SECTION 4

POINT SOURCE MANAGEMENT PLAN ELEMENT

INTRODUCTION

This section of the Water Quality Management Plan (WQMP) deals with "point source" pollution control for the SEAGO region. One definition of point source pollution would be "any pollution that can be traced to a specific facility that discharges wastewater into waters of the United States." Point source pollution is often loosely defined as "any source that comes out of a pipe." This definition is somewhat ambiguous, as some activities such as landfills or mining operations can be classified as both point and nonpoint sources of pollution. However, for this section of the plan, "point source" will be defined as those activities for which some type of permit or authorization is issued prior to discharge.

The purpose of this section is to identify planning priorities and guidelines for wastewater management and will include the following subsections: permit requirements; on-site disposal systems; centralized wastewater treatment systems; industrial and manufacturing dischargers, point source control programs and compliance data, and solid waste.

PERMITS (AND AUTHORIZATIONS)

Disposition, use, and reuse of wastewater or effluent is generally governed by some type of a permit issued by the Arizona Department of Environmental Quality (ADEQ) or the Environmental Protection Agency (EPA). Permits pertaining to point source pollution control include the National Pollutant Discharge Elimination System (NPDES) permits, Groundwater Protection Permits, reuse permits, and Aquifer Protection Permits (APP). A listing for all entities in the region currently possessing a permit, or required to obtain a permit, is listed as **Table 4-1**.

NPDES

Section 402 of the Clean Water Act requires that any facility which discharges effluent to surface waters of the United States obtain a permit under the NPDES program. NPDES permits contain effluent limitations for specific pollutants based on the receiving water body and its designated uses. These standards may be technologically based or water quality based if the receiving water is a specially designated water (e.g., unique water, effluent dominated water, or total maximum daily load-targeted (TMDL). The NPDES permits are drafted by ADEQ and must undergo Section 401 certification that any discharge will not violate state water quality standards. NPDES permits are issued by the EPA. The agency, entity, or individual being granted the permit is required to monitor the discharge and report results to EPA and ADEQ.

Reuse

Facilities that treat effluent for irrigation or other purposes are required to obtain a reuse permit from the ADEQ. Users of the reclaimed water are also required to obtain reuse permits. These state permits have quality limitations as well as monitoring requirements. Standards are specific according to the intended end use of the effluent. Facilities that discharge as well as reuse effluent must obtain both a NPDES and reuse permit.

Aquifer Protection Permits

The Aquifer Protection Permit (APP) Program came into being in October 1989, with the major purpose of protecting groundwater and ensuring that aquifer water quality standards are maintained. The APP Program replaced the existing Groundwater Protection Permit Program. The ADEQ's Aquifer Protection Permit program is the principal management program for both point and non-point source pollution in Arizona. The APPs are required by all discharging facilities that do not have either an NPDES or a reuse

permit. Any entity or individual responsible for the release or potential release of a pollutant which may impact on groundwater quality must obtain an APP. New facilities must obtain an APP prior to operation.

The APP program has two types of permits: individual and general. Individual permits require the use of Best Available Demonstrated Control Technology (BADCT) and include discharge monitoring requirements. General permits are issued for a limited range of facilities including: sewage disposal systems with flows greater than or equal to 2000 gallons per day (gpd), but less than 20,000 gpd, and meet certain conditions; recharge and underground storage and recovery pilot projects; and for agricultural application of wastewater sludge. If a facility does not comply with the conditions and requirements of the general APP permit, ADEQ may revoke the general permit and require the facility to obtain an individual APP.

TECHNICAL REVIEW

All Wastewater Treatment Facilities, including those covered under general permits, must have an approval from ADEQ prior to construction. Facilities and their operating procedures must also be consistent with certified regional Water Quality Management Plans (WQMP), facility plans and/or general plans. More information on permits and requirements for permits is contained in **Appendix 4-1**.

ON-SITE SEPTIC DISPOSAL SYSTEMS

In the SEAGO region, on-site septic systems serve approximately 35 percent of the population. On-site wastewater systems are prevalent throughout the unincorporated areas of all four counties as well as in older sections of incorporated communities. Although very few of the septic systems within unincorporated areas are technically out of compliance with environmental regulations, there are a variety of problems that can occur with on-site systems, and require some type of immediate corrective action. All of the counties in the SEAGO region have signed intergovernmental agreements with ADEQ, which specify the level of regulation and enforcement responsibilities delegated to the counties. A brief outline of these delegation agreements as they pertain to point source management is listed as **Table 4-2.**

Some systems in the region, primarily those serving commercial establishments, are at capacity and prohibited from undergoing expansion. Other problems relate to land conditions, such as lots that cannot support the required leach field size or soil conditions which restrict percolation. Growth in these areas will be limited until sewer hookups to public treatment systems are extended, or developers are willing to finance these costs themselves. Groundwater contamination is likely to occur in these areas and there is a need to develop general guidelines that address this issue. Most counties now examine applications for individual systems on a case by case basis, and work with the applicants to ensure compliance. In some areas, particularly Cochise and Santa Cruz Counties, conventional systems are known to be unsuitable in certain locations. Prospective residents are told in advance that an alternative treatment system will be required that could cost as much as $10,000 for installation and maintenance costs.

Table 4-3 is a comparison of the types of systems in the counties and other concentrations of population where data was available. This data was obtained from the 1990 Census and consequently is somewhat outdated as development has occurred or people have opted to hook up to an existing sewer line. It is however, a general representation of the number of on-site systems in operation in the region.

One particular concern expressed by some county health officials, was the question of what to do about dwellings in incorporated areas that were still on individual septic systems. Many communities have ordinances that follow the guidelines in Engineering Bulletin No. 12, and require mandatory connection to public sewers when they are available within 200 feet of the property line. While the dwelling may be within the required 200 feet of a city sewer, in some instances the homeowner has not been required to connect to the system because of the cost of making the connection or some natural barrier. The smaller lot sizes make it difficult if not impossible to repair or replace the system when it fails. These residents do not usually have the funds required to hook up to the city system, and the incorporated entities are unwilling or unable to pay the costs. Unincorporated areas of the county are under the jurisdiction of the county Board of Supervisors, and must follow applicable county planning and zoning ordinances.

Cochise County

Some of the more rural areas in Cochise County are beginning to experience failures of on-site systems. In extreme cases, the County Health Department has declared a moratorium on conventional septic systems, and requires alternative treatment methods be installed before allowing further development. Substantial portions of the population of Cochise County reside in unincorporated communities and rely on on-site disposal systems, including:

Bowie CDP

Bowie is an unincorporated community of approximately 750 people, the major developed area in the northeast portion of Cochise County. It lies within the Census County Division known as Bowie CCD which consists of approximately 1,755 persons. There is no industry in the town other than some light commercial development, service stations, motels, cafes, and a laundromat. The present method of sewage disposal for the area is individual septic tanks and leach fields. The soils of the area are acceptable for the use of on-site systems. Few problems have resulted except at the laundromat where some surface discharge has been reported. Engineering studies and cost estimates for a sewage collection system and treatment facility have been performed for the community but as yet no plans have been generated because of the community's economic situation.

