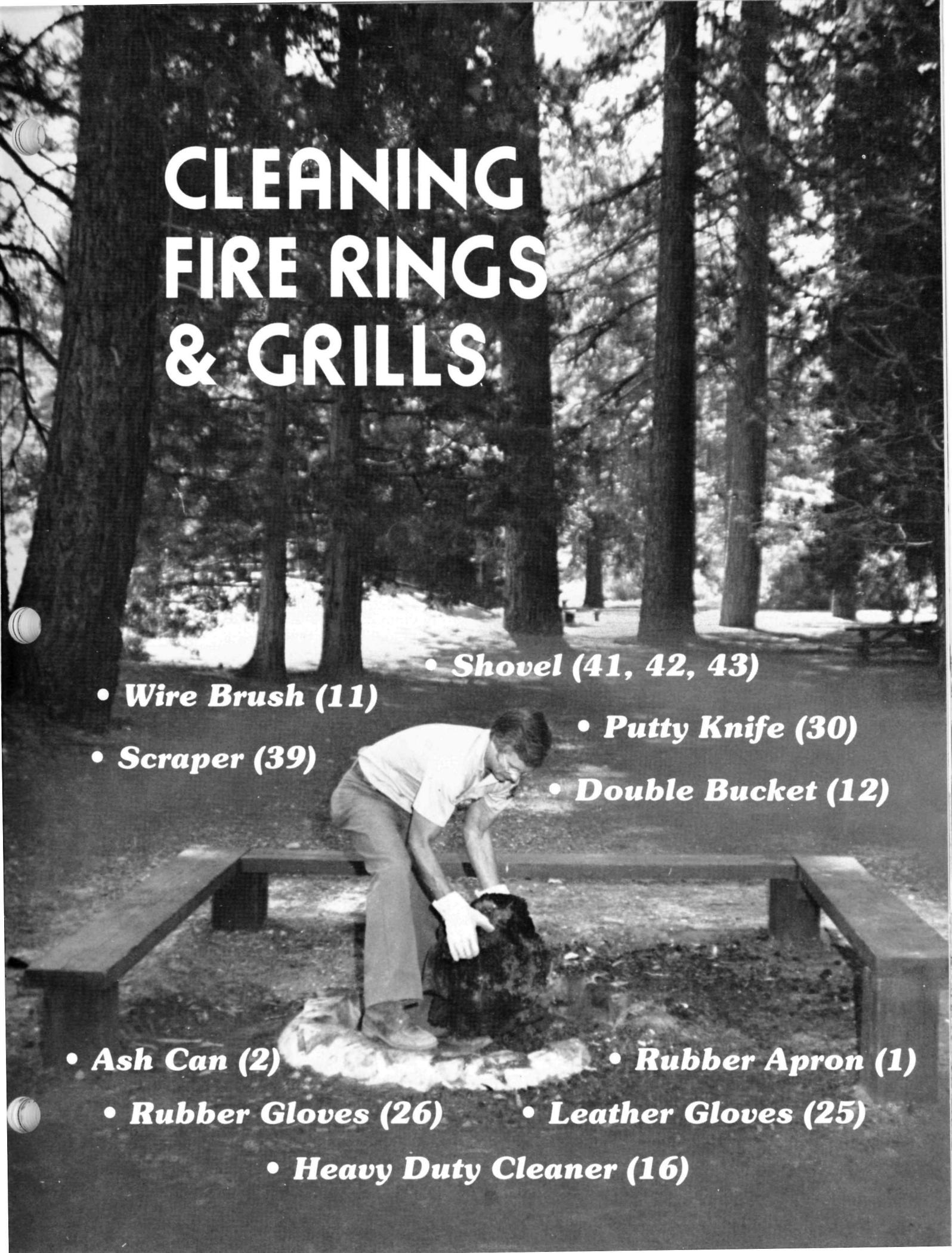
The cleaning procedure for wood table tops and benches is the same for other type table tops and benches (fiberglass and concrete). The only difference is that a stronger cleaning agent may be used because of the sturdier surfaces. However, the ease of cleaning these surfaces usually does not require extra strength cleaning agents.

## Safety & Sanitation

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Watch for splinters, nails, spider webs, and loose planks. Correct deficiencies on the spot. Also, check for knee hazards under the table.

# CLEANING FIRE RINGS & GRILLS

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- A black and white photograph of a man in a light-colored shirt and dark pants, wearing white gloves, leaning over a fire ring in a wooded area. He is cleaning the interior of the fire ring, which is surrounded by a concrete or stone border. The background shows several tall, thin trees and a patch of snow on the ground.
- *Shovel (41, 42, 43)*
  - *Wire Brush (11)*
  - *Putty Knife (30)*
  - *Scraper (39)*
  - *Double Bucket (12)*
  - *Ash Can (2)*
  - *Rubber Apron (1)*
  - *Rubber Gloves (26)*
  - *Leather Gloves (25)*
  - *Heavy Duty Cleaner (16)*

# Fire Rings

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Shovel excess ashes from the pit into a metal container that does not contain burnable garbage. Make sure all charred logs are inside the fire ring or stacked neatly beside it for use.



Rake the area, if necessary, to camouflage any ashes that may have blown from the pit and to leave the site neat and ready for use. Whether or not wood is supplied would be an individual Forest policy.



Remove any makeshift fire rings. Scatter the stones from the site, remove the ashes, and rake the area to remove all signs of the fire ring.



# Grills

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Clean the ashes from the grill before it is half full and place the ashes in a metal container that does not contain burnable garbage. If the ashes are allowed to accumulate, the public has no alternative but to scatter them on the ground, creating a messy site. The ashes contain potassium and potash and could be beneficial as a soil nutrient if properly disposed of away from the public use areas. Further direction on ash disposal should be obtained at each Forest.



Scrape all caked grease and food particles from the grate with a metal scraper. Scrub the grate and concrete pad (if applicable) with a wire brush and heavy duty cleaner. Allow the cleaner to work for several minutes to soften the grease. A rubber apron is recommended to protect clothing from grease and cleaning solution. Thoroughly rinse the cleaner solution and soil from the grate.





Rake around grills, if necessary, to obscure any signs of discarded or spilled ashes.

## Safety & Sanitation

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The heavy duty cleaner will not cause chemical burns, but it is very strong and contact with it should be minimized. Eye protection may be necessary if vigorous wire brushing causes splattering.

