TECHNICAL SUPPORT CENTERS

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SUMMARY

As delegation of the Construction Grants Program (CGP) proceeds the States will be increasing their staff size and their ability to manage the program. At the same time the EPA Regional program staffs will be reduced and their emphasis will shift from project management to oversight of state programs.

Even though the Agency is delegating the project management functions of the CGP it still has concerns about specific program elements and the quality of the wastewater facilities. However, with the decrease in Regional program staff size and the shift toward oversight, the Agency's capability to affect these specific program elements is decreasing.

As delegation progresses, the states and grantees are repeatedly requiring outside knowledge to solve specific and complex problems in the CGP. States, grantees and architect/engineering (A/E) firms have not consistently developed the knowledge or experience to address many problems either for lack of resources or because they have been slow to react to the demand. Knowledge that is available has not been applied nationally so that those who need that specific help can obtain it.

As EPA delegates the day-do-day project management of the Construction Grants Program, it is relieved of a large quantity of repetitive, but necessary, work. Many of these tasks, such as review of proposed engineering contracts and technical and administrative review of applications, are extremely resource intensive. As EPA is freed of these tasks

it can concentrate all of its efforts on improving the quality of the program and the facilities that are constructed.

Continuing direct management or duplicating State efforts, such as reviewing proposed contacts and applications, will not add value to the program. EPA must approach the program differently than it has in the past and bring to it different and better skills than the states are providing or can provide.

The Agency now has a unique opportunity to channel the resources freed up through delegation into building specific expertise that is normally unavailable to EPA, the States and grantees. This expertise could be focused on two things; studying and advancing knowledge in a specific area, and applying that knowledge to specific problems.

In order to most effectively develop and apply the expertise, it should be gathered in "centers of expertise."

A center would contain experts within subareas of a functional area. The experts would have varying backgrounds (i.e., academic, private sector, state, local, and federal experience). These experts would together, constitute a Technical Support Center, (TSC). These Technical Support Centers will become a focal point for developing basic national strategy concepts that can be focused to particular circumstances. The TSC will also be the focal point for technology transfer and advancement.

The TSCs will use their focused and concentrated nature to advance the program by:

- o Acting as consultants to the States on complex or uncommon problems of importance
 - o Identifying and monitoring innovations or developments of new knowledge and transfering information on tried and proven solutions.
 - o Identifying knowledge gaps and negotiating through the Research Committees for specific research and development to support the program.
 - o Packaging materials and training Regional Office and State staffs on new initiatives, or innovative solutions to problems.

The TSC cannot however, serve all grantees and correct all problems. The centers' work will be most effective if it is primarily aimed at the states. The TSCs' main goal will be to help the states succeed as the direct managers of the CGP.

There are three models for the TSCs:

- o Single Center Headquarters Model One national center located in Headquarters under the direction of DAA for Water Program Operations.
- o Multiple Centers Dispersed Model One national center per functional area located in a Regional Office under the direction of the DAA for Water Program Operations.
- o Regional Model One or two experts per Region per functional area under the direction of the Regional Administrator. A small staff in Headquarters to oversee the TSCs.

TECHNICAL SUPPORT CENTERS

The Problem: A Change In Program Emphasis

As delegation of the Construction Grants Program (CGP) proceeds the States will be increasing their staff size and their ability to manage the program. At the same time the EPA Regional program staffs will be reduced and their emphasis will shift from project management to oversight of state programs.

Even though the Agency is delegating the project management functions of the CGP it is still concerned with the quality-of sewage treatment facilities.

This is especially critical now because the Agency's past record of positively affecting the quality of facility plans is dismal. Since January 1979, quality review of facility plans has been performed by a contractor. Of the 128 plans reviewed in calendar year 1979, over 40 percent had weakness and omissions. The weakness of or omissions in the facility plans included, but were not limited to:

- o excessive reserve capacity which can lead to expensive inappropriate facilities;
- o incomplete social economic and environmental impact assessments, and
- o incomplete financing of the local share of capital costs and the O&M costs.1

Dearth, K. "Quality Assurance for Facility Planning", July 14, 1980.