Elfrida

Elfrida is an unincorporated residential community with a population of approximately 650. Like Bowie, it is a large developed but unincorporated area in the rural central portion of Cochise County. Within this section of the county a Census County Division known as Elfrida CCD was established for the 1990 Census. The population of the Elfrida CCD is approximately 4,800 persons. A few commercial establishments, including a laundromat, general store, and service station are located in Elfrida and serve the surrounding agricultural area. A public high school is also located at Elfrida. Sanitary waste disposal is by individual septic tanks and leach fields in soils that have a moderately slow permeability. Elfrida is located in an area of considerable flooding hazard.

Hereford

Hereford is a large, unincorporated residential community southeast of the City of Sierra Vista. The 1990 Census designated the area in and around Hereford as a Census Designated Place (CDP), the Sierra Vista S.E. CDP, with a population 9,237. Due to its proximity to the mountains and location between Sierra Vista and the county seat at Bisbee, the area continues to experience substantial growth and development. Sanitary waste disposal is primarily by individual septic tanks and leach fields in soils that have a moderately slow permeability, and there have been several problems associated with a very shallow water table. The Vista Grande subdivision is under a moratorium from the county for installing new or replacing existing on-site systems, and will only do so on a case by case basis after extensive testing.

McNeal

McNeal is an unincorporated residential community of approximately 100 people. Residential housing density appears to be slightly greater than one house per acre. Sewage disposal is by individual septic tanks and leach fields in soils that may have low to medium permeability. No septic tank failures have been reported.

Pirtleville CDP

This area around this unincorporated residential community has been designated a Census Designated Place by the 1990 Census and has a population of 1,364. Residential housing density is two to three houses per acre and sewage disposal is by means of individual septic tanks and leach fields have low permeability. Pirtleville is contiguous to the incorporated limits of Douglas but in the past has vetoed annexation to this community.

Pomerene

Pomerene is a small, unincorporated residential community of approximately 350 people, located near the City of Benson. According to the 1977 303(e) River Basin Study for the Upper Gila and San Pedro River Basins, the community is in a high flood hazard location due to flash flooding of side washes near the San Pedro River. Housing density appears to be greater than two houses per acre. Sanitary wastes are disposed of by individual septic tanks and leach fields in soils that have a moderately high permeability.

St. David CDP

St. David is an unincorporated farming community, and the 1990 Census calculated the St. David CDP population to be 1,468. Sanitary waste disposal is by individual septic tanks and leach fields in soils that generally have a moderately rapid intake and permeability rate.

Whetstone CDP

Whetstone is an unincorporated residential community to the north of Huachuca City, situated along State Route 90, the main highway leading into Sierra Vista and southern Cochise County. The 1990 Census placed the population of the Whetstone CDP at 1,289. Sanitary waste disposal is by individual septic tanks and leach fields in soils that generally have a moderately rapid intake and permeability rate. There have been no widespread instances of septic tank problems/failures in the area.

Graham County

Graham County currently has no areas identified as having problems with on-site systems. There are occasional failures of individual systems, in particular to the south of Safford, but the county feels this is more a factor of the age of the system and lack of maintenance rather than failure due to the soil conditions.

Substantial areas of unincorporated population that are currently using on-site disposal practices are:

Bylas CDP

While technically a portion of Graham County, the Bylas CDP is primarily on the San Carlos Indian Reservation and does not come under the jurisdiction of Graham County or ADEQ. The population of the Bylas CDP according to the 1990 Census was 1,219.

Fort Thomas

Fort Thomas is an unincorporated farming community located southeast from the San Carlos Reservation. The population of the area is approximately 350. Sewage disposal is by individual septic tanks with leach fields. The soils of the area are generally acceptable for use of leach fields and problems should only appear if the system has not been properly constructed or maintained.

Peridot CDP

Peridot is similar to the Bylas CDP, in that it is on the San Carlos Reservation and does not come under the jurisdiction of Graham County or ADEQ. The population of the CDP according to the 1990 Census was 957 people.

Swift Trail Junction CDP

Swift Trail Junction is an unincorporated community that according to the 1990 Census had a population of 1,203 personnel. Sewage disposal is by individual septic tanks with leach fields. The soils of the area are generally acceptable for use of leach fields and problems should only appear if the system has not been properly constructed or maintained.

Greenlee County

There are some unincorporated residential areas in Greenlee County experiencing problems with on-site disposal systems. In particular, one trailer park is converting to a small package treatment plant with a certified operator, but until this is completed it has to pump the four existing septic tanks an average of once a week. Other subdivisions experiencing on-site system failures are handling them on a case by case basis with the County Health Department. There are currently no large unincorporated areas in the county that rely primarily on on-site disposal systems, although one-third of the housing units in the county do rely on on-site systems.

Santa Cruz County

Santa Cruz County has identified some severe problems with on-site system failures in the county, in particular the Rio Rico and Meadow Hills subdivisions. In some areas development has been halted until these problems can be resolved.

Rio Rico East CDP

Rio Rico is a residential community to the north of the City of Nogales. As previously mentioned in the Description of Water Resources, residents are now beginning to experience problems with failing systems and some problems are so severe that lot sales have been suspended in one of the subdivisions. Both the County Health Department and ADEQ suspect that soil percolation data furnished prior to construction was erroneous and ADEQ will not allow further development in these areas until a proper waste treatment system is in place, or some other form of alternative treatment is used by the property owner.

Sonoita

Sonoita is a small, residential and farming community situated on State Route (SR) 83, about 20 miles west of the intersection of SR 82 with SR 90 and about 11 miles east of Patagonia. Sewage disposal is by individual septic tanks with leach fields. The soils of the area are mostly clay, and moderately acceptable for use of leach fields, but some problems have occurred with the concentration of businesses at the intersection of SR 82 and SR 83. The county has requested that they look at an alternative treatment method, such as a constructed wetland.

Elgin

Elgin is a small farming community of approximately 100 people, in the northeastern portion of Santa Cruz County. Sewage disposal is by individual septic tanks with leach fields. The soils of the area are generally acceptable for use of leach fields.

Tubac

Tubac is a growing residential community of about 500 people situated about 12 miles to the north of the City of Nogales, adjacent to Interstate 19. Sewage disposal is by individual septic tanks with leach fields. The soils of the area are generally acceptable for use of leach fields, but there have been incidents where tests were marginal because the soils percolated too quickly and drained into the Santa Cruz River.

Nogales and Surrounding Areas

Santa Cruz County has particular pollution problems because of its proximity to the border. The city of Nogales, Sonora, consists of many small residences situated on the surrounding hillsides. Many of these residences do not possess indoor plumbing, or are not properly connected to the sewer disposal system. On December 31, 1990, the Tucson Citizen reported the Mayor of Nogales, Sonora as stating there were over 5,000 houses in his city with no sewer connection, and some United States officials consider this a low estimate. The topography of the region dictates that all improperly discharged sewage drains down the hillsides into the four major surface drainages that flow into Arizona. This problem is exacerbated during the rainy season, when rain scours the hillsides and drains any cesspools or leaking barrels.