Wherever food is being prepared, it is important to remove all traces of cleaner solution.

Remove all toe-trippers from the traffic pattern around the fire rings and grills.

# CLEANING WATER HYDRANTS



- **Rags (34)**
- **Rake (35)**
- **Shovel (42)**
- **Scrub Brush (9)**
- **3D Solution (15)**
- **Bucket(13)**



Remove all litter and other debris from the catch basin. Turn over existing gravel with a shovel to help prevent soaps and silt from ponding water. If ponding of water persists, note the hydrant location and request complete replacement of the gravel.

Clean the entire water hydrant with 3D solution.



Scrub the faucet with a small brush using the 3D solution and then rinse the solution from the faucet.

Remove any accumulated vegetation that could cause clogging of the gravel. Note any drainage problems that could cause silting of the gravel. Repair drainage at this time.

## Safety & Sanitation

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Do not allow the basin rims to get high enough to cause a tripping hazard. Rims constructed below the ground surface will allow run-off to silt in the gravel basin. Check the water flow from the hydrant to see that it is clear and free of foreign matter.

Instructions on the care and maintenance of potable water disinfection equipment are beyond the scope of this publication. Guidelines should be established for each individual system by the Forest.

# CLEANING ROCKS & MASONRY

- **Needle Scaler (48)**

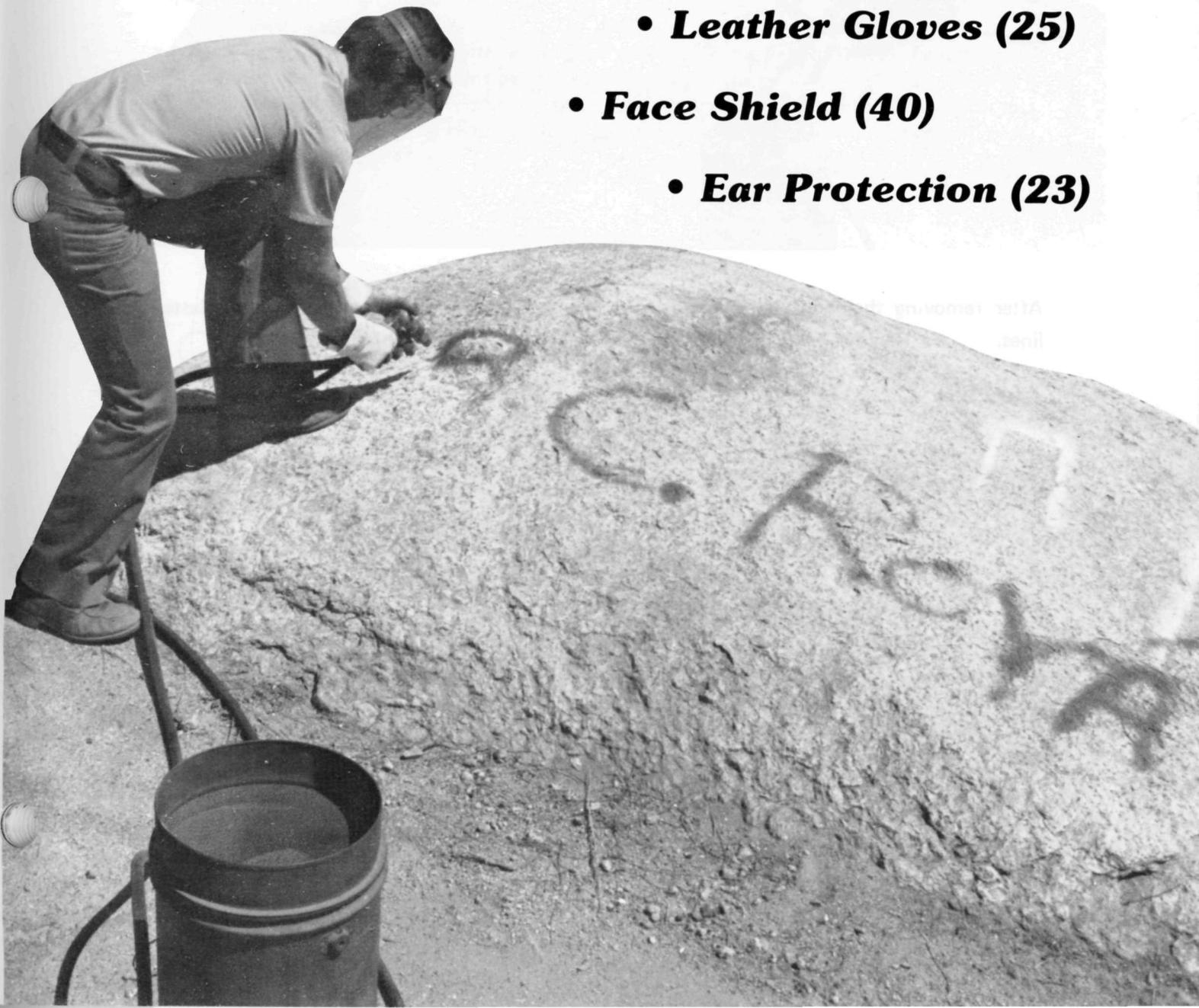
- **Air Compressor (18)**

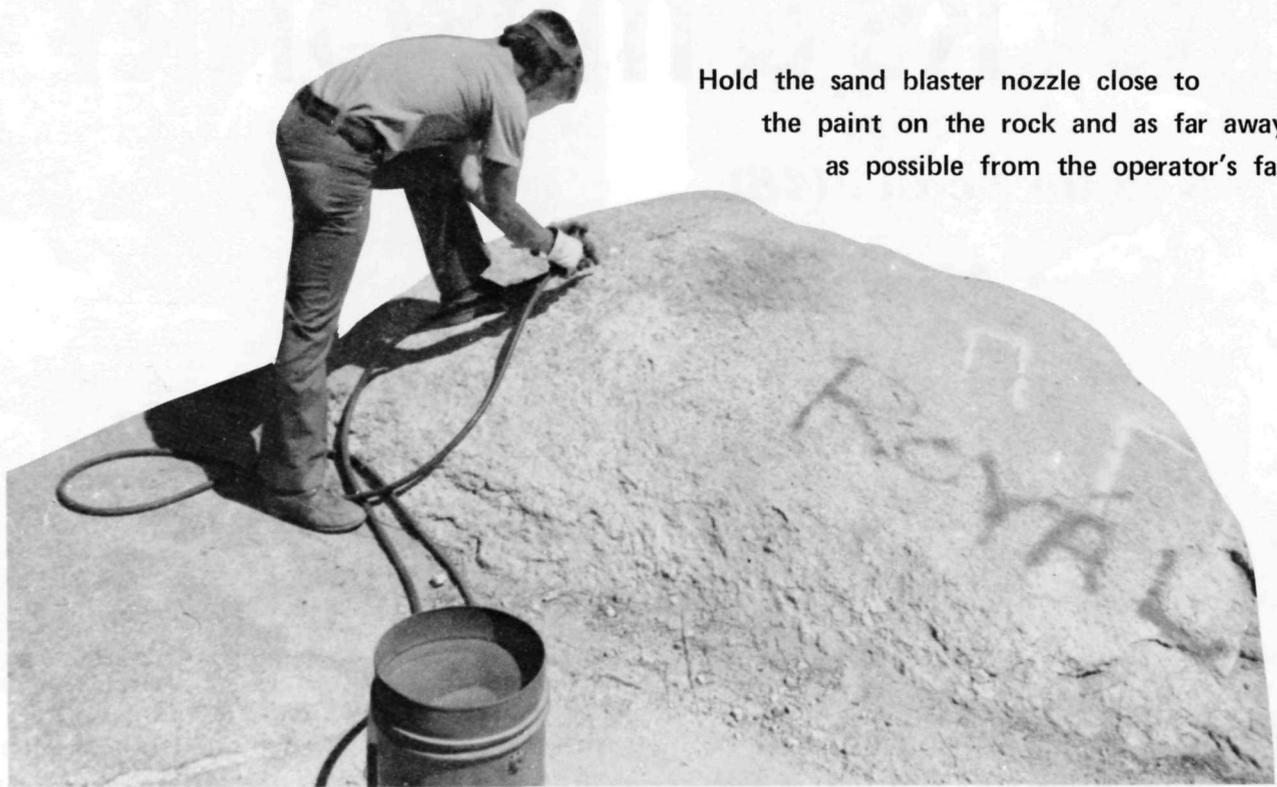
- **Sand Blaster (36)**

- **Leather Gloves (25)**

- **Face Shield (40)**

- **Ear Protection (23)**





Hold the sand blaster nozzle close to the paint on the rock and as far away as possible from the operator's face.

After removing the paint lines, feather the painted area to prevent leaving sand blasted lines. Remove all paint and give a final check for sand blast markings.



# Other Methods

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Suggestions from the field have shown that the least popular method is using an industrial paint remover or oven cleaner.

Recommended methods are:

1. *Using a needle scaler.* The needle scaler removes paint by impacting the surface with steel needles using compressed air. Irregular surfaces are easily cleaned and the needle scaler removes paint from rocks faster and more effectively than sand blasting.
2. *Using a blow torch.* As long as the blow torch is regulated correctly with a blue flame, there is no scorching effect. Heavy gloves and goggles or face mask are recommended.
3. *Using a steam cleaner.* This method is self-explanatory. Gloves and goggles or face mask are also recommended.
4. *Mixing a cement and water paste (slurry) and painting or rolling over the portion of rock that is painted.* The cement paste blends very well with most rocks if it is applied to a total section, such as one side, ridge to ridge, or fracture to fracture, etc. Blend it in to a natural breaking point. The rock should be cleaned as well as possible for the cement paste to adhere.

# Safety & Sanitation

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When using a sand blaster, blow torch or steam cleaner, eye protection and heavy gloves are necessary. Sand blasters, blow torches and steam cleaners are extremely dangerous when two or more people are working together. Face masks and goggles create blind spots so be careful not to injure someone while operating this equipment.

If industrial paint removers are used, remember that they are caustic and will burn. Use rubber gloves and keep water at hand to flush any paint remover that gets on the skin. *Eye protection is necessary.* Old clothes or a rubber laboratory apron should be worn.

# CARE OF RECREATION GROUNDS



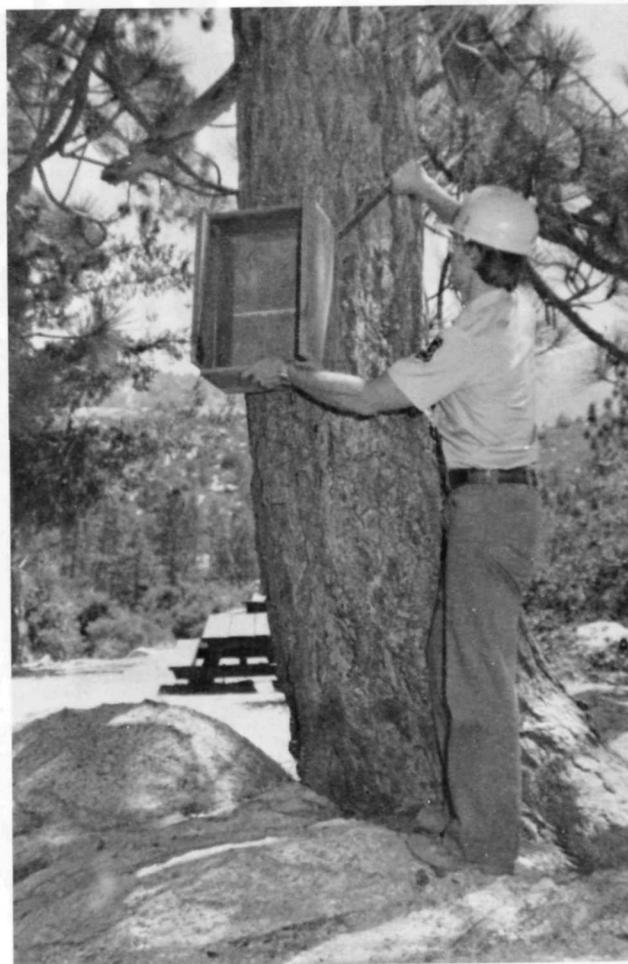
- *Rake (35)*
- *Hammer (27)*
- *Hard Hat (28)*
- *Litter Picker (31)*
- *Plastic Liners (4)*
- *Pruning Saw (38)*
- *Leather Gloves (25)*
- *Shovel (41, 42, 43)*

## CARE OF RECREATION GROUNDS

Pick up litter. Family units need more intensive policing than do buffer areas around them. Pick up even small litter in family units when it detracts from a clean appearance. Pay particular attention to removing broken glass and other safety hazard material. Recheck to see that areas around tables, grills, etc., are raked to smooth soil surfaces. Redistribute loose soil, fill holes, and remove litter not otherwise picked up.