Prior to delegation of the CPG we had developed in the Regional Office a technically competent engineering staff. This staff reviewed Facility Plans and technical and engineering specifications. They occasionally did on-site visits and if needed they were experienced and competent enough to significantly revise facility plans and plant specifications. However, as project managers they have been overburdened with administrative duties. The result has been that the staff has had little time to apply their engineering knowledge to solving common and complex flaws in facility plans. the program staff in the Regions have to resolve audits, ensure that procurements and negotiations with contractors are consistent with federal regulations and respond to public, Congressional and internal Agency requests for time and information among other things. Prior to delegation, and now, the Agency has not concentrated these engineering or technical resources so as to improve the quality of wastewater treatment facilities.

Additionally, we were unable to develop experienced, competent staff for some areas of the program because of resource constraints or because we were unaware of the need. The financial side of this grants program has been underdeveloped. There is considerable insurance work, bonding, record keeping and local finance work to be done within the program. Since in the past we have emphasized the environmental and engineering aspects of the program we have been

unable to fully develop expertise in the area of municipal finance. Areas such as energy efficiency, water conservation and other new initiatives have been similarly underdeveloped.

As delegation progresses, the states and grantees have repeatedly required outside knowledge to solve specific and complex problems in the CGP. Many problems are encountered in attempting to implement new intiatives such as water or energy conservation. Other problems are related to managing the grant, such as financing the local share, maintaining proper records, setting up an affordable and effective user charge system or locating a minority contractor. Still other problem are site-specific and technically oriented. In an area that has a shallow water table that serves as a source of drinking water what kind of effluent conveyance and sludge management systems should be adopted? Many States, grantees and architect/engineering (A/E) firms have not consistently developed the knowledge to address many problems because of a lack of access to a broad range of experience. EPA, on the other hand, does have staff which have a broader range of experience. As the states accept delegation of the program there is a threat of losing this staff to the states. It is imperative that we retain experience and knowledge within the Agency. Only if it is kept within EPA can it be disseminated nationally so that those who need specific help can obtain it.

The knowledge and experience required to address complex problems and implement new initatives will not be rapidly developed in the states. The states are just beginning to

take over the large task of day-to-day project management Most of the States efforts will be directed towards this day-to-day management. There are several ways to increase the level of knowledge and experience for the states, grantees and A/E firms, so that they are able to solve complex problems and improve the quality of the program. One alternative is to fund separate state staffs of experienced and knowledgeable personnel for each state. This staff would represent an addition to the project management staff funded by 205(g). Such an alternative would be an expensive duplication of resources from state to state. Nor would this alternative allow EPA to retain involvement in the improvement and quality of specific program elements.

Another alternative which would allowing for continuing EPA involvement would be to increase the Agency's resources in research and development (R&D). The R&D effort would concentrate on solutions to complex problem and transfer all new information and technologies to the A/E firms and states. This solution does not address the problems of managing a grant. Nor does the solution take into account the historic and continuing gap between federal R&D efforts and private industry application.

A Proposed Solution: Develop Expertise Within EPA

EPA is ultimately responsible for the success of the CGP. In order to retain involvment in the development and improvement of specific program elements, advance the program and help the states solve complex problems that would otherwise

result. in costly delays it is vital that the Agency retain the knowledge and experience it now has and develop it into specific expertise.

Expertise developed in EPA would allow the Agency to contribute to, and affect the quality of the program and the facilities constructed.

Developing Expertise

It is important to define how the Agency can develop "expertise". The first step is to bring together a staff of talented people. They could have some prior experience in the CGP, either as private engineer/consultants, or as local, state or federal employees; but simply renaming an existing group of regional staff the experts will not provide a credible expertise that is able to approach problems with the states. We are specifically interested in experts. They must be able to readily analyze problems, do research and explain findings and resolutions to those with less time or detailed knowledge.