The Nogales Wash is the major drainage in the area, with the three other drainages flowing into it. The wash flows from Sonora directly through downtown Nogales, Arizona, and empties into the Santa Cruz River about eight miles north of the border. On its journey north to Tucson, the Santa Cruz flows through many residential areas, ranches, recreational areas, and through a riparian habitat.

For the past several years the Nogales Wash has been flowing at between 3-5 million gallons per day, with much higher flows during rain events. Among the pollutants found in the samples taken from the wash are: fecal coliform, various viruses and parasites, Volatile Organic Compounds (VOCs), mercury, and cyanide.

As a result of a declaration of emergency, the Nogales Wash is being chlorinated on a regular basis. The chlorination has been successful in reducing levels of E. Coli, but during rain events it is very difficult to chlorinate large quantities of rapidly flowing water.

The Santa Cruz County Health Department considers the chlorination to be a short-term solution at best. Many residents are strongly opposed to releasing chlorine to the environment regardless of the reason, and the EPA requires wastewater treatment operations to maintain lower levels of chlorine residuals in the effluent than the levels of chlorine being applied to the Nogales Wash. Additionally, chlorine only treats E. Coli and some other viruses and parasites present in the wash. The VOCs and heavy metals are not treated by this process, and still pose a real health hazard. The Nogales Wash will continue to serve as a collection system for improperly discharged sewage or hazardous material, and steps must be taken to treat the cause of the problem, not just the effect. As recent as May 16, 1991, the Nogales Wash erupted into flames, an event suspected to be caused by the dumping of industrial waste into the wash in Sonora.

Planning Implications, On-site Septic Disposal Systems

To date, with the exception of the Nogales area, the region as a whole has not experienced significant problems with on-site septic systems or the lack of proper disposal facilities. However, this problem is now beginning to appear and areas in Santa Cruz and Cochise Counties have moratoriums on conventional septic systems in some areas and only allow development if alternative treatment methods are used. As the population continues to grow in these rural, unsewered areas the use of on-site disposal systems may be limited and this may restrict further development in those areas. One alternative is the development of small, package systems designed to provide for rural community wastewater treatment, but financing the development and construction may be a problem. More consideration to the development of improvement districts or some other sort of special taxation districts should be given if development of rural areas of the region is to continue.

Recommendations, On-site Septic Disposal Systems

- The Arizona Department of Environmental Quality (ADEQ) should support the development of smaller, package treatment plants for smaller, developing communities rather than waiting for these communities to formally incorporate and establish a Public Owned Treatment Works (POTW).

- The ADEQ should work with the property owners, County Health Department officials, and municipal officials to develop strategies for specific problem areas.

- The counties and incorporated entities must ensure hook up to these systems when certain conditions are met.

- Counties and incorporated entities should consider mandating/enforcing minimum lot size before permitting an on-site system, certification requirements for septic tank installers, and:

- Counties and local governments should provide public outreach and information on alternative systems available, possibly with the assistance of ADEQ or Arizona Small Utilities Association.

- Counties and incorporated entities must encourage cluster or centralized Wastewater Treatment Facilities (WWTF) in new subdivisions in cities and unincorporated areas.

- Counties and incorporated entities facing financial constraints must encourage the formation of special districts where on-site problems are particularly severe.

- Local Planning and Zoning Departments should hold up final approval for permits until systems are in and approved.

CENTRALIZED WASTEWATER TREATMENT SYSTEMS

Ensuring a long-term solution to wastewater disposal is, and has long been a priority in the region. The Arizona Department of Environmental Quality has identified 57 public and private Wastewater Treatment Facilities in the SEAGO region. These include the Wastewater Treatment Facilities operating in incorporated cities and towns in the region. The development and expansion of centralized collection and treatment facilities has occurred not only to ensure the health and safety in the region, but also to enable growth and development to take place. As would be expected with increasing population, all counties in the SEAGO region are projected to generate increased volumes of wastewater.

The majority of the centralized wastewater treatment facilities in the region rely on facultative lagoons. Facultative lagoons are relatively quiescent, allowing the dissolved oxygen profile to vary locally from high levels due the natural means of oxygenation in some areas to low levels at the bottom, where settled solids can be decomposed anaerobically.

The second most utilized treatment method in the region is extended aeration/activated sludge system. Extended aeration is best defined as providing sufficient quantities of air in the sewage to propagate and maintain necessary aerobic bacteria life to digest the organic matter in the influent. This is accomplished by the use of a rotary compressor forcing the air through diffusers placed near the bottom of the aeration units. The air is dispensed evenly, causing a turbulent action in the unit which shreds and breaks down solids for complete contact with the air and bacteria. Activated sludge denotes that sewage, after passing through the aeration stage, is reduced to a fine sludge containing aerobic bacteria. The activated sludge is separated in the final settling tank and constantly returned to the first aeration stage, thereby inoculating the raw sewage with bacteria and further reducing the sludge to an inert "ash." If necessary, the final effluent is then chlorinated before discharging from the treatment system.

Municipal Systems

There are 20 systems in the SEAGO region that can be classified as "publicly owned treatment works" or POTWs. The POTWs refer to facilities that belong to an incorporated entity or a special taxation district

such as a sanitary or improvement district. These centralized systems serve approximately 55 percent of the region's population. These facilities are generally small with the majority having design capacities less then 1.0 mgd. An inventory of centralized Wastewater Treatment Facilities in the region is included as **Appendix 4-2**.

Appendix 4-2 also shows 1990 population figures, population projections through the year 2010, estimated populations served and design capacities of the existing POTWs in the region. Wastewater treatment needs are projected based on a rough estimate of 100 gallons per person per day (gpcd). When a city reaches an operating level of 80 percent of design capacity, it is recommended that the facility begin planning for expansion. Using **Appendix 4-2** and comparing the maximum design capacity of these municipal systems to the projected population growth of the entity, the need for facility expansion can be projected. Based on the 100 gpcd, those facilities operating at 80 percent of their design capacity were identified as facilities in need of expansion.

It should be stressed that this is a very simplistic look at the existing capacity versus the population projections for the entity. In some cases, this can be somewhat misleading because portions of the entity may rely on on-site septic systems, or portions of the area outside of the incorporated limits may be hooked into the sewer system. This does, however, give each WWTF a worst case scenario and a projection of possible future capacity requirements.

Most incorporated communities in the SEAGO region feel that their systems have the capacity to meet minimum projected growth through the year 2010, while many have capacity well beyond that point. There are no facility expansion plans being developed in the region with the exception of Nogales, and there are several areas in need of collection line renovation and expansion.