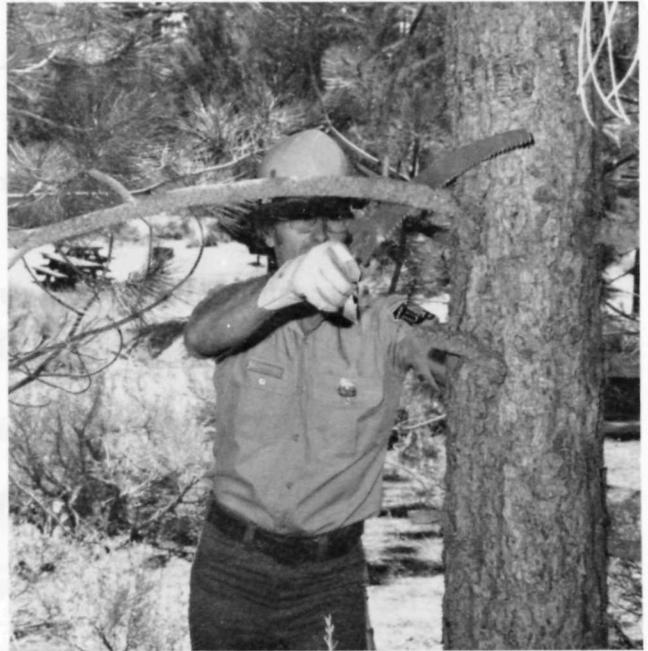
Pick up larger pieces of litter in buffer areas so that litter is not noticeable. Do not perform litter pick-up in family units that are occupied. Pick up all litter in streams and on waterfronts that run through, or are adjacent to the site.

Dismantle and haul off all camper constructed furniture.



Remove all nails and wire in trees and facilities in or adjacent to family units. Protect the tree by placing a wooden block or piece of a tree limb between hammer and tree. Removing old nails is sometimes easier if the nail is first lightly tapped into the tree.

Trim all limb stubs that may be a hazard to visitors in family units or along pathways, with a pruning saw. New technology is showing that improper pruning of trees can be very harmful to the tree. At least one person on the maintenance crew should receive training on proper methods for tree pruning. Trees around a recreation site have to withstand enough abuse without improper pruning contributing to the problem. As a guide, prune diseased and dead branches anytime. Cut dead branches back to the callus collar but do not remove the living collar. Information on tree care can be obtained from USDA Forest Service, Northeastern Forest Experiment Station, Broomall, PA 19008.



Painting of newly pruned limbs is not recommended because recent studies have shown that no benefit exists. However, all freshly cut tree stumps should be treated for Fomeannosus with Borax (technical grade sodium tetraborate decahydrate) at a dosage rate of 1 lb to 50 sq ft of stump area. The best time for the treatment is the same day the tree is cut. Some portions of Region 8 will not require treatment in late spring and summer because the climate prevents the growth of the disease spores.



During the maintenance route, stay alert to performing nonscheduled maintenance such as unplugging culverts, repairing erosion damage, repairing barriers, etc. Sometimes time does not permit these unassigned activities and if not, then record the problem and report it to the supervisor for scheduling.

# Safety & Sanitation

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Whenever tools such as litter pickers, hammers, pruning saws, rakes, etc., are used there is the imminent danger of minor accidents. Always use these tools with utmost caution.

Hard hats are recommended whenever working in wooded areas.

# Signs

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Surveys of recreation facilities indicate the maintenance of signs is a top priority problem. Different materials should be considered for signs to try and offset the vandalism that readily occurs.

- Keep signs bright, patch holes or blemishes, straighten and tighten. Keep posters and paper signs fresh and neat.
- Use as few signs as possible to do the job and only use signs which fit the recreation situation. Place the signs on main travel paths.
- Keep signs on bulletin boards simple, helpful, to the point, and neatly arranged.
- Use sign posts and backboards in developed sites. Do not nail signs on trees, nor post on toilet doors or screens.
- Remove publicly installed impromptu signs and/or other methods of communication. Message boards may be necessary to serve the users' needs.

# PRESSURE WASHERS

- **3D Solution (15)**
- **Double Bucket (12)**
- **Rags (34)**
- **Rake (35)**
- **Sandpaper (37)**
- **Scrub Brush (8)**
- **Squeegee (45)**
- **Pressure Washer(49)**



Pressure washer systems and steam cleaners have become more popular in the last few years. They are an effective means of doing a quality job and the operator does not have the laborious task of hand-cleaning. Although pressure washers have their place, some items need to be considered before purchasing them.

- Some pressure washer systems need a hose hook-up or other pressure water system.
- Location of facilities make it inconvenient or impossible to get pressure equipment to the site.
- Excess soap and water used on picnic tables and grills may cause a muddy condition and require more time eliminating this condition than time saved in cleaning.
- The configuration of some surfaces may cause cleaning solution to splash back to the operator. Eye protection should be considered.
- Cracks and crevices in buildings may collect dirty soapy water during pressure application.
- Surfaces of some material may be porous and soak up excess water.
- Floor drains may be inadequate or nonexistent and excess water used in pressure cleaning may be a nuisance to clean up or may leave a muddy condition if squeezed out the door. If the floor drains are connected to the sewer system the chemicals used may be harmful to the sewage treatment process.
- Confined space may be a problem to effectively operate the pressure wand.

The frequency of using the pressure washer will depend on the schedule set up by the individual Forest. For instance, water hydrant posts do not need to be cleaned as often as toilets, although the faucet assembly of the hydrant should. It only takes one person to create the need for cleaning. Any established cleaning schedule should be used as a minimum guideline and more frequent cleaning should be on an as-needed basis.

All toilet paper should be removed or covered with plastic before using a pressure washer. Space deodorant containers may also have to be covered if they are low enough to be in the splash zone.