The second step to developing expertise is to require that the staff of experts devote <u>full time</u> to a functional area. This requirement will promise the development of a set of skills to complement those of the traditional Regional Officer, a generalist who must normally divide his time among a number of distinct jobs. The experts must not be involved in the day-to-day oversight of the CGP. Rather, they must focus on two things, studying and advancing knowledge

in the specific area and applying that knowledge to solve problems. In addition, the duties of the expert must be structured so that time is available to raise the level of expertise. This is accomplished through research; attending conferences, seminars, and symposiums; maintaining professional relationships, and, most importantly pursuing resolutions to particularly difficult problems in the functional area* in response to issues or problems raised by a State or RO. Implementing the Solution: Technical Support Centers (TSC)

In order to most effectively develop and apply the expertise, it should be gathered in "centers of expertise." A center would contain experts within subareas of a functional area. For example a center of municipal finance experts ay have some expertise in public finance and taxation and others with expertise in bond market and ratings. The experts would have varying backgrounds (i.e., academic, private sector, state, local, federal) and experience. Technical Support Centers will become a focal point for developing basic national stragegy concepts that can be focused to particular circumstances. The TSC will also be the focal point for technology (anything from I/A to financial management) transfer and advancement. Technology transfer will be especially important for resolving small community problems across Regions. A TSC will be a vehicle for transferring a tried and proven solution from one community

Functional Areas - Designed or adapted to a particular need or activity. Functional areas include: Municipal finance, waste management, A/I, I/I analysis, SSES, or facility sizing.

across the nation to another.

The TSCs will have several responsibilities:

- or uncommon problems of great importance.
- o They will identify and monitor innovations or the development of new knowledge and transfer information on tried and proven techniques.
- They will identify knowledge gaps and negotiate through the Research Committees for specific research and development to support the program.
- Office and state staffs on new initiatives or innovative solutions to complex problems.

The TSCs will be able to aid the states if they are having problems in a specific functional area. The TSC will be especially useful if consistent deficiencies in a state program are discovered through an evaluation or audit. They can effectively get the state back on the track with training and technology transfer.

TSC Will Work With the States

The TSC cannot serve all grantees and correct all problems. The center's work will be most effective if it is primarily aimed at the states. The TSCs, main goal will be to help the states succeed as the direct managers of the CGP.

Suggested TSCs: Functional Areas and Required Expertise

The following functional areas are listed as potential TSCs. These functional areas have repeatedly come up as

problem areas in which the Agency, the States and A/E firms have not consistently developed or applied knowledge. It may appear that the expertise listed below is not different from what has always been available. However, the TSC will need experts who can apply specific knowledge and analytic capabilities that the general chemists or biologist do not have. The TSCs will provide expertise that is not available elsewhere. Over time the functional areas and or the type of expertise needed may shift or be refined.

It is vital that these experts be senior level people who are oriented toward the development, growth and application of their expertise. The TSCs will not provide career fadders for the experts. The Centers are envisoned as up and out organizations. The expertise can be obtained through IPA programs with universities, and other government agencies, through contracts and direct hiring. Outstanding State staff may serve as IPA's for a specific center.

- o Sludge Managment
 - Expertise in the management of material generated by a facility
 - chemistry
 - biology (aquatic)
 - Expertise in the impact of substances (effluent or pollutants) on streams and/ or rivers.
 - hydrologists
 - aquatic biologists
 - wildlife management experts

par layer (specal party)

Municipal finance

- Financial experts
 - bond market, rating and insurance experts
 - accountants
 - economists
 - public finance (taxation) experts
- User Charge/ICR experts
 - economists
 - public finance experts
 - accountants
- Grant Management
 - * accountants
- pretreatment
 - Design and siting expertise
 - mechanical and civil engineering
 - Physical Plant Operation
 - electrical engineers
 - ° chemists
 - biologists
- o Water Conservation/Energy Efficiency
 - Design and Siting
 - mechanical and civil engineers
 - hydrologists
 - Physical Plant Operation
 - chemists
 - biologists
 - electrical engineers

- Alternative Treatment
 - Design and Siting
 - mechanical and civil engineers
 - ° chemists
 - biologists
 - hydrologists
 - qeologists

Other functional areas are:

- o combined sewer overflow,
- o environmental assessment, and
- o inflow and inflitration/sewer system evaluation survey

Following are some examples of how experts in a TSC could support the construction grants program after delegation.

Design specifications: There is a constant inflow of new equipment and improvement of existing equipment for use in POTW's. This creates a need for the process design Engineer to be kept aware of any advances in equipment performance.

Typically the process design Engineer accomplishes this thru use of technical literature. However, this is not sufficient because it is usually manufacturers literature and provides no true empirical reliability data. Second, in situation where a somewhat innovative approach is desired in for instance "Aeriation" equipment the design engineer may want to know what (1) the latest advances are (2) what should the design specs be (3) is there really only one manufacturer that can meet section needs therefore should a sole source design spec

Regional Office staff to answer these questions. However an expert on process equipment could probably easily answer these and a myrid of other questions posed by a grantees design engineer or State review staff. After a simple phone call by a Regional staffer a Service Center expert could be on his way and in a matter of a few days could be in to review the problem, suggest ways of solving it and return to the Center for the next problem.

Energy Conservation: Energy Conservation in a POTW is extremely important as a large part of the operating expense is for electricity, fuel, oil or gas. New technology in this area is constantly evolving. It is extremely important to be aware of the methods for energy reduction. The typical design engineer, State or EPA reviewer can't keep up with the latest information other than to be able to anticiapte when a particular process seems to be very energy intensive. If this happens Technical Service Experts could be called in to review the design and suggest changes to the directors or inceneration process for example.

Alternatives for Small Communities: New technology has made available a great number of alternatives to conventional POTWs. For on lot disposal this may include dry toilets, septic systems and for conventional sewer systems included are vaccum or presurized sewers. Experts in these systems are needed to help head off major problems due to the many system designs and types of equipment available and because

there is limited emperical experience for the design engineers, grantees and States to draw upon.

The TSCs can provide seminars and workshops for the States and Regional liaisons. Through seminars and workshops the experts can instruct the officials on troubleshooting, utilizing checklists to review plans and specifications and other newly developed methods of meeting certain objectives.

In addition to solving specific problems the TSCs will develop checklists and criteria that should be considered by A/E firms in preparing plans and designs for specific facilities. Checklist and criteria are one means of advancing the State of the art and ensuring that grantees, states and A/E firms consider all available options.

Incentives to Use the TSCs

The TSCs will offer the highest quality technical resources in the Construction Grants Program. This service will be essentially free to the states. The major incentive the states have to use the TSC is that the grantees are demanding specific aid and the States cannot meet the demand. However, practically speaking, the grantees may not always be aware that they need assistance, and the state may be unfamiliar with the grantees problems as well as the need for assistance. Even if the grantee perceives the need for assistance it may not communicate this need to the state or to a TSC.

Clearly the states must be aware that the TSCs exist, what the mission of the centers are and that the services provided

will not be making their decisions for them, rather the TSCs are offered to speed up the construction of appropriate, economical waste treatment facilities.

Models for the Technical Support Centers

Below are three models for organizing the TSCs; the Single Center Headquarters Model, the Multiple Centers Dispersed Model and the Regional Model.

The Single Center Headquarters Model and the Multiple Centers Dispersed Model are similar, both are designed in three tiers and have similar duties. .

A. Single Center Headquarters Model

Under this model the TSC is one national center of experts located at Headquarters. The center would report to the DAA for Water Program Operations.

The National Center will:

- Arrange for applied research to advance the state of the art:
- Work with the Research Committee in ORD to identify technology or health effects research areas;
- o Go on-site to learn about specific innovations or experiments that are underway so that the methods, and outcomes can be transferred to other localities;
- o Train regional program staff;
- o Most importantly consult with Regional Program staff on specific problems related to the TSC functional area;

- Occasionally go on-site with State and Regional
 Program support staff to work with a grantee
 (such occasions would be chosen because they would
 be genuine learning opportunities for the TSC
 center expert (s))
- o . Serve as an information clearinghouse
- o Review a series of grants to identify common problems or trends.
- o Develop improved ways to deal with common problems.

The second tier of the model is the Regional liaison. The program staff in each Regional Office would have at least one knowledgeable, person who would be the liaison between the state/grantee and the TSC. The Regional liaison would not have the in-depth knowledge, training or expertise of the TSC experts but he would be able to recognize problems and to work with the TSC and states. If a particular problem required on-