Recommendations for Centralized Treatment Systems

From the analysis in **Appendix 4-2**, several entities may need to look at expanding their facilities immediately, and population projections further indicate that several facilities will need to begin planning for expansion in the near future.

Facilities that may be in need of expansion to meet <u>current</u> needs:

- Bisbee, San Jose
- Huachuca City
- Sierra Vista
- Pima
- Patagonia

Facilities in need of expansion to meet projected needs:

- Bisbee, Mule Gulch
- Safford
- Thatcher

Areas without centralized Wastewater Treatment Facilities which may need facilities to meet needs during the planning period:

- Elfrida
- Hereford

Specific recommendations for certain areas:

- Nogales: Nogales will definitely need to expand its capacity, and perhaps sooner than expected as

a result of the North American Free Trade Agreement (NAFTA). Construction of a new facility dedicated solely to flows from the United States is one option currently under consideration, but arrangements will first have to be made with the International Boundary Water Commission (IBWC) to sell the United States interests in the existing plant.

- Critical areas in the region, the northeast section of the Town of Duncan and the surrounding unincorporated communities, as well as unincorporated communities outside of Clifton, need to look at expanding their wastewater capabilities.

- Owner/operators of facilities should begin planning for expansion and preparing plan amendments when they are at or near 80 percent capacity.

- Local government officials must maintain continuous coordination and information exchange with ADEQ, County Health Department officials and municipal operators if the area WQMP is to be a meaningful report.

- Monitoring and sampling requirements should be "batched" or grouped by the smaller providers and a "circuit rider" system set up in order to reduce transportation costs. A system is currently in effect with some of the operators, but it can be expanded.

- The Arizona Department of Environmental Quality (ADEQ) should compile a database of all compliance inspection results, in order to provide local government officials current, accurate information about systems in their jurisdiction.

- The ADEQ should require demonstration of financial and managerial capability prior to giving approval for the construction of wastewater treatment facilities.

- The ADEQ, in cooperation with local governments, should stress the formation of special taxation districts in order to ensure that adequate wastewater treatment facilities are available to serve the public.

- Where economic conditions are such that a system's viability is in question, ADEQ and local government officials should push for regionalization and/or consolidation of water supply systems in order to ensure adequate sanitary conditions for the public.

- The ADEQ must continue to provide technical assistance to the smaller providers when required, and ensure compliance with existing regulations through technical assistance and inspection visits.

- The ADEQ should encourage the establishment of regional labs to reduce cost of analyzing samples and associated transportation costs.

- ADEQ should look at adjusting monitoring and sampling requirements based on the system's size, past sampling performance, and source of effluent.

PRIVATE AND INSTITUTIONAL WASTEWATER SYSTEMS

In addition to the municipal Wastewater Treatment Facilities or POTWs in the region, there are 37 private and institutional wastewater systems in the region. These facilities come under the jurisdiction of the various County Health Department officials and the ADEQ and range from large, institutional operations like the Ft. Huachuca military installation and the state and federal correctional institutions, to small commercial operations. Most of these facilities are small, usually less than 0.5 mgd. Private and institutional systems are listed alphabetically by county in **Appendix 4-3**.

INDUSTRIAL WASTEWATER TREATMENT SYSTEMS

Industrial Dischargers

There are only a few wastewater systems in the SEAGO region that can be generally classified as industrial systems, but with the advent of the North American Free Trade Agreement, it is expected that the numbers of this type of facility will grow along the U.S. Mexican Border. These systems are described in **Appendix 4-4** .

Planning Implications, Industrial Dischargers

As the border communities in the region grow, increased attention will have to be given to discharges from industrial type operations. This is especially true with the expected increase in manufacturing caused by the North American Free Trade Agreement.

Recommendations, Industrial Dischargers

- The use of technical assistance from ADEQ should be encouraged for all industrial dischargers, with frequent monitoring of their discharges.
- Communities should adopt pretreatment ordinances where required, and enforce them.
- Communities should adopt and enforce pollution prevention programs where required.

POINT SOURCE PROGRAMS

Pretreatment Program

The National Pretreatment Program was established by the CWA to prevent (1) interference with POTW operations resulting from discharge of pollutants the system cannot treat; (2) pass-through or untreated pollutants into receiving waters; (3) contamination of sewage sludge to the extent that various disposal options are either ruled out or become more expensive; and (4) exposure of POTW workers to chemical hazards. The current emphasis of this program is on controlling toxic priority pollutants listed by the EPA. All treatment plants larger than five mgd are required to have pretreatment programs as a condition of their NPDES permits. Smaller plants may also be required to have pretreatment programs if nondomestic waste causes any of the problems mentioned above. The EPA has established federal standards which prohibit discharge of certain types of pollutants as well as categorical standards which apply to industrial users in specific industrial categories. The National Pretreatment Program also allows POTWs to set local discharge limits as needed to meet water quality standards or to comply with sludge management regulations.

Pretreatment programs are generally controlled by the POTW, which determines which of its industrial users should be regulated, monitors compliance, and takes enforcement actions when necessary. In Arizona, pretreatment programs must be approved by the EPA.

Pretreatment programs may be affected by programs to control toxic pollutants and requirements for individual control strategies where waters are not expected to meet water quality standards because of point source discharges of toxic pollutants. Once federal standards are approved for allowable levels of toxics in sludge, pretreatment programs may have to be revised as well.
Currently, there are only two dischargers in the region that are required by the POTW to pretreat wastewater. These are the United Musical Instruments Company and Fuggitti Electroplating, both of which discharge to Nogales International Wastewater Treatment Facility.

Wastewater Sludge

The treatment of wastewater results in the production and accumulation of residual byproducts which have to be treated or disposed of in a safe manner. Sludge is the accumulated solids that are separated from wastewater during processing, and the precipitate resulting from chemical treatment, coagulation, or sedimentation of wastewater. Although the solids carried in wastewater represent less than 0.1 percent of the total weight of the wastewater flow, cost of their disposal represents 30-50 percent of the total cost of wastewater treatment. If proper care is not taken in handling and disposal of wastewater sludge it can present a potential pollution hazard.

Solids in wastewater are eventually converted into a residual sludge that constitutes an important byproduct of sewage treatment. In the past, sludge has often been discarded or wasted without any concern for the environmental consequences. The importance of the proper disposal of sludges is outlined in Section 405, of the Clean Water Act, which specifically prohibits the disposal of sewage sludge which "would result in any pollutant from such sewage sludge entering the navigable waters," except under permitted circumstances controlled by the Environmental Protection Agency. The effect of these limiting regulations is better control over and eventual elimination of this source of contaminants from the nation's waters.