The initial tasks of picking up litter, raking, dusting horizontal surfaces, sweeping, etc., all have to be done prior to using the pressure washer. Tools and materials previously addressed are adequate to accompany the pressure washer. These items will not be readdressed.

# Water Hydrants

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The basic procedures of removing the litter and agitating or replacing the gravel in the catch basins remain the same. Using a 3D solution, spray the entire hydrant and allow the solution to work for a few minutes, then rinse. Polish and dry the faucet.

# Picnic Tables

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Apply a 3D solution with the pressure wand to the top and benches being careful not to use an excessive amount. Let stand for a few minutes to allow the detergent action to take place. Stubborn stains can generally be removed with a second application using the wand's full pressure.



Rinse 3D solution from the table and be certain that all stains are removed by hand-cleaning. Squeegee excess rinse water from table top and benches and wipe with a clean rag to get squeegee skips and water on plank edges.

# Grills

Thoroughly clean all ashes from the grill and scrape off the excess grease. Apply a degreasing solution with the pressure wand and allow it to work for a few minutes. While still using a degreasing solution, place the tip of the pressure wand close to the grill to obtain the maximum pressure and as quickly as possible, remove the remaining grease, then rinse. All pressure systems are different and the length of the wands are different so care must be taken to see that the solution is not splashed back on the operator. Eye protection should be considered.



Rake around the grill, if necessary, to loosen soil and speed the evaporation of excess water.

# Vault Toilets

A pressure washer may not be able to remove the abrasive marks on the outside of the vault toilet riser caused by people rubbing their heels against it or kicking it. However, it is an excellent means of cleaning the hinge area and other hard-to-clean areas. If the pressure washer is used to clean the inside of the toilet riser, direction should be obtained from your supervisor concerning the type of cleaner to be used since daily cleaning could add an excessive amount of chemicals to the vault and could be harmful to further treatment of the waste. If biological products are used for odor control, then certain cleaning solutions could be harmful to their action.



Spray the outside of the toilet riser with a 3D solution giving special attention to the seat hinge area and the crack between the riser flange and the floor.

Start spraying the walls from the bottom up and allow the solution to work for a few minutes. Rinse the walls starting from the top down and rinse the toilet riser. Wipe or squeegee the walls to keep them from streaking.



Remove by hand the stains or smears not removed by the pressure washer.

Dry mop, squeegee or wet vacuum the floor and leave as dry as possible. Do not throw mop bucket contents into the vault unless approved by your supervisor.

Replace toilet paper and space deodorants as necessary.



# Flush Toilets

The interior toilet rim and bowl are difficult to clean using a pressure washer. Use a long-handled brush with a toilet bowl cleaner (approved by Engineering) and thoroughly clean up under the rim in the throat of the bowl. Spray a 3D solution on the exterior of the toilet with special attention given to the seat hinge area.



Spray the walls with a 3D solution starting from the floor up. Allow the solution to work for a few minutes on the toilet and the walls and then rinse starting from the top down.

Dry mop, squeegee or wet vacuum the floor and leave as dry as possible. Do not throw mop bucket contents into the toilet unless approved by your supervisor.



Wipe or squeegee the walls to keep them from streaking. Polish and dry the exterior of the toilet and flush valve.

# Urinals

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Urinals are cleaned using the same method as the toilets. The lower portion of the urinal is curved in such a manner that the cleaning solution from the pressure washer can adversely splash out into the room and potentially on the operator. The lower bowl area may have to be cleaned by using a long-handled brush with an appropriate cleaner.

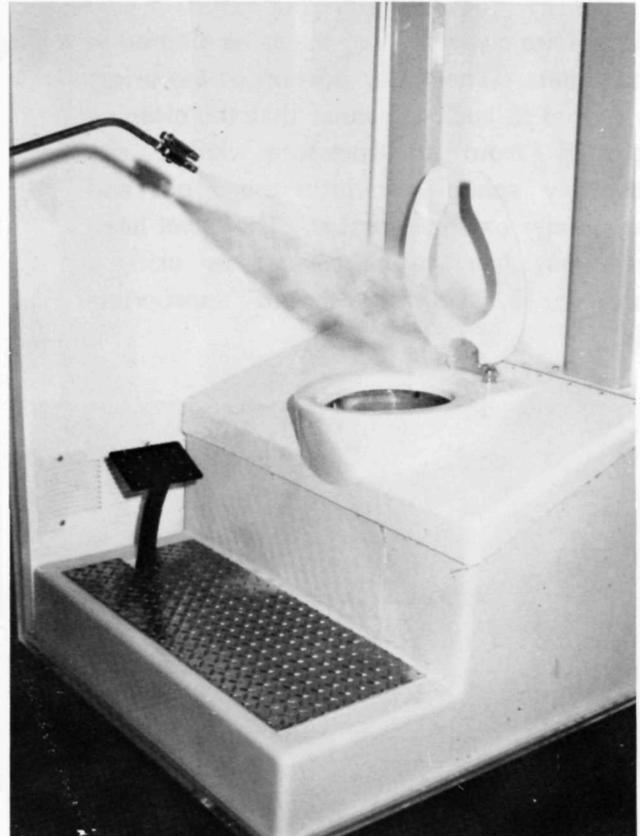


Polish and dry all exterior surfaces including the flush valves.

# Chemical Recirculating Toilets

The space confinement in chemical recirculating toilets may cause the spray of the pressure washer to splash back onto the operator.

Flush the toilet a few times to loosen any fecal matter that may be adhering to the bowl area. Apply a 3D solution with the pressure wand to all toilet surfaces and allow the solution to work for a few minutes.



Use the same 3D solution on the walls by starting at the bottom and working up. After the solution has had a few minutes to work, rinse entire compartment using as little water as possible.

# APPENDIX I

## Tools & Materials

Squeegee or wipe the walls and the outer toilet area. Leave polished and dry.

Replace toilet paper as needed.

If drainage within the building is not an integral part of the structure than drainage modifications will have to be made prior to using a pressure washer system.



## Safety & Sanitation

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Pressure washers and/or steam cleaners operate with very high pressures and/or pressure with heat. Extreme care should be taken when operating this equipment in confined spaces. Also remember that cleaning solutions or steam can be splashed back on the operator from irregular surfaces. Protective measures should be taken.

