

UTILITY

MAINTENANCE STANDARDS

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NATIONAL PARK SERVICE

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WATER SUPPLIES

Maintenance is considered the method of retaining a facility in as near to its original condition as practical and does not take into consideration any improvements or betterments over original design, except those costing less than \$3,000.

Reference to inspections (daily, weekly, monthly, etc.) connotes the potential or frequency that a supervisor should have the opportunity to be exposed to possible deficiencies as a routine and does not necessarily refer to formal inspections.

Level I

1. Continuous adequate flow into system.
2. Watershed free of bacteriological and physical contaminants.
3. Raw water sample submitted for chemical bacteriological analysis each year.
4. Static and pumping levels in wells checked and recorded daily.
5. All mechanical and electrical equipment in proper operating condition and presents good appearance.
6. Reservoir openings and vent screening tight. Steel reservoirs free of corrosion and painted.
7. Reservoirs free of sediment and algae or other plant growth.
8. Residual chlorine at several points in system measured and recorded daily.
9. Air relief valves and other appurtenances in first class operating condition. Valves maintained to provide rapid sectionalizing. Fire hydrants have adequate volume and pressure. Cathodic protection devices operating to prevent electrolysis. Minimum losses from entire system.
10. Water samples submitted for bacteriological examination every two weeks. (Minimum large systems)

WATER SUPPLIES

Level I

11. Distribution systems and reservoirs maintained free of accumulated sediments.
12. Seasonal systems operated to prevent frost damage.
13. Water meters tested annually for accurate flow measurement. Distribution system inspected annually for evidence of corrosion, tuberculation, and encrustation.
14. Chlorination equipment and other chemical feeders inspected daily for proper operation and rate of feed. Chlorine gas cylinders weighed daily and pertinent data recorded. Gas and other safety equipment inspected daily.
15. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted and color coded.

WATER SUPPLIES

Level II

1. Continuous adequate flow into system.
2. Watershed free of bacteriological and physical contaminants.
3. Raw water sample submitted for chemical and bacteriological analysis each year.
4. Static and pumping levels in wells checked and recorded daily.
5. All mechanical and electrical equipment in proper operating condition and presents good appearance.
6. Reservoir openings and vent screening tight. Steel reservoirs free of corrosion and painted.
7. Reservoirs free of sediment and algae or other plant growth.
8. Residual chlorine at several points in system measured and recorded daily.
9. Air relief valves and other appurtenances in first class operating condition. Valves maintained to provide rapid sectionalizing. Fire hydrants have adequate volume and pressure. Cathodic protection devices operating to prevent electrolysis. Minimum losses from entire system.
10. Water samples submitted for bacteriological examination monthly.

WATER SUPPLIES

Level II

11. Distribution systems and reservoirs maintained free of accumulated sediments.

12. Seasonal systems operated to prevent frost damage.

13. Water meters tested annually for accurate flow measurement. Distribution system inspected annually for evidence of corrosion, tuberculation and encrustation.

14. Chlorination equipment and other chemical feeders inspected semi-weekly for proper operation and rate of feed. Chlorine gas cylinders weighed semi-weekly and pertinent data recorded. Gas and other safety equipment inspected semi-weekly.

15. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted and color coded.

WATER SUPPLIES

Level III

1. Continuous adequate flow into system.

2. Watershed free of bacteriological and physical contaminants.

3. Raw water sample submitted for chemical and bacteriological analysis each year.

4. Static and pumping levels in wells checked and recorded daily.

5. All mechanical and electrical equipment in proper operating condition and presents good appearance.

6. Reservoir openings and vent screening tight. Steel reservoirs free of corrosion and painted.

7. Reservoirs free of sediment and algae or other plant growth.

8. Residual chlorine at several points in system measured and recorded daily.

9. Air relief valves and other appurtenances in first class operating condition. Valves maintained to provide rapid sectionalizing. Fire hydrants have adequate volume and pressure. Cathodic protection devices operating to prevent electrolysis. Minimum losses from entire system.

10. Water samples submitted for bacteriological examination monthly.

WATER SUPPLIES

Level III

11. Distribution systems and reservoirs maintained free of accumulated sediments.

12. Seasonal systems operated to prevent frost damage.

13. Water meters tested annually for accurate flow measurement. Distribution system inspected annually for evidence of corrosion, tuberculation and encrustation.

14. Chlorination equipment and other chemical feeders inspected weekly for proper operation and rate of feed. Chlorine gas cylinders weighed weekly and pertinent data recorded. Gas and other safety equipment inspected weekly.

15. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted.

SEWERAGE SYSTEMS

Level I

1. Collection systems maintained free of interruptions in service due to obstructions and root growth. Lines flushed monthly. Copper sulphate or comparable chemical introduced monthly. Lines power-augered annually.

2. Ground water infiltration held to maximum of 5,000 gallons per mile of line per day.

Manholes tight and clean. Steps solid for personnel safety. Covers tight and free of corrosion.

3. Treatment plants neat, clean, well painted and free of obnoxious odors. Plant effluents will cause no pollution of sub-soil or water bodies. Solids disposed of consistent with bacteriological quality. *Insect breeding non-existent*. Testing conducted weekly to determine plant operating efficiencies with results recorded.

4. Bar screens and grit chambers free of debris. No surface sludge accumulation in septic and Imhoff tanks. Concrete surfaces painted to control deterioration. Metal surfaces painted to control corrosion. Oxidation pond levels proper for aerobic decomposition. No ponding in filters.

SEWERAGE SYSTEMS

Level I

5. Sludge drawn from septic tanks, Imhoff tanks, and clarifiers when capacity is one-half full. Sludge removed from drying beds when well-dried. Bed surfaces clean and scarified after sludge removal. Underdrain systems in filters and sludge drying beds operating.

6. Chlorination equipment inspected daily for proper operation and rate of feed. Chlorine gas cylinders weighed daily and pertinent data recorded. Gas masks and other safety equipment inspected weekly.

7. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted and color coded.

8. Manufacturer's instructions for all equipment conspicuously posted and followed.

9. Spray fields free of excessive plant growth. Spray nozzles clean and free-flowing.

10. Sanitary waste disposal stations clean and operable by visitors whenever needed.

11. Sewage lagoons (oxidation pond) free of odor and algae growth. Weeds and plant growth kept from water's edge and mowed on slopes. Effluent analyzed monthly to determine bod reduction. Dikes free of leakage. Solid accumulation removed from splash pan area of inflow line annually. All lagoons properly signed.

SEWERAGE SYSTEMS

Level II

1. Collection systems maintained free of interruptions in service due to obstructions and root growth. Lines flushed every two months. Copper sulphate or comparable chemical introduced every two months. Lines power-augered annually.

2. Ground water infiltration held to maximum of 5,000 gallons per mile of line per day.

Manholes tight and clean. Steps solid for personnel safety. Covers tight and free of corrosion.

3. Treatment plants neat, clean, well painted and free of obnoxious odors. Plant effluents will cause no pollution of sub-soil or water bodies. Solids disposed of consistent with bacteriological quality. Insect breeding non-existent. Testing conducted semi-monthly to determine plant operating efficiencies with results recorded.

4. Bar screens and grit chambers free of debris. No surface sludge accumulation in septic and Imhoff tanks. Concrete surfaces painted to control deterioration. Metal surfaces painted to control corrosion. Oxidation pond levels proper for aerobic decomposition. No ponding in filters.

5. Sludge drawn from septic tanks, Imhoff tanks, and clarifiers when capacity is three-quarters full. Sludge removed from drying beds when well-dried. Bed surfaces clean and scarified after sludge removal. Underdrain systems in filters and sludge drying beds operating.

SEWERAGE SYSTEMS

Level II

6. Chlorination equipment inspected daily for proper operation and rate of feed. Chlorine gas cylinders weighed semi-weekly and pertinent data recorded. Gas masks and other safety equipment inspected weekly.

7. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted and color coded.

8. Manufacturer's instructions for all equipment conspicuously posted and followed.

9. Spray fields free of excessive plant growth. Spray nozzles clean and free-flowing.

10. Sanitary waste disposal stations clean and operable by visitors whenever needed.

11. Sewage lagoons (oxidation pond) free of odor and algae growth. Weeds and plant growth kept from water's edge and mowed on slopes. Effluent analyzed monthly to determine bod reduction. Dikes free of leakage. Solid accumulation removed from splash pan area of inflow line annually. All lagoons properly signed.

SEWERAGE SYSTEMS

Level III

1. Collection systems maintained free of interruptions in service due to obstructions and root growth. Lines flushed every three months. Copper sulphate or comparable chemical introduced every three months. Lines power-augered annually.

2. Ground water infiltration held to maximum of 5,000 gallons per mile of line per day.

Manholes tight and clean. Steps solid for personnel safety. Covers tight and free of corrosion.

3. Treatment plants neat, clean, well painted and free of obnoxious odors. Plant effluents will cause no pollution of sub-soil or water bodies. Solids disposed of consistent with bacteriological quality. Insect breeding non-existent. Testing conducted monthly to determine plant operating efficiencies with results recorded.

4. Bar screens and grit chambers free of debris. No surface sludge accumulation in septic and Imhoff tanks. Concrete surfaces painted to control deterioration. Metal surfaces painted to control corrosion. Oxidation pond levels proper for aerobic decomposition. No ponding in filters.

5. Sludge drawn from septic tanks, Imhoff tanks, and clarifiers when capacity is full. Sludge removed from drying beds when well-dried. Bed surfaces clean and scarified after sludge removal. Underdrain systems in filters and sludge drying beds operating.

SEWERAGE SYSTEMS

Level III

6. Chlorination equipment inspected daily for proper operation and rate of feed. Chlorine gas cylinders weighed weekly and pertinent data recorded. Gas masks and other safety equipment inspected weekly.

7. All mechanical and electrical equipment dismantled annually and worn or defective parts replaced. Equipment and building interiors painted.

8. Manufacturer's instructions for all equipment conspicuously posted and followed.

9. Spray fields free of excessive plant growth. Spray nozzles clean and free-flowing.

10. Sanitary waste disposal stations clean and operable by visitors whenever needed.

11. Sewage lagoons (oxidation pond) free of odor and algae growth. Weeds and plant growth kept from water's edge and mowed on slopes. Effluent analyzed monthly to determine bod reduction. Dikes free of leakage. Solid accumulation removed from splash pan area of inflow line annually. All lagoons properly signed.

REFUSE COLLECTION AND DISPOSAL

Level I

1. No litter around refuse containers. Collection adequately frequent to eliminate littering. Cans, bulk containers, and collection vehicles clean, painted, and odor-free. Plastic can liners utilized or collection vehicles covered to prevent roadside littering.

2. Landfill areas clean with no exposed refuse after day's operation. No drainage from landfill polluting surface or sub-surface water sources. No insect breeding in landfill. Completed landfills have vegetative cover.

3. Incinerators and grounds neat and clean. Operated for maximum reduction of bulk and minimum air pollution. Incinerator waste disposed of in landfill. Furnaces, ash pits, flue gas passages, and grates clean and free of ash and clinkers. Masonry sound, insulation intact, refractory tight. Doors and ports tight fitting. Spark arresters and stack screens intact.

REFUSE COLLECTION AND DISPOSAL

Level II

1. No litter around refuse containers. Collection adequately frequent to eliminate littering. Cans, bulk containers, and collection vehicles clean, painted and odor-free. Plastic can liners utilized or collection vehicles covered to prevent roadside littering.

2. Landfill areas clean with minimum of exposed refuse after day's operation. No drainage from landfill polluting surface or sub-surface water sources. *No insect breeding in landfill.* Completed landfills have vegetative cover.

3. Incinerators and grounds neat and clean. Operated for maximum reduction of bulk and minimum air pollution. Incinerator waste disposed of in landfill. Furnaces, ash pits, flue gas passages, and grates clean and free of ash and clinkers. Masonry sound, insulation intact, refractory tight. Doors and ports tight fitting. Spark arresters and stack screens intact.

REFUSE COLLECTION AND DISPOSAL

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L-P GAS SYSTEMS

Level I, II, III

Entire storage and distribution systems maintained and operated in strict accordance with:

1. National Fire Protection Association pamphlet No.w58 — Storage and Handling of Liquefied Petroleum Gases. June 1967

2. National Park Service Safety Handbook, Chapter 4.

3. Copper tubing disconnected and checked for interior corrosion annually and reassembled.

ELECTRICAL SYSTEMS

Level I

1. Generating equipment and buildings neat, clean and well painted. Safety signs and posted instructions properly located and legible. Moving parts and high voltage points screened and marked. Operating logs, plant logs and maintenance records current with overloads, ambient temperatures and temperature rises recorded. Safety equipment, overload protective devices and switches operate properly. All equipment color coded.

2. Poles, towers, insulators and conductors sound and in safe operating condition. Transformers, switching devices, and substations fenced and locked to exclude non-operating personnel. Grounding connections positive and tight. Hook-sticks dry and insulated for safe use. Potheads, relays, transformers and lightning arresters free of corrosion, pitting and evidence of excessive heat. Insulator glaze intact and free of cracks.

3. Meters tested for accurate measurement annually. Electrical energy in sufficient quantity at proper voltage and phase delivered to all users.

ELECTRICAL SYSTEMS

Level II

1. Generating equipment and buildings neat, clean and well painted. Safety signs and posted instructions properly located and legible. Moving parts and high voltage points screened and marked. Operating logs, plant logs and maintenance records current with overloads, ambient temperatures and temperature rises recorded. Safety equipment, overload protective devices and switches operate properly. All equipment color coded.

2. Poles, towers, insulators, and conductors sound and in safe operating condition. Transformers, switching devices and substations fenced and locked to exclude non-operating personnel. Grounding connections positive and tight. Hook-sticks dry and insulated for safe use. Potheads, relays, transformers and lightning arresters free of corrosion, pitting and evidence of excessive heat. Insulator glaze intact and free of cracks.

3. Meters tested for accurate measurement every two years. Electrical energy in sufficient quantity at proper voltage and phase delivered to all users.

ELECTRICAL SYSTEMS

Level III

1. Generating equipment and buildings neat, clean and well painted. Safety signs and posted instructions properly located and legible. Moving parts and high voltage points screened and marked. Operating logs, plant logs and maintenance records current with overloads, ambient temperatures and temperature rises recorded. Safety equipment, overload protective devices and switches operate properly. All equipment color coded.

2. Poles, towers, insulators, and conductors sound and in safe operating condition. Transformers, switching devices, and substations fenced and locked to exclude non-operating personnel. Grounding connections positive and tight. Hook-sticks dry and insulated for safe use. Potheads, relays, transformers and lightning arresters free of corrosion, pitting and evidence of excessive heat. Insulator glaze intact and free of cracks.

3. Meters tested for accurate measurement every three years. Electrical energy in sufficient quantity at proper voltage and phase delivered to all users.

ELEVATORS

Level I

1. Motors and generators free of excessive temperature and vibration, excess worn brushes, loose connections, deposits of oil, grease and dust.
2. Controller contacts and relays no oil or dirt deposits, worn or burned contacts, loose connections, defective or improper fuses.
3. Governors and gear and bearings free of dirt and dust, lubricant level maintained.
4. Wire rope free of rust and corrosion, have a slightly oily feel, fastenings secure; no broken or frayed strands.
5. Pit, machine room, top of car free of oil, trash and debris.
6. Car no loose or missing bolts, screws, fastenings, burned out or defective lights, noisy doors, damaged or dirty wall and ceiling panels. Clean and free of odor.
7. Oil buffer have proper oil level. No obstructions to interfere with operation.
8. All safety devices and switches operational.
9. Inspection service by a qualified inspector conducted quarterly according to *American Safety Code for Elevators* ASA A17.1.
10. Daily inspection to insure conformance.

ELEVATORS

Level II

1. Motors and generators free of excessive temperature and vibration, excess worn brushes, loose connections, deposits of oil, grease and dust.
2. Controller contacts and relays no oil or dirt deposits, worn or burned contacts, loose connections, defective or improper fuses.
3. Governors and gear and bearings free of dirt and dust, lubricant level maintained.
4. Wire rope free of rust and corrosion, have a slightly oily feel, fastenings secure, no broken or frayed strands.
5. Pit, machine room, top of car free of oil and debris.
6. Car no loose or missing bolts, screws, fastenings, burned out or defective lights, damaged wall or ceiling panels. Clean.
7. Oil buffer have proper oil level. No obstructions to interfere with operation.
8. All safety devices and switches operational.
9. Inspection service by a qualified inspector conducted quarterly according to *American Safety Code for Elevators* ASA A17.1.
10. Semi-weekly inspection to insure conformance.

ELEVATORS

Level III

1. Motors and generators free of excessive temperature and vibration, excess worn brushes, loose connections; deposits of oil, grease and dust.
2. Controller contacts and relays no oil or dirt deposits, worn or burned contacts, loose connections; defective or improper fuses.
3. Governors and gear and bearings free of dirt and dust, lubricant level maintained.
4. Wire rope free of rust and corrosion, have a slightly oily feel; fastenings secure, no broken or frayed strands.
5. Pit, machine room, top of car free of oil and debris.
6. Car no loose or missing bolts, screws, fastenings, burned out or defective lights.
7. Oil buffer have proper oil level. No obstructions to interfere with operation.
8. All safety devices and switches operational.
9. Inspection service by a qualified inspector conducted quarterly according to *American Safety Code for Elevators* ASA A17.1.
10. Weekly inspection to insure conformance.

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24 NOV 1970