Section 405 of the Clean Water Act prohibits disposal of sewage sludge except in accordance with NPDES regulations and requires the EPA to develop regulations and provide guidelines. The EPA issued draft Sludge Management Regulations in May 1989, and issued technical standards which specify pollutant concentration limits for various sludge disposal/use options in February 1993. Part 503 controls the quantity of sewage sludge that may be applied to lands, distributed and marketed, placed in a sludge disposal facility (monofill), or other surface disposal site, or fired in a sewage sludge incinerator. Certain pollutant limits, pathogen and vector controls, and management practices are now mandated for each of these practices to ensure that the sewage sludge is used or disposed in ways that protect public health and the environment. The new rules reward producers of high quality sewage sludge by allowing them to market their products as fertilizer, subject to limited regulatory control. Encouraging the generation of high quality sewage sludge can improve soil fertility, reduce hazardous air emissions from incinerators, and reduce the volume of waste disposed of in landfills.

Sludge is generally disposed of in one of three ways. It may be placed in a landfill, applied to cropland, or incinerated. Stabilized sludge containing no free water can be satisfactorily disposed of in a sanitary landfill or disposed of in a municipal solid waste landfill. New sludge regulations require that sludge pass a "paint filter" test before disposal in a landfill. This means it has to be dewatered to contain no more than 20 percent liquids. The sanitary landfill must be managed so that wastes are systematically deposited and covered. Leachate and runoff from a sanitary landfill should be minimized to prevent pollution of ground and surface waters. In the SEAGO region, landfill disposal should not materially affect groundwater quality.

Application of sludge to cropland is a popular method of sludge disposal because it is simple and economical. Sludge is added to the soil to improve the moisture holding capacity and is a source of nutrients for growing crops. Although the sludge makes an excellent soil conditioner, there exists the possibility of contamination or pollution. Nutrients leached from the soil can contaminate surface waters as surface return flow or contaminate groundwater through deep percolation attributed to surface irrigation. Also, numerous heavy metals zinc, copper, iron, lead, cobalt, cadmium, barium, nickel, boron, and arsenic can be present in wastewater sludge in varying quantities.

Incineration of dried sludge is relatively uncommon in the SEAGO region. This method is costly because of the equipment and energy required, and the potential for air pollution. Additionally, residue from this process still has to be disposed of.

The majority of wastewater treatment plants in the region utilize facultative lagoons for sanitary wastewater disposal and have a significant operational advantage over "mechanical' plants with respect to residual wastes disposal. In lagoons, the residuals are not removed from the wastewater treatment process for disposal, but instead remain in the lagoon system for years, being slowly degraded in the bottom deposits. Obviously, many of the constituents of wastewater are not degradable and sludge deposits will build up in the lagoon, eventually requiring pumping or dredging at 15-25 year intervals to restore the necessary volume and depth for proper operation.

A summary of the new EPA rules dealing with disposition and handling of wastewater sludge is in **Appendix 4-5.**

Septage Disposal

Another treatment system byproduct is septage. Septage is a residual waste product of septic tanks. Although quantities are large, septage has until very recently received little attention from environmental engineers and scientists. Its effects on the environment are generally unknown. Until now disposal of septage posed problems because regulatory agencies provided no detailed guidance on proper disposal methods.

Septage is the material pumped from septic tanks or cesspools. Septic tank systems should be pumped out at regular intervals in order to avoid plugging of leach fields. Septage can be characterized as a grey to black liquor sludge with solid content ranging from 1-8 percent, and is made up of settled materials, floatable solids, and liquor. Hydrogen sulfide, a product of anaerobic digestion, gives septage its characteristic offensive odor. The composition of septage is highly variable. The suspended solids and nitrogen contents of septage are approximately 100 times and 200 times, respectively, more concentrated than those in raw domestic wastewater.

The most common environmental problem related to the disposal of septage is artificial nutrient enrichment of surface and ground waters. In areas where proper disposal is not practiced, accelerated eutrophication of ponds and rivers may result. Contamination of drinking water sources by nutrients contained in septage has occurred in Tombstone where septage was commonly disposed of in abandoned mine shafts. Nitrates, formed by the nitrification of ammonia, readily leaches through soil and can contaminate drinking water wells.

Septage disposal is currently regulated and addressed under solid waste management. New regulations under Resource Conservation Recovery Act (RCRA) Subtitle D are designed to minimize leachate from landfills which will be done, in part, by restricting the placement of liquids in landfills. Septage may be disposed of in sludge monofills or by land application according to new federal regulations. These regulations are summarized in **Appendix 4-5**.

Currently some of the municipal wastewater treatment systems in the region accept septage from septic system maintenance companies on a reimbursable basis. There are some indications that where disposal of septage is not available at a municipal treatment plant or at a sanitary landfill, indiscriminate dumping occurs.

Recommendations for Point Source Control Programs

- County and city managers must address increased public awareness and education, in order to facilitate early identification of water quality problems in their jurisdictions.
- County and city government should consider stricter controls and licensing procedures for septage haulers and monitoring provisions.
- All landfill operators and associated governmental entities should look at controlling access to dumping facilities in order to reduce the amount of uncontrolled, indiscriminate dumping of septage.
- County and city general plans should address septage disposal in unsewered areas, and provide information and locations of sites accepting septage to septage haulers.

EVALUATION OF GENERAL COMPLIANCE STATUS OF EXISTING SYSTEMS

Compliance data was reviewed for the years 1989-1992. Violations are reported in four different categories: quality violations for effluent, failure to submit monitoring or sampling data; lack of a certified operator; and operation/maintenance/inspection. Of the approximately 75 systems in the region requiring individual permits, almost 75 percent were reported as out of compliance with federal and/or state regulations at least once during that period.

In terms of general compliance trends, the region did not fare well. During the period reviewed, of the facilities possessing NPDES permits, all (100 percent) had violations reported for monitoring year 1992. The most common violation was for failure to submit required monitoring information and reporting violations. The next most common violation was for effluent quality violations. Inspection problems and absence of certified operator(s) of the required grade were third and fourth in a number of occurrences, respectively.

Of the four facilities in the region currently possessing reuse permits, all had at least one violation during the reporting period. The most common violation for this category was also for failure to submit required monitoring reporting information, followed by inspection violations. Quality and operator problems were third and fourth, respectively.

For the facilities requiring individual permits, (72 percent) had no violations during the period. The remaining 28 percent facilities had one or more violations and were most often in violation of inspection requirements. Lack of a certified operator was the second highest type of violation for this group.

Facilities which require no permit accounted for approximately 25 percent of the total violations in the region. Seventy-four percent of these facilities had one or more violations in the period. The most common violation category was for operator certification, followed by inspection or operation and maintenance problems. It should be noted that because these facilities do not have permits, they do not test for effluent quality nor submit monitoring reports to ADEQ. All facilities, regardless of permitting status, are routinely inspected by ADEQ or the local health department through a delegation agreement. The frequency of inspections depends on the size of the facility and its compliance history.

Lastly, for the POTW facilities in the region, 80 percent had one or more violations during the period covering 1989-92. The most common category of violation for these facilities was for operation and maintenance problems followed by quality and submittal violations.