Previously mentioned precautions under each section also apply to this section.

# APPENDIX I

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## Tools & Materials

The following materials are listed as they appear in GSA supply catalogs and schedules (when applicable). GSA numbers are not included because they change too often. The numbers preceding the following list of tools and materials are keyed to the tasks for which they are required. Numbers following each item identify sources of supply, which are listed in appendix II.

- (1) APRON, Laboratory                      Synthetic rubber coated on both sides should be adequate for most common cleaning jobs. (1)
- (2) ASH CAN                                      A 10-gallon size is adequate. The material of the can must be nonflammable. (1)
- (3) BAGS, Waste receptacle                Polyethylene bags are now available only by the box. The size that fits the average Forest Service garbage can is 19½ x 14½ x 38½ inches. Field experience has shown that a 3 mil thickness or greater prevents double-bagging. (1, 2)
- (4) BAGS, Waste receptacle                Most any thickness is acceptable because items picked up are generally light in weight. The flat 24 x 24-inch polyethylene bags will fit the litter carrier. Tall kitchen-can bags (2 x 2½ ft) found in most markets are also acceptable. (Local supply or 1)
- (5) BROOM, Upright                            Corn fiber brooms are adequate. The standard length broom (40 inches) is best for most uses. (1)
- (6) BROOM, Whisk                             Whisk or hearth size brooms with corn fibers are useful for areas inaccessible to larger brooms. (1)
- (7) BRUSH, Dusting                            A bakery and counter brush with 100 percent horsehair bristles is the best all around brush for dusting. A medium sized paint brush can be used for small crevices. A ceiling and wall brush with a long handle is handy to dust the cobwebs from the rafters. (1)

- (8) BRUSH, Scrub The household type with white tampico fibers is adequate. (1)
- (9) BRUSH, Chassis and running gear Palmetto or polypropolyene bristles are adequate. The long handle makes it easier to reach in garbage cans. (1)
- (10) BRUSH, Sanitary The curved brush head with 100 percent horse-hair is the most commonly used, but other styles are adequate—some may even prefer the swab, toilet bowl type. (1)
- (11) BRUSH, Wire The curved handle steel wire scratch brush or the shoe handle for cleaning pipe threads and welds are adequate for the grills and other miscellaneous uses. (1)
- (12) BUCKET, Double The most convenient is the two-compartment plastic pail. Second choice would be two separate pails. (Local supply or 3)
- (13) BUCKET (Pail) The 12-quart size in either metal or plastic is adequate. (Local supply or 1)
- (14) BUCKET and wringer The wringer and bucket should be heavy duty because of constant handling and use. An important consideration is that the wringer and bucket be compatible with the mop. (1)
- (15) CLEANSERS, 3-D Solution A combination of a disinfectant, deodorant, and detergent and is excellent for most cleaning tasks that will be encountered. The strength of the mixed solution or commercial product can be varied for most cleaning conditions. *Keep the solution clean to maintain effectiveness—see appendix III.* (1, 4, 5, 7)
- (16) CLEANSERS, Cleaning compound solvent This heavy duty cleaner is for removing grease. A number of products exist for this purpose—see appendix III. (1, 4, 5, 7)

- (17) **CLEANSERS, Toilet bowl** All cleaning compounds used for cleaning toilet bowls (water flush, chemical recirculating, compost, or vault) should be approved by recreation management to prevent possible upset of sewage treatment processes. (1, 4, 5, 7).
- (18) **COMPRESSOR, Air** The main requirement of the air compressor is to be compatible with the sand blaster for effective removal of paint on rocks. (*Local supply, local rental or 1*)
- (19) **CUP, Measuring** Any one- to two-cup plastic measuring cup is adequate. (*Local supply*)
- (20) **DEODORANTS, Toilet** These are space deodorants designed to be installed high on the wall of restrooms. Vandalism can be discouraged by placing the dispensers out of sight. Be sure to get the proper diffuser for the deodorant you plan to use.
- AirKem, Red label solidaire, Time-Aire and Stick-Ups (4)
- Woodlets, LaRonde (6)
- Zep, Meter Mist Dispenser with Zep odor neutralizer (7)
- (21) **DEODORANTS, Toilet vault** Two products have maintained a record of successful use. The first is Fresh Care from AirKem. This is an odor counteractant (combines with odor molecules to neutralize them) developed specifically for open pit or vault toilets. It is a liquid that is mixed with a light paraffin oil carrier and sprayed on odor-producing surfaces (waste mass, vault or pit walls). Weekly treatment may be expected (or more often) depending on the amount of use and temperature. (4)
- The second is Zep's "Mr. Big" block. This is a 20-lb, odor-masking block designed to hang in the vault under the floor adjacent to the toilet riser hole. This block may last an entire season if the weather is cool. However, it should be checked monthly for replacement due to varying weather conditions. (7)

- (22) **DUSTPAN, Household style** A simple steel pan is adequate. (1)
- (23) **EAR PLUGS** Non-toxic expandable foam ear plugs are washable and reusable. (1)
- The headset ear protection may be better to help keep the sound out of your ears, but they may not be compatible with the face shield. (1)
- (24) **FILE, Half-round** Bastard cut. (1)
- (25) **GLOVES, Leather** Experience will dictate the style and thickness of the glove to perform the various tasks. (1)
- (26) **GLOVES, Rubber** Rubber gloves should not be so thick and bulky that they will hinder a person in performing a task. They also should not be so thin that they will easily tear. A cloth-lined neoprene is recommended. (1)
- (27) **HAMMER, Hand** The carpenter's curved claw is the most versatile. (1)
- (28) **HELMET, Construction workers** The brimless helmet with a visor sunshield is the most common. (1)
- (29) **INSECTICIDE** Various insects around the country require different types of insecticides. Consult with reputable manufacturers before using any insecticide. (Local supply, 1, 4, 5, 7, or 8)
- (30) **KNIFE, Putty** The semiflexible type is most commonly used. (1)
- (31) **LITTER PICKER** The litter picker can be a commercial or a self-made product as long as it assists recreation personnel in removing the litter. (9)
- (32) **MOP** Almost any mop will be adequate. Be sure the mophead is compatible with the mop bucket and wringer. (1)

