basin. The basin must be designed to drain back into the wet well or collection system as the influent flow recedes;

B. A portable pump capable of being connected to the pumping station or a portable generator; or

C. Storage of excess flow in trunk line sewers provided sufficient capacity for twenty-four (24)-hour storage of peak flows is available and flooding of basements will not occur; and

10. Alarm systems. Alarm systems shall be provided for all pumping stations. The alarm shall be activated in cases of power failure, pump failure or any cause of high water in the wet well. If possible, the alarm should be telemetered to a location that is manned twenty-four (24) hours per day. Audio-visual alarms with self-contained power supply shall be provided as a minimum. A sign shall be posted at each pump station in a clearly visible location, listing a telephone number to be called if the alarm is seen or heard; and

11. Instructions and equipment. Sewage pumping stations and their operators should be supplied with a complete set of operational instructions including emergency procedures, maintenance schedules, tools and spare parts as may be necessary.

(C) Force Mains. Design considerations for force mains are as follows:

1. Velocity. At design average flow, a cleansing velocity of at least two feet (2') per second shall be maintained;

2. Size. In general, three-inch (3") diameter pipe shall be the smallest used for raw sewage force mains. However, use of grinder pumps or similar equipment may allow use of smaller pipe. These instances will be reviewed on an individual basis. Piping materials may be pressure pipe normally used for conveying potable water, however the effects of surges and pressures within the system should be considered in the selection of the piping material. As a minimum SDR 21 PVC pressure pipe or its equivalent should be used. The force main and fittings including reaction blocking shall be designed to withstand normal pressure and pressure surges (water hammer);

3. Air relief valves. An automatic air relief valve shall be placed at high points in the force main to prevent air locking. However, consideration will be given to alternate proposals with proper justification;

4. Termination. Force mains should enter the gravity sewer system at a point no more than two feet (2') above the flow line of the receiving manhole; and

5. Water line and sewage force main separation. There shall be at least a ten-foot (10') horizontal separation between water lines and sewage force mains. There shall be an eighteen-inch (18") vertical separation at crossings as required in paragraph (9)(A)4. of this rule. Only in extenuating circumstances will deviations be allowed to these minimum separation distances.

(11) Small Wastewater Treatment Works. Treatment the extent of which will depend on 10 CSR 20-7.015 Effluent Regulations and 10 CSR 20-7.031 Water Quality Standards shall be provided in connection with all installations. Secondary treatment shall be the minimum acceptable degree of treatment. Wastewater treatment plants should be designed to provide for the estimated population and flows to be fifteen (15) or twenty (20) years hence. The following items shall be taken into consideration in planning sewage treatment works:

(A) Plant Location. In general to avoid local objections, the wastewater treatment facilities should be located as far as is practical from any present built-up area or any area which will develop within a reasonable future period. No sewage treatment facility shall be located closer than fifty feet (50') to any dwelling or establishment.

1. The treatment facility shall be located above the twenty-five (25)-year flood level.

2. An all-weather access road shall be provided from a public right-of-way to every treatment facility. Sufficient room shall be provided at the site to permit turning vehicles around. In determining the type of roadway and method of construction, consideration shall be given to the types of vehicles and equipment necessary to maintain and operate the facility. If access is required for heavy sludge trucks, the road must be of more substantial construction than one (1) used only for access of mowing equipment or other light vehicles. Gravel roads to be used by heavy vehicles shall have a minimum depth of six inches (6") of crushed rock material with a bottom layer of four inches (4") of two to three inch (2–3") size material and a top layer two inches (2") thick of three-fourths inch (3/4") size material. In general, the grade of the access road shall not exceed twelve percent (12%).

3. Wastewater treatment facilities shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any well or water supply structure;

(B) Design.