Planning Implications, Evaluation of Compliance Status

It is difficult to obtain information on some private and institutional systems, and unless significant problems occur they are only of limited interest to governing officials. However, it is generally within these systems where many of the violations and findings of noncompliance occur. Smaller "Mom and Pop" type operations found at motels, restaurants, and trailer courts often do not have a qualified, full-time operator, and are subject to frequent other violations. County Health Department officials will have to ensure that these private and institutional sites are monitored in order to prevent point source pollution problems from getting out of hand.
As technology and diagnostic capabilities improve, measurable standards will get more specific and compliance will become increasingly difficult for the smaller operators. The ADEQ must judge at what point compliance with the standard is economically feasible for these small operators.

Additionally, some of the smaller entities feel threatened by ADEQ, and will not request assistance until they have exhausted all of their local sources for fear of being found in violation and fined. As these smaller entities are often not that technically competent, problems are often exacerbated that could have, and should have been resolved before they became more sever.

Recommendations, Evaluation of Compliance Status

- The ADEQ should continue to provide technical assistance to all WWTFs. This assistance should be provided upon request, as well as in the form of routine inspections to ensure

compliance.

- ADEQ should be available to provide emergency assistance to small operators on a 24-hour a day basis.

- ADEQ should examine its policies and practices when providing emergency assistance to smaller systems. A fine should be the last alternative when a system has requested assistance to resolve the problem, and may not have the technical expertise to correct the problem themselves.

- The ADEQ should look at establishing a contingency fund to provide assistance to the smaller systems for emergency repairs. These smaller systems usually do not have funds on hand to pay for repairs to their systems, and using other sources such as CDBG and FmHA would add months to the process. ADEQ could provide these funds on an interim basis for needed immediate repairs, and work out the details of reimbursement after the emergency situation had been resolved.

- The ADEQ should develop and maintain a database with detailed compliance information, and make this information to local government planning personnel through scheduled mailings or a database accessible via modem.

- The ADEQ should encourage the establishment of regional labs to reduce the cost of analyzing samples and associated transportation costs.

- Within limitations, ADEQ may want to establish effluent limits and sampling requirements based on the particular area or influent treated by the facility.

SOLID WASTE

Solid waste disposal practices can contribute to both point and nonpoint sources of pollution, and water quality problems in general. However, for the purposes of the SEAGO Water Quality Management Plan, solid waste will be discussed here under point source pollution, because solid waste facilities or landfills are required to obtain an Aquifer Protection Permit. The reason for an APP is to ensure that there are no releases of pollutants from the landfill to the land surface or to the vadose zone, in such a manner that there is a reasonable probability that the pollutant will reach the aquifer. Solid waste facilities and activities generally fall under provisions of the Resource Conservation and Recovery Act (RCRA).

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act of 1991 emphasizes planning and regulation as the major elements of dealing with a mounting national solid waste problem. The RCRA gives highest priority to reducing the use of toxics, followed by recycling, waste treatment and finally landfilling and incineration. The RCRA sets quantifiable goals of not less than 10 percent reduction of municipal solid waste by the year 1990, not less than 25 percent recycled by 1995 and not less than 50 percent by the year 2000.

Industries will be required to recycle specified percentages of paper, plastic, glass, and other materials. The RCRA further provides for minimum recovery and utilization rates for newsprint, mixed paper, and other types of paper. It recognizes that these goals are only attainable if markets are developed for recycled products and mandates that federal agencies take the lead through their own procurement practices.

The RCRA encourages state and regional planning as the basic strategy for a coherent solid waste management program. The major change is a shift from inducing participation through funding to regulatory sanctions. The state program is requiring APPs for new and existing landfills. The new regulations will mean significant upgrades to existing facilities. New facilities will be built to much stricter codes of design standards.

The capacity of existing landfills and the ability to site new landfills can affect the disposal of solid waste. As of 1993, are 22 landfills operating in the SEAGO region. **Table 4-4** identifies the locations of active landfills, the responsible operator, and the projected life span of the facility.

Ten of the 21 landfills have a life span of 10 years or less, with most of these located in Cochise County. Although landfills in the other counties will also reach capacity in the near future, there are other landfills in those counties which offer the potential to serve regional solid waste management needs. In addition to landfilling, recycling programs are becoming more prevalent throughout the region as alternative solid waste disposal methods. Huachuca City has recently developed a resource recovery system at its landfill.

Cochise, Santa Cruz, Graham, and Greenlee Counties are all concerned about the limited landfill space they have remaining and are in the process of regionalizing landfills or locating new landfill sites on a county-wide basis. The Cochise County Solid Waste Plan calls for closure of most of the existing landfills in Cochise County, and solid waste will be taken to transfer stations located throughout the county, sorted for hazardous waste and recyclable materials, compacted and taken to a regional landfill for disposal. Current plans call for one regional landfill in the eastern part of the county, but a second, western county regional landfill is envisioned in the future.

Planning Implications/Issues, Solid Waste

The illegal dumping of waste water sludge and septage was identified earlier under the point source control programs. Illegal dumping of solid wastes is also a problem, especially in rural areas where the closest landfill or transfer station is many miles away.

Household hazardous waste has also been identified as an issue for both waste treatment disposal as well as solid waste management. Many of the larger communities across the state have held community collection days. These efforts have been marginally successful due primarily to the high costs involved in collecting and transporting the materials to approved disposal sites. Sierra Vista initiated a lot of the preliminary work in the area on household hazardous waste, but deferred completion of the program to the staff at Cochise County. Unfortunately, severe personnel turnover at Cochise County among the environmental staff has caused the program to lag, and in 1993 Cochise County returned $20,000 in federal grant monies that it had received through ADEQ.

Under state regulations, counties must provide opportunities for recycling to their residents. Recycling is also a means to reduce the amount of waste deposited in landfills, thus lengthening the life span of these facilities. There may be opportunities worth investigating for recycling in the SEAGO region in addition to the Huachuca City operation. Sierra Vista and Ft. Huachuca are doing some limited recyling, but not to any great extent.

Recommendations, Solid Waste

- County and city governments should include recycling, source reduction and reuse in county and municipal comprehensive plans.
- These plans should include Public education and outreach with support for local recycling operations and household hazardous waste drives.
- Alternative technologies, such as sludge composting, package reduction, and more important funds for start-up costs need to be evaluated and supported by all levels of government.
- Solid waste planning must continue to be an important agenda item for all SEAGO entities.
- Counties should take the lead in regional solid waste planning and implementation.

- County government should strictly enforce dumping ordinances to reduce illegal or "wildcat" dumping.

TABLE 4-1
PERMIT DATA FOR ENTITIES IN SEAGO

FACILITY NAME	TYPE FACILITY	LOCATION	COUNTY	NPDES	REUSE	APP DUE DATE
ADOT - TEXAS CANYON REST STOP	Wastewater	TEXAS CANYON	Cochise			
ADOT -- TEXAS CANYON REST STOP	Wastewater	TEXAS CANYON	Cochise			05/30/96
APACHE MOBILE PARK	Wastewater	ST. DAVID	Cochise			06/30/93
BELLA VISTA RANCHES	Wastewater	SIERRA VISTA	Cochise		R0004-02	09/30/99
BENSON WWTF	Wastewater	BENSON	Cochise			
BISBEE, CITY OF - MULE GULCH WWTF	Wastewater	BISBEE	Cochise	AZ0021810	R0018-02	10/30/98
BISBEE, SAN JOSE WWTF	Wastewater	BISBEE	Cochise			01/30/94
BISBEE, WARREN WWTF	Wastewater	BISBEE	Cochise			01/30/93
BISBEE-DOUGLAS INTL. AIRPORT	Wastewater	DOUGLAS	Cochise	AZ0022659		06/30/97
CLEAR SPRINGS UTILITY CO.	Wastewater	SUNSITES	Cochise			03/30/93
CLOUD 9 RANCHES ESTATES	Wastewater	SIERRA VISTA	Cochise	AZ0021733		
COCHISE INDUSTRIAL PARK	Wastewater	DOUGLAS	Cochise			12/30/98
COCHISE JUNIOR COLLEGE	Wastewater	DOUGLAS	Cochise			
DOUBLE ADOBE TRAILER PARK	Wastewater	McNEAL	Cochise			
DOUGLAS WWTF	Wastewater	DOUGLAS	Cochise			08/30/95
EL PASO NATL. GAS - BOWIE	Wastewater	BOWIE	Cochise			08/30/95
EL PASO NATL. GAS - SAN SIMON	Wastewater	SAN SIMON	Cochise			05/30/94
HOLY TRINITY MONASTERY	Wastewater	HUACHUCA CITY	Cochise		R0016-02	02/28/95
HUACHUCA CITY WASTE WATER TREATMENT	Wastewater	HUACHUCA CITY	Cochise			02/28/99
KOA, CHIEF 4 FEATHERS WWTF	Wastewater	BENSON	Cochise			04/30/99
MILLER RV PARK WWTF	Wastewater	HUACHUCA CITY	Cochise			08/30/96
NACO SANITARY DISTRICT	Wastewater	NACO	Cochise			02/28/96
PALOMINAS DEVELOPMENT CO WWTF	Wastewater	PALOMINAS	Cochise			
SAN JOSE LODGE WWTF	Wastewater	BISBEE	Cochise			

SIERRA VISTA WASTE WATER TREATMENT FAC	Wastewater	SIERRA VISTA	Cochise			
SINKS CARWASH	Wastewater	SIERRA VISTA	Cochise			01/30/99
SOUTH 92 CARWASH	Wastewater	SIERRA VISTA	Cochise			01/30/99
SOUTHEAST AZ MEDICAL CENTER WWTF	Wastewater	DOUGLAS	Cochise			
SOUTHERN ARIZONA BIBLE COLLEGE	Wastewater	PALOMINAS	Cochise			
SOUTHLAND UTIL. (GOLDEN ACRES)	Wastewater	SIERRA VISTA	Cochise			
THE THING -- DAIRY QUEEN	Wastewater	TEXAS CANYON	Cochise			
TOMBSTONE, CITY OF	Wastewater	TOMBSTONE	Cochise	AZ0022080		07/30/99
US ARMY -- FORT HUACHUCA	Wastewater	FORT HUACHUCA	Cochise			
WILLCOX WWTF	Wastewater	WILLCOX	Cochise			09/30/96
WILLCOX, CITY OF	Wastewater	WILLCOX	Cochise			10/30/96
ALANCO, LTD. -- ARMCO MIL	Mining Operations	TOMBSTONE	Cochise			08/30/96
HELDAY G PLANT	Mining Operations	TOMBSTONE	Cochise			07/30/97
MAINE, STATE OF (SILVER)	Mining Operations	TOMBSTONE	Cochise			09/30/94
PBR MINERALS -- GRAND CEN	Mining Operations	TOMBSTONE	Cochise			11/30/95
PHELPS DODGE - DOUGLAS	Mining Operations	DOUGLAS	Cochise			07/30/93
PHELPS DODGE - GOLD PRINC	Mining Operations	SAFFORD	Cochise			08/30/95
SILVER TECH MINES	Mining Operations	TOMBSTONE	Cochise			10/30/97
BENSON, CITY OF	Land Fill	BENSON	Cochise			01/30/95
BISBEE, CITY OF	Land Fill	BISBEE	Cochise			08/30/93
COCHISE COUNTY - ELFRIDA	Land Fill	ELFRIDA	Cochise			07/30/93
DOUGLAS, CITY OF	Land Fill	DOUGLAS	Cochise			07/30/93
EL PASO NATL. GAS -- WILLCOX	Land Fill	WILLCOX	Cochise			09/30/93
HUACHUCA CITY, LAND FILL	Land Fill	HUACHUCA CITY	Cochise			08/30/93
WILLCOX, LAND FILL	Land Fill	WILLCOX	Cochise			11/30/94
APACHE POWDER CO	Industrial	ST. DAVID	Cochise			
AZ. ELECTRIC POWER CO OP	Industrial	BENSON	Cochise	AZ0023795		
CHIRICAHUA (BONITA) HOG FARM	Industrial	BONITA	Cochise			

SIERRA VISTA READY MIX	Industrial	SIERRA VISTA	Cochise			
ADOC - FT. GRANT WWTF	Wastewater	FT. GRANT	Graham			
ADOC -- SAFFORD	Wastewater	SAFFORD	Graham	AZ0022764		
CAMELOT MHP WWTF	Wastewater	SAFFORD	Graham			09/30/93
FT. THOMAS HIGH SCHOOL WWTF	Wastewater	FT. THOMAS	Graham			12/30/98
PIMA, WWTF	Wastewater	PIMA	Graham			11/30/97
SAFFORD WWTF	Wastewater	MT. GRAHAM	Graham			10/30/96
SAFFORD, CITY OF	Wastewater	SAFFORD	Graham		R0003-05	07/30/93
THATCHER WWTF	Wastewater	DALEY ESTATES	Graham			
THATCHER WWTF	Wastewater	THATCHER	Graham			
USDOJ - SAFFORD FED CORR	Wastewater	SWIFT TRAIL	Graham			07/30/96
ASK PEAK MINE	Mining Operations		Graham			
PHELPS DODGE -- SAFFORD	Mining Operations	SAFFORD	Graham	AZ0022331		
GRAHAM COUNTY - CENTRAL LAND FILL	Land Fill	SAFFORD	Graham			02/28/95
GRAHAM COUNTY - FT. GRANT LAND FILL	Land Fill	FT. GRANT	Graham			10/30/95
GRAHAM COUNTY - FT. THOMAS LANDFILL	Land Fill	FT. THOMAS	Graham			03/30/95
SAFFORD, CITY LAND FILL	Land Fill	SAFFORD	Graham			05/30/93
SAFFORD, CITY OF - FIRE T	Industrial	SAFFORD	Graham			06/30/95
CLIFTON WWTF	Wastewater	CLIFTON	Greenlee			09/30/97
DUNCAN SCHOOL DIST. #2	Wastewater	DUNCAN	Greenlee			12/30/98
DUNCAN, TOWN OF	Wastewater	DUNCAN	Greenlee		R0003-06	
PHELPS DODGE -- MORENCI	Mining Operations	MORENCI	Greenlee	AZ0022705		03/30/96
DUNCAN LAND FILL	Land Fill	DUNCAN	Greenlee			03/30/94
GREENLEE COUNTY - BLUE LAND FILL	Land Fill	BLUE	Greenlee			02/28/93
GREENLEE COUNTY - SHELDON LAND FILL	Land Fill	SHELDON	Greenlee			04/30/94
GREENLEE COUNTY - SOUTH COUNTY	Land Fill	GREENLEE COUNTY	Greenlee			03/30/95
AZ STATE PARKS -- PATAGON	Wastewater	PATAGONIA	Santa Cruz	AZ0021793		05/30/99

BUENA VISTA PUBLIC SERVICE	Wastewater	NOGALES	Santa Cruz			10/30/98
CITIZEN'S UTIL. - PECKS C	Wastewater	NOGALES	Santa Cruz			
KOA - AMADO (MTN.VIEW CA)	Wastewater	AMADO	Santa Cruz			03/30/93
NOGALES, CITY OF	Wastewater	NOGALES	Santa Cruz	AZ0020150		
NOGALES, CITY OF - KINO RANCHES	Wastewater	NOGALES	Santa Cruz			
PATAGONIA, TOWN OF	Wastewater	PATAGONIA	Santa Cruz	AZ0021679		10/30/97
RIO RICO PROPERTIES	Wastewater	NOGALES	Santa Cruz			
USFS PENA BLANCA LODGE	Wastewater	NOGALES	Santa Cruz			
YERBA BUENA (NOGALES #1)	Wastewater	NOGALES	Santa Cruz			03/30/96
AZ. WESTERN MINES - ORO B	Mining Operations	NOGALES	Santa Cruz			06/30/96
CALIFORNIA MILLSITE	Mining Operations	ARIVACA	Santa Cruz			02/28/95
MARGARITA MINE	Mining Operations	APPLE VALLEY	Santa Cruz			01/30/95
PATAGONIA, TOWN OF	Land Fill	PATAGONIA	Santa Cruz			02/28/94
SANTA CRUZ COUNTY - AMADO	Land Fill	AMADO	Santa Cruz			01/30/95
SANTA CRUZ COUNTY - SONOI	Land Fill	SONOITA/ELGIN	Santa Cruz			02/28/94
SANTA CRUZ COUNTY - TUBAC	Land Fill	TUBAC	Santa Cruz			12/30/95
RUBY TAILINGS PLANT	Industrial	RUBY	Santa Cruz			
UNITED MUSICAL INSTRUMENT	Industrial	NOGALES	Santa Cruz			

TABLE 4-2
DELEGATION AGREEMENTS WITH ADEQ

FUNCTION AND DUTIES	COUNTY			
	COCHISE	GRAHAM	GREENLEE	SANTA CRUZ
Inspection and permitting of septic tank cleaners.	XXX	XXX	XXX	XXX
Investigation of nuisance complaints.	XXX	XXX	XXX	XXX
Investigation of illegal and "wildcat" dumping.		XXX	XXX	XXX
Inspection and permitting of garbage haulers.		XXX	XXX	XXX
Approval of plans and permitting of private landfills located on the property of establishments already under County Health Department sanitation permits.		XXX	XXX	
Inspection of private landfills located on the property of establishments already under County Health Department sanitation permits.		XXX	XXX	
Permitting of agricultural on-site disposal facilities used by entities operating 4 or fewer farms/ranches or 160 acres or more.		XXX	XXX	
Inspection of agricultural on-site disposal facilities used by entities operating 4 or fewer farms/ranches or 160 acres or more.		XXX		
Granting variances from the garbage collection frequencies for all commercial accounts and for residential areas outside the city and town limits.		XXX		
Approval of plans and construction of septic tank systems with subsurface disposal.	XXX	XXX	XXX	XXX
Approval of construction of public and semi-public swimming pools.	XXX	XXX	XXX	

Source: Arizona Department of Environmental Quality

TABLE 4-3
COMPARISON OF SYSTEMS
IN THE SEAGO REGION

COUNTY	HOUSING UNITS	PUBLIC SEWER	SEPTIC TANK OR CESS-POOL	OTHER MEANS
Cochise County	40238	26372	13584	282
Graham County	9112	4980	3893	239
Greenlee County	3582	2434	1139	9
Santa Cruz County	9595	6453	3035	107
OTHER POPULATION CONCENTRATIONS				
Benson City	1872	1759	113	0
Bisbee City	3181	2869	303	9
Bylas CDP	307	157	51	93
Clifton Town	1246	1208	16	0
Douglas City	4327	4265	101	9
Duncan Town	314	302	31	0
Huachuca City	837	793	42	2
Morenci CDP	762	784	0	0
Nogales City	5537	4891	587	59
Patagonia Town	464	411	69	0
Peridot CDP	282	138	78	49
Pima Town	637	478	157	2
Pirtleville CDP	452	330	70	4
Rio Rico East CDP	512	458	189	0
Safford City	2857	2679	178	0
St. David CDP	648	12	601	0
Sierra Vista City	12927	11971	934	22
Sierra Vista Southeast CDP	3814	806	3003	5
Swift Trail Junction CDP	365	5	350	5
Thatcher Town	1263	1004	259	0
Tombstone City	708	554	151	3
Whetstone CDP	593	10	583	0
Willcox CDP	1371	1317	54	0

TABLE 4-4

ACTIVE LANDFILLS IN SEAGO REGION

Facility	County	Operator	Life Span
Benson	Cochise	City of Benson	3.5 years
Bisbee	Cochise	City of Bisbee	67 years
Douglas	Cochise	City of Douglas	2.5 years
Elfrida	Cochise	Cochise County	1 year
Huachuca City	Cochise	Huachuca City	4 years
Tombstone	Cochise	City of Tombstone	unknown
Willcox	Cochise	City of Willcox	8 months
Safford	Graham	City of Safford	135 years
Artesia	Graham	Graham County	25 years
New Central	Graham	Graham County	20 years
New Eden	Graham	Graham County	25 years
New Ft. Thomas	Graham	Graham County	20 years
New San Jose	Graham	Graham County	10 years
New Ft. Grant	Graham	Department of Corrections	5 years
New Duncan	Greenlee	Greenlee County	30 years
Loma Linda	Greenlee	Greenlee County	6 years
Blue	Greenlee	Greenlee County	20 years
Rio Rico	Santa Cruz	Santa Cruz County	25 years
Tubac/Amado	Santa Cruz	Santa Cruz County	6 to 7 years
Sonoita	Santa Cruz	Santa Cruz County	19 years
Patagonia	Santa Cruz	Town of Patagonia	100 years

SOURCE: SEAGO Regional Solid Waste Study, 1989.