- (33) PLIERS** The most commonly used are 8-inch with wire skinner. (1)
- (34) RAGS, Wiping** Only highly absorbant rags should be used. (Local supply or 1)
- (35) RAKE, Garden** The bow style iron garden rake is recommended. (1)
- (36) SAND BLASTER** The sand blaster should be small enough for one- or two-man operation. (Local supply, local rental or 1)
- (37) SAND PAPER** For most situations, a medium sand paper is recommended. (Local supply)
- (38) SAW, Pruning** A small saw with a blade approximately 18 inches long is recommended for the miscellaneous pruning required. (1)
- (39) SCRAPER** A small metal scraper a little larger than a putty knife is recommended for scraping excess food and grease accumulations on grills. (Local supply)
- (40) SHIELD, Face** A clear plastic protective face shield 9 inches long by 18 inches wide is recommended. (1)
- (41) SHOVEL, D-handle** The smallest square point is recommended. (1)
- (42) SHOVEL, Long-handle** The shorter round point is recommended. (1)
- (43) SHOVEL, Hand (Fire)** This small hand shovel or scoop may be preferred for removing ashes from fire grills. (1)
- (44) SPONGE, Cellulose** The coarse texture is recommended. For more versatile use, sponges with an abrasive backing is recommended. (1)

- (45) SQUEEGEE The small hand squeegee for windows is recommended. (1)
- (46) TOILET, Paper Toilet paper should be carefully selected depending on the type of toilet being used. The Forest Service utilizes vault, pit, compost, recirculating, minimum flush, oil flush, standard flush, etc. and the requirements of each system vary. (Local supply or 1)
- (47) TOILET, Seat cover If paper seat covers are used, consider the possibility of excess paper products clogging sewer lines, and low volume toilets, adding too much cellulose for compost toilets and hindering the pumping of vault, pit, and chemical recirculating toilets. (1)
- (48) VON ARX, Needle scaler The needle scaler uses a number of small steel rods that alternately impact the surface using compressed air as the driving force. (11)
- (49) WASHER, Pressure The former Coxwell Reel Mobile illustrated in the November 1971 Equipment Development and Test Report 2300-8 is no longer being produced. (Local supply, or 10)
- (50) WRENCH, Open-end adjustable The 10½-inch size is adequate. (Local supply or 1).

# APPENDIX II

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## Sources of Supply

(1) **GSA Stock Catalog and Federal Supply Schedule.**

(2) **Ar-Bee Transparent Products, Inc.**

4880 West Grand Avenue  
Chicago, Illinois 60639

(3) **Lustro-ware**

Division of Borden Chemical-Borden Inc.  
Columbus, Ohio 43223

(4) **Air Kem Division**

Airwick Industries, Inc.  
Carlstadt, New Jersey 07072

(5) **S.C. Johnson & Son, Inc.**

Racine, Wisconsin 53403

(6) **Woodlets, Inc.**

90 Chenango  
Buffalo, New York 14213

(7) **Zep Manufacturing Co.**

1310 Seaboard Industrial Blvd., N.W.  
Atlanta, Georgia 30318

(8) **Crown Chemicals (Malvex Fly Bait)**

4995 North Main Street  
Rockford, Illinois 61101

(9) **J.J. Rams, Inc.**

Robert D. Sisco Associates  
P. O. Box 3  
Livingston, New Jersey 07039

(10) **Mecanaids Inc.**

403 Kennedy Blvd.  
Somerdale, New Jersey 08083

**L&A Products, Inc.**

655 West County Road E  
St. Paul, Minnesota 55112

-Continued-

**Advance Machine Company**  
Spring Park, Minnesota 55384

(11) **The Marindus Co., Inc.**  
P. O. Box 663  
Englewood, New Jersey 07631

(12) **James Aslin**  
4076 Wildwood Drive  
North Bend, Oregon 97459

# APPENDIX III

## Cleaning Compounds

A 1978 Forest Service survey showed that approximately 100 different cleaning products were being used within 400 Ranger Districts. With this number of products being used, it was apparent that comparison testing of the products was impractical.

Five cleaning products used more than others are shown in the chart below. The numbers represent a percentage of use of a given material. For example, 292 Districts listed products used for cleaning "finished wood," 22 of them said they used scouring powder. Therefore, scouring powder, for use on "finished wood" received a rating of  $22 \div 292$ , or 7.5 percent.

	Natural wood	Finished wood	Concrete	Painted concrete	Fiber-glass	Stainless steel	Porcelain
Air Kem A-33	24.6	27.2	30.9	28.5	34.6	28.6	21.7
Pine Oil Disinfectant	16.4	14.4	18.2	15.4	11.1	11.4	8.3
Pine Sol		6.5	9.7	6.7	6.5	5.5	
Scouring Powder	6.7	7.5	8.5	5.5	10.5	14.9	34.1
Bleach			6.4				

A brief description of each of the five cleaners follows:

### 1. Air Kem A-33

A-33 is a combination detergent, disinfectant, and odor counteractant. Active ingredients in this product are N-alkyl dimethyl benzyl ammonium chlorides, tetrasodium ethylene diamine tetracetate, and essential oils.

It is recommended by its manufacturers for use on hard surfaces such as tile, porcelain, stainless steel, glass, vinyl flooring, and washable paint.

The manufacturer recommends A-33 for use on all hard-sealed surfaces. Although literature on A-33 does not discuss using it on unfinished wood surfaces, according to the survey it is the most widely used product within the Forest Service for cleaning natural wood. When asked specifically about this use, the manufacturer replies that it will not harm any unfinished wood surface that is not harmed by water. A-33 is available in two

forms—as a liquid in 1-gallon bottles, 5-gallon pails and 30- and 50-gallon drums; and as a powder, which is available in cartons of ½-ounce or 1½-ounce packets. The liquid is diluted at a ratio of 2 ounces per gallon of water to make a cleaning solution, and the dry powder is used in a solution of 1 ounce of powder to 2 gallons of water.

Undiluted liquid A-33 is a moderate irritant to skin and eyes and therefore should be handled with care. However, the manufacturer states that it is not a strong enough irritant to require the use of gloves and face mask when handling, and that when diluted to suggested working strength, it is not irritating at all—even to the eyes. There are over 120 dealers of Air Kem Nationwide. Consult your yellow pages.