1. Type of treatment. Careful consideration should be given to the type of treatment before making a final decision. A few of the important factors to consider are the location and topography of the plant site; character and quantity of the wastes to be treated; operating costs and the probable type of supervision and maintenance the plant will receive. Particular care must be used in choosing methods of treatment for seasonal use developments, such as parks and campgrounds, and for developments which produce waste loads which fluctuate between wide extremes from day-to-day. The use of activated sludge type plants is generally not recommended for these developments because a high degree of operating efficiency for these plants is dependent in part upon a relatively stable loading condition. Where all use of the development is confined to a specific season, consideration should be given to designing lagoon systems on the draw-and-fill concept, retaining all wastewaters generated during the season of use and discharging them after an appropriate period during the off season or utilizing the stored water for irrigation.

2. New processes, methods and equipment. The policy of the department is to encourage rather than obstruct the development of new methods and equipment for the treatment of sewage wastes. The lack of inclusion in these standards of some types of wastewater treatment processes or equipment should not be construed as precluding their use. The department may approve other types of wastewater treatment processes or equipment under the following conditions:

A. The operational reliability and effectiveness of the process or device shall have been demonstrated with a suitably sized prototype unit operating at its design load conditions to the extent required by the department; and

B. The department may require test results and engineering evaluations demonstrating the efficiency of the processes or equipment. The department may also require that appropriate testing be conducted and evaluations, other than those employed by the manufacturer or developer, be made under the supervision of a competent process engineer.

3. Sewage flow and strength. Minimum design loadings for all treatment processes shall be calculated using the following table unless the engineer can document the validity of lower per capita figures based on actual waste strength and/or flow data from the development to be served or from similar developments.

Table 1

Type of Establishment	Pounds BOD per person (unless otherwise noted)	Gallons per day per person*
Employee Sanitary Waste	.05	15

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Generally means eight (8)-hour shift employees at institutions, commercial establishments, factories and similar establishments. Total employee waste figure, if applicable, must be added to the appropriate patron or residential total from the following table:

Residential		
Single family dwellings	.17	75—100
Apartments or condominiums	.17	60—100
Rooming houses	.15	45
Boarding houses	.17	75
Mobile homes	.17	75—100
Food or Drink Establishments (wastes per patron)		
Tavern or bar (not serving food)	.01	2
Fast-food (paper service)	.02	3
Cafe or restaurant	.03	5
Restaurant serving alcoholic beverages	.04	5
Restaurant grinding garbage	.07	6
Schools (wastes per student)		
Day school, no cafeteria, gym or showers	.02	10
With cafeteria—ADD	.02	4
With garbage grinding—ADD	.02	1
With gym and showers—ADD	.01	10
Boarding schools	.17	75
Institutions		
Hospitals (per bed)	.22	125—200
Institutions other than hospitals	.17	100—150
Nursing homes	.17	100—125
Commercial and Recreational		
Public parks (toilets only)	.02	5
Public parks with bath house, showers, toilets	.06	15—25
Swimming pools and beaches	.06	15—25
Country clubs (per resident member)	.17	75—100
Country clubs (per member present)	.06	15—25
Service stations (wastes per customer)	.01	5
Laundromats (per machine)	1.25	580
Hotels	.15	50
Motels (without restaurants)	.10	40
Luxury resorts	.17	75
Camper trailers	.08	30
Work or construction camps	.15	60
Churches (per seat)	.01	5
Stores, malls or shopping centers (per one thousand (1000) square feet of floor area)	.34	200
Stadiums, auditoriums, theaters or drive-in (per seat)	.01	5

*Note: Gallons per person per day includes normal infiltration for residential systems.

4. Population to be served. Unless satisfactory justification can be given for using lower per-unit occupancies, the following numbers shall be used in determining the population for which to design the sewage works:

	Persons/ Unit
Residences	3.7
Apartments or condominiums	
(1 bedroom)	2.0
(2 bedroom)	3.0
(3 bedroom)	3.7
Mobile homes	3.0—3.7
Camper trailers without sewer hookup	2.5
Camper trailers with sewer hookup	3.0
Motels	3.0

5. Organic loading. Where sewage strengths are expected to be materially greater than normal domestic sewage (three hundred milligrams per liter (300 mg/l) biochemical oxygen demand), consideration shall be given to enlarging settling, digestion and secondary treatment units.

6. Conduits. All piping and channels should be designed to carry the maximum expected flows. The incoming sewer should be designed for free discharge. Pockets, corners and channels where solids can accumulate should be eliminated. Suitable gates should be placed in channels to seal off unused sections which might accumulate solids. Shear gates or stop-planks should be used in preference to gate valves or sluice gates.

7. Arrangement of units. Component parts of the facility should be arranged for greatest operating convenience, flexibility, economy and so as to facilitate installation of future units.

(C) Facility Details.

1. Mechanical equipment. Mechanical equipment shall be used and installed in accordance with manufacturers' recommendations and specifications. Major mechanical units should be installed under the supervision of the manufacturers' representative.

2. Emergency operation. Facilities which enable removal of treatment units from service for cleaning, maintenance or mechanical breakdown without bypassing must be provided.

3. Drains. Means should be provided to dewater each unit. Pumping with portable pumps into a holding basin or other suitable disposal site will be considered a satisfactory means of dewatering. Due consideration shall be given to the possible need for hydrostatic pressure relief devices to prevent flotation of structures.

4. Construction materials. Due consideration should be given to the use of construction materials which are resistant to the action of hydrogen sulfide and other corrosive gases, greases, oils and similar constituents frequently present in sewage.

5. Operating equipment. Specifications should include a complete outfit of tools necessary for proper maintenance of the facility. If required by the department, an operation and maintenance manual shall be provided to explain the operating procedures at a level easily understood by the owner or operator of the facility. The manual, at a minimum, shall address maintenance of mechanical equipment, monitoring, recordkeeping and operating procedures including the amount, frequency and method of sludge disposal.

6. Grading and landscaping. Upon completion of the facility, the ground should be graded to prevent erosion and the entrance of surface water into any unit.

7. Treatment facilities outfalls. The outfall sewer shall be designed to discharge to the receiving stream in a manner acceptable to the department. In general the effluent from the final treatment process shall be conveyed to a defined stream channel via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be so constructed and protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. All outfalls shall be designed so that a sample of the effluent can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters.

8. Potable water supply protection. No piping or other connections shall exist in any part of the treatment works which, under any conditions, might cause the contamination of a potable water supply. Potable water from a municipal or other supply may be used above grade for water closet, lavatory, drinking fountain or similar fixtures. A reduced pressure backflow preventer or break tank shall be used to isolate the potable system from all plant uses other than the ones provided for in this rule. Where a break tank is used, water shall be discharged to the break tank through an air-gap at least six inches (6") above the maximum flood line, ground level or the spill line of the tank, whichever is higher. Backflow preventers shall be located above the maximum flood line or ground level. A sign shall be permanently posted at every hose bib, faucet, hydrant or fill cock located on the water system beyond the break tank or backflow preventer to indicate that the water is not safe for drinking. Where a separate non-potable water system is to be provided, backflow prevention will not be necessary but all system outlets shall be posted with a permanent sign indicating that the water is not safe for drinking.

9. Sewage flow measurement. Flow measurement shall be provided for all wastewater treatment facilities. Flow measurement should not be less than pump calibration time clocks or calibrated flume or weir and stilling basin as required.

10. Protection from the elements. All sewage treatment facilities except those which operate only seasonally shall be designed to assure effective operation under all weather conditions. Protection from the elements must be given special consideration since small wastewater treatment facilities will frequently be located in remote areas and may not receive daily attention. Freezing temperatures affect most treatment facilities to some degree. Open sand filters and small extended aeration plants are likely to be affected the most. Provisions for covering exposed process areas with boards or insulating panels may be sufficient in many cases. The use of heat tapes around sludge and scum return piping may be helpful in addition to covering the tanks. Sufficient electrical outlets should be provided at the plant site for this purpose. Tanks which are not completely backfilled on all sides may require additional protective measures during freezing weather. Any such measures taken to comply with these provisions shall not present a hazard to the operator nor hinder the operation of the treatment facility.

11. Safety. Adequate provisions should be made to protect the operator and any visitors from unnecessary hazards.

A. All wastewater treatment facilities must be fenced sufficiently to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

B. Fences shall be a minimum of five feet (5') in height and shall be constructed of durable materials appropriate to the site and nature of the treatment facilities. Posts shall be imbedded to a sufficient depth or otherwise securely anchored to prevent displacement and shall not be spaced more than twenty feet (20') apart. Barbed wire, woven wire fabric or chain link mesh shall be securely fastened to the posts with fasteners designed for the type of material used.

C. Fences shall be located far enough back from all process units to permit easy access for operation and maintenance and for access of mowing equipment, sludge trucks and similar equipment. A minimum four foot (4') clearance from all units is recommended.

D. Woven wire fabric will generally be acceptable for fencing lagoons and other small facilities having a minimum of mechanical equipment. The fabric should nearly touch the ground surface and should have small enough mesh in the lower two feet (2') to prevent passage of small animals. Larger and more complex treatment facilities should be provided with chain link or similar fencing.

E. At least two (2) strands of barbed wire shall be provided above the fence fabric spaced no more than six inches (6") apart.

F. At least one (1) gate shall be provided for access of maintenance equipment and vehicles and each gate shall be provided with a lock. Gates shall be constructed in a manner and of materials comparable to those used for the fence. Gates shall be designed to prohibit entry of the enclosure by crawling underneath. When sizing the gate, consideration must be given to the need for entry of mowing equipment, sludge trucks or other vehicles or equipment necessary for routine maintenance and operation.

G. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. A sign shall be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

(12) Primary Treatment. For general requirements applicable to all types of treatment facilities, refer to section (11) of this rule.

(A) Grease Traps. Grease traps shall be provided on kitchen drain lines from institutions, hotels, restaurants, school lunch rooms and other establishments from which relatively large amounts of grease may be discharged to the treatment facility.

1. Grease traps should be located as close to the fixtures being served as possible and should receive only the waste streams from grease-producing fixtures. Sanitary waste streams, garbage grinder waste streams and other waste streams which do not include grease should be excluded from passing through the grease traps. Grease traps must be cleaned on a regular basis and must be readily accessible for this purpose.

2. Sizing of grease traps is based on wastewater flow and can be calculated from the number and kind of sinks and fixtures discharging to the trap. In addition, a grease trap should be rated on its grease retention capacity, which is the amount of grease (in pounds) that the trap can hold before its average efficiency drops below ninety percent (90%). Current practice is that grease-retention capacity in pounds should equal at least twice the flow capacity in gallons per minute. The following two (2) equations may be used to determine the capacity of grease traps for restaurants and other types of commercial facilities:

A. Restaurants.

$$D \times Gl \times Sc \times \frac{Hr}{2} \times Lf = \text{Size of grease trap in gallons, where:}$$

D = Number of seats in dining area;
Gl = Gallons of wastewater per meal, normally 5 gallons;
Sc = Storage capacity factor, minimum of 1.7;
Hr = Number of hours open; and
Lf = Loading factor,

1.25 interstate highways
1.0 other freeways
1.0 recreational areas
0.8 main highways
0.5 other highways.

B. Hospitals, nursing homes, other type commercial kitchens with varied seating capacity.

$$M \times Gl \times Sc \times 2.5 \times Lf = \text{Size of grease trap in gallons, where:}$$

M = Meals per day;
Gl = Gallons of wastewater per meal, normally 4.5;
Sc = Storage capacity factor, minimum of 1.7; and

Lf = Loading factor,
1.25 garbage disposal and dishwashing
1.0 without garbage disposal
0.75 without dishwashing
0.5 without dishwashing and garbage disposal.

3. Grease traps shall be provided with a manhole or opening of sufficient size to permit inspection and cleaning. When the grease trap is located below ground, the access opening shall be extended to grade. The opening shall be fitted with a tight fitting cover which will prevent the entrance of insects and vermin.

4. The grease trap should be constructed of materials similar to septic tanks and be properly baffled on both the inlet and outlet.

(B) Bar Screens. Bar screens should be provided before pumps, shredders or other mechanical equipment. Bar screens should precede imhoff tanks, primary settling basins and extended aeration plants.

1. Bar screens should be located to provide for easy cleaning and adequate drainage of screenings. Design must provide for removal and/or cleaning of bar screens or debris baskets located inside pump station wet wells without entering the wet well.

2. The invert of a bar screen channel or the bottom of a debris basket shall be a minimum of six inches (6") below the invert of the incoming sewer and a minimum of six inches (6") above the highest liquid level in the pump pit or treatment process tank. The channel preceding and following the screen should be floored to prevent stranding and sedimentation of solids.

3. Clear openings between bars of hand cleaned screens should be from three-fourths to one and one-half inches (3/4–1 1/2"). Construction should be such that the screens can be conveniently raked.

4. The area of the screen openings should be sufficient to provide a velocity of one foot (1') per second through the vertical projection of the screen openings at average flow.

5. Hand cleaned screens should be placed on a slope of thirty to forty degrees (30 40°) with the horizontal.

6. Ample facilities must be provided for the removal, draining and disposal of screenings. Suitable storage facilities shall be provided where temporary storage of screenings is necessary. Screenings may be disposed of in an approved solid waste disposal facility.

(C) Septic Tanks. Septic tanks may be accepted as a satisfactory means of primary treatment for installations receiving flows not in excess of twenty-two thousand five hundred (22,500) gallons per day. Minimum acceptable liquid capacity for septic tanks shall be seven hundred fifty (750) gallons. Septic tanks should be designed and constructed in accordance with 10 CSR 20-8.021(4).

(D) Comminutors. Comminutors may be used in conjunction with bar screens as a means of preliminary treatment upstream of extended aeration plants. A screened bypass channel to a bar screen shall be provided. The use of the bypass channel shall be automatic at depths of flow exceeding the design capacity for the comminutor. Each comminutor that is not preceded by grit removal equipment should be protected by a six-inch (6") deep gravel trap. Provisions shall be made to facilitate servicing units in place and removing units from their location for servicing. Electrical equipment in comminutor chambers where hazardous gases may accumulate shall be suitable for hazardous locations (National Electrical Code, Class 1, Group D, Division 1 location). Grinder pumps may be used in lieu of comminutors. Grinder pumps used for preliminary treatment must be sized to pump the maximum flow unless they are being used as part of flow equalization.

(13) Secondary Treatment. Criteria for design of secondary treatment processes are given for the most commonly used and recognized waste treatment processes applicable for small sewage treatment facilities. They include waste stabilization and aerated ponds, sand filters, extended aeration activated sludge and disinfection. Unit processes not covered by these criteria will be reviewed in accordance with paragraph (11)(B)2. The effluent quality that may be expected from a secondary treatment unit process or combination of processes is related not only to the engineering design but, most important, to the level of operation and maintenance that the units receive. The design criteria established in the rule for the various units are to reflect those features considered necessary for the unit to perform at its best efficiency, to ensure ease in operation and maintenance and to guide designers in selecting materials which will ensure the completed project will be durable. For other requirements applicable to all types of treatment facilities, refer to section (11).

(A) Wastewater Stabilization Ponds. Waste stabilization ponds provide treatment of primarily domestic wastewater by the unaided natural processes of biological activity. The wastewater stabilization pond process requires the least operational and maintenance skill of all processes considered in this rule. The criteria contained in this rule is for facultative and aerated facultative ponds.

1. The summary of design data shall include pertinent information on location, geology, soil conditions, area for expansion and any other factors that will affect the feasibility and acceptability of the proposed project. The following information must be submitted in addition to that required by sections (4) and (7):

A. A layout showing the direction and distance of all cultural features within one fourth (1/4) mile of the proposed site. A seven and one-half (7.5) minute quadrangle map made by the United States Geological Survey of the area under consideration is acceptable, provided the map is field checked for accuracy in depicting present cultural features;

B. A geological evaluation of the proposed pond site prepared by the Missouri Department of Natural Resources, Division of Geology and Land Survey shall be submitted. To obtain this geological evaluation of the proposed site, the engineer shall submit the following information to the appropriate department office:

(I) A layout sheet showing the proposed location. The layout shall include the legal description, property boundaries, roads, streams and other geographical landmarks which will assist in locating the site;

(II) Size of the pond and/or approximate volume of waste to be treated;

(III) Maximum cuts to be made in the construction of the pond; and

(IV) Location and depth of cut for borrow area, if any;

C. A determination as to the compatibility of the proposed site with local zoning ordinances.

D. A description, including maps, showing elevations and contours of the site and adjacent area shall be provided;

E. Location of ponds in watersheds receiving significant amounts of stormwater runoff is discouraged. Adequate provisions must be made to divert stormwater runoff around the ponds and protect embankments from erosion;

F. Construction of ponds in close proximity to water supplies and other facilities subject to contamination should be avoided. A minimum separation of four feet (4') between the bottom of the pond and the maximum groundwater elevation should be maintained where feasible. The four-foot (4') separation distance does not necessarily apply to perched water tables due to impervious strata near the surface;

G. Proximity of ponds to water supplies located in areas of porous soils and fissured rock formation shall be evaluated on

avoid creation of health hazards or other undesirable conditions; and

H. In general, to avoid local objections, the wastewater stabilization pond should be located as far as is practical from any existing built-up areas or existing dwellings. In no case should the pond be located closer than two hundred feet (200') from an existing built-up area or existing dwelling. The pond should be located at least one hundred feet (100') from the building(s) that it serves.

2. Basis for design. A flow-through stabilization pond shall be considered capable of meeting effluent limitations of forty-five (45) mg/l BOD and seventy (70) mg/l suspended solids. Controlled discharge stabilization ponds shall be considered capable of producing an effluent of a quality that is much better than a flow-through stabilization pond when treating normal domestic type sewage.

A. In general, waste stabilization ponds shall be designed on the basis of thirty-four pounds (34 lbs) of applied BOD per day per acre of water surface area in the primary cell. Water surface area shall be computed at area at the three foot (3') operating level. A minimum of one hundred twenty (120) days' detention time should be provided in the total system. To achieve this detention time the use of secondary cells up to five feet (5') deep and the use of third cells up to eight feet (8') deep may be necessary.

B. For aerated wastewater stabilization ponds, the development of final design parameters, it is recommended that actual experimental data be developed. However, the aerated lagoon design for minimum detention time may be estimated using the following formula:

$$t = \frac{E}{2.3\, k_1 \times (100 - E)}$$

where

t = detention time in the aeration cell in days;

E = percent of BOD_5 to be removed in an aerated pond; and

k1 = reaction coefficient aerated pond, base 10.

For normal domestic sewage, the k_1 value may be assumed to be 0.12 at a temperature of twenty degrees Centigrade (20°C) and 0.06 at a temperature of one degree Centigrade (1°C). A temperature of one degree Centigrade (1°C) must be used for determining the detention time. Other k_1 values may be used to determine detention time when pilot test data is obtained by incubating anticipated wastes at critical operating temperatures. A temperature of twenty degrees Centigrade (20°C) may be used for determining aeration requirements. As a minimum, aerated facultative pond systems designed to treat a typical domestic waste (BOD≤300 milligrams per liter) shall consist of one (1) or more aerated cells and one (1) quiescent cell which provide the following minimum hydraulic detention times:

Minimum Detention Times for Aerated Pond Cells for Typical Domestic Waste (BOD ≤300 mg/l)

*No. of Aerated Cells	Days** for Treatment	Quiescent Cell, Days	Total Detention*** Time, Days
1	44	2-10	46-54
2	26	2-10	28-36
3	21	2-10	23-31

*For multiple aerated cells, the first two (2) cells shall be of equal size and no one (1) cell shall provide more than fifty percent (50%) of the total required volume.

**Includes three (3) days' detention time for sludge accumulation. Sludge volume is based upon 1.54 days detention time per one hundred milligrams per liter (100 mg/l) of suspended solids in the influent for a twenty (20)-year accumulation of sludge.

***Total detention time for all cells combined.

(I) The design minimum detention time of aerated cells treating domestic type waste of greater strength than three hundred (300) mg/l BOD should be determined utilizing the equation from subparagraph (13)(A)2.B. on a per-cell basis. For aerated facultative pond systems designed to treat greater strength waste with a BOD of four hundred (400) mg/l or more shall consist of two (2) or more aerated cells and one (1) quiescent cell. The first two (2) cells shall be of equal size and no one (1) cell shall provide more than fifty percent (50%) of the total required volume. The following minimum detention times are presented for illustration and result from use of the formula from subparagraph (13)(A)2.B. with provision of additional volume for sludge accumulation.

Minimum Detention Times for Aerated Pond Cells for Greater Strength Waste

Influent BOD mg/l	No. of Aerated Cells	Days for Treatment	Quiescent Cell, Days	Total Detention* Time, Days
400	2	46	2—10	48—56
400	3	37	2—10	39—47
400	4	32	2—10	34—42
1000	2	87	2—10	89—97
1000	3	67	2—10	69—77
1000	4	58	2—10	60—68

*Total detention time for all cells combined.

C. Where any wastes discharged to a stabilization pond are from a restaurant, institutional kitchen or similar establishment likely to produce large amounts of grease, grease traps shall be provided as discussed in subsection (12)(A) of this rule. If ground garbage is also introduced to the waste stream from these sources, a septic tank having a capacity equal to at least five (5) times the average daily flow of that waste stream shall be provided for primary treatment preceding unaerated pond systems. Septic tanks sized at one and one-half (1.5) times the average may be provided as primary treatment for other waste streams. No reduction in BOD applied to the stabilization pond shall be allowed where the only pretreatment is grease removal. Where complete primary treatment is provided for any waste stream entering the pond system, the BOD loading of that stream may be reduced by thirty-five percent (35%) when determining the required pond system surface area or detention time.

D. Consideration shall be given to the type and effect of industrial wastes contributed to the stabilization pond system. For high strength wastes where the required detention time exceeds nine (9) months for an unaerated stabilization pond, consideration should be given to other processes such as aerated ponds, land application of the effluent or activated sludge treatment plants.

E. A minimum of three (3) cells in series shall be provided for all flow-through pond systems. The second cell shall be three tenths (.3) times the area of the primary cell and the third cell shall be one tenth (.1) times the area of the primary cell. For facultative pond systems where the primary cell will be smaller than ten thousand (10,000) square feet, consideration should be given to the use of land application of the effluent. See section (15) of this rule. If the use of land application methods is not feasible or would present a nuisance, and the primary cell size is between three thousand (3000) and ten thousand (10,000) square feet, the third cell of the series shall have an area of at least one thousand (1000) square feet. Where the primary cell is less than three thousand (3000) square feet, only a secondary cell of one thousand (1000) square feet area is required.

F. A minimum of three (3) cells is required for all controlled discharge pond systems. The first and second cells shall be