## **2. Pine Oil Disinfectant**

This is a disinfectant detergent composed primarily of soaps and pine oil (distilled pine resin). Pine oil is recommended by the manufacturer for all hard surfaces including wood, concrete, metal, and ceramic, normally found in restrooms.

Pine oil disinfectant is available through GSA. It is listed in the GSA “Industrial Products” supply catalog under “Disinfectant, Germicidal and Fungicidal,” and is available in quart, gallon, and 55-gallon containers.

## **3. Pine-Sol**

This is another disinfectant detergent composed primarily of soaps and pine oil. It is recommended for use on all hard finished surfaces, both natural and painted. The manufacturer does state, however, that if used on rubber or asphalt tile, it should be rinsed immediately. The manufacturer also states that it should be kept away from food, from heat, sparks and flame, and that containers should be rinsed before they are discarded.

Pine-Sol is not available through GSA. It is sold through retail outlets, such as supermarkets, in 1-quart containers. By ordering through an American Cyanamid wholesaler, it is also possible to obtain Pine-Sol in 1-gallon containers.

## **4. Scouring Powder**

Composition of different brands of scouring powder varies, but all apparently contain chemical cleaning agents, such as the sodium phosphate and sodium hypochlorite, and also abrasive polishing agents such as pumice.

Scouring powder is useful in removing soil from most hard surfaces. The user should always read instructions on the container before using any scouring powder, as some brands warn against mixing with other types of cleansers, and some warn that use on certain surfaces may cause damage.

Scouring powder can be purchased from GSA, and is also available through retail sources under various trade names.

## 5. Bleach

Bleach is sold commercially under many trade names and is available through GSA as "sodium hypochlorite solution." It is an excellent sanitizer, but is not a particularly good cleaning agent. Better overall results can usually be obtained by using a product that is intended to be both a disinfectant and a detergent.

The specific products discussed here—Air Kem A-33, Pine Oil Disinfectant, and Pine-Sol were identified by name only because they happened to be the most widely used. There may be similar, less widely known, products that will do as good a job in cleaning.

For the type of cleaning involved in campgrounds and picnic sites, products other than scouring powder and bleach have been divided into four broad categories. These are:

- Pine Oil Cleaners
- Quaternary Ammonium Cleaning/Disinfecting Solutions
- Alkaline Cleaners and Sanitizers
- Acid Cleaners and Sanitizers.

Lists of products falling into each of these categories are shown in the lists at the end of this appendix.

Pine Oil Cleaners and Quaternary Ammonium Cleaners ("QUATS") are useful as all-purpose cleaning and disinfecting agents.

Alkaline cleaners are particularly effective in removing oils and greases.

Acid cleaners are effective in removing scale deposits from concrete and tile.

As a general recommendation, it is suggested that either a pine oil cleanser/disinfectant or a "QUAT," plus scouring powder, be purchased for maintenance cleaning of campgrounds and picnic sites. In most cases, these are all that will be needed. Acid- or alkaline-type cleaners may be added if specific conditions require them.

## Pine Oil Cleaners

<u>PRODUCT</u>	<u>MANUFACTURER</u>
<b>Pine Oil Disinfectant</b>	<b>Lighthouse for the Blind</b> Houston, TX 77019
<b>Pine-Sol</b>	<b>American Cyanamid Co.</b> Wayne, NJ 07470
<b>Pineroma</b>	<b>Continental Chemical Corp.</b> P. O. Box 994 Terre Haute, IN 47808
<b>Chlorosan</b>	<b>Los Angeles Chemical Co.</b> 4545 Ardine South Gate, CA 90280

## Quaternary Ammonium Cleaners

<u>PRODUCT</u>	<u>MANUFACTURER</u>
<b>A-33</b>	<b>Air Kem Division</b> Airwick Industries, Inc. Carlstadt, NJ 07072
<b>Sani-Kleen</b>	<b>West Chemical Co.</b> 990 South 7th West Salt Lake City, UT 84104
<b>Germicidal Detergent</b>	<b>Portion-Pac Chemical Corp.</b> 360 East Grant Chicago, IL 60611

# Alkaline Cleaners

<u>PRODUCT</u>	<u>MANUFACTURER</u>
A-125	<b>Air-Kem Division</b> Airwick Industries, Inc. Carlstadt, NJ 07072
Zep-O-Ban E	<b>Zep Manufacturing Co.</b> P. O. Box 2015 Atlanta, GA 30301
Environ	<b>Vestal Laboratories</b> 4963 Manchester Avenue St. Louis, MO 63110

# Acid Cleaners

<u>PRODUCT</u>	<u>MANUFACTURER</u>
LpH	<b>Vestal Laboratories</b> 4963 Manchester Avenue St. Louis, MO 63110
Brawn	<b>Air Kem Division</b> Airwick Industries Carlstadt, NJ 07072
Porcelain Cleaner	<b>Thoro Products Co.</b> 6611 West 58th Place Arvado, CO 80002

## **EQUIPMENT DEVELOPMENT AND TEST**

The Forest Service's Equipment Development and Test (ED&T) program, conducted by two Equipment Development Centers (San Dimas, Calif., and Missoula, Mont.), provides systematic application of scientific knowledge to create new or substantially improved equipment, systems, materials, processes, techniques, and procedures that meet the objectives of advanced forest management and utilization in the United States. The ED&T effort, featuring Mechanical Engineering activities, encompasses projects in forest engineering, aviation and fire management, recreation, timber, range, wildlife, occupational safety and health, forest insect and disease, and forest residues to enable forest work to be performed more efficiently, at less cost, with minimum hazard.

As needs for field development services are identified and defined, the Centers determine if already available commercial products are suitable as is or if they require modifications necessitated by the forest environment. On the other hand, sometimes needs can only be met by the Centers taking advantage of the latest technology to create new concepts through a step-by-step product development program. These developments are typically achieved by active ED&T involvement with disciplines found throughout the Forest Service. The new equipment is field tested and demonstrated and user feedback is obtained to evaluate results. The role of the Centers is not considered complete until project output is implemented in the field.



Our goal is to keep our recreation sites in a neat, safe, and sanitary condition so that visitors will not be distracted from their recreation pursuits by poor housekeeping. Recreation facilities should always be clean and neat regardless of their age or condition. We must continue to live with many old improvements but they can still be kept clean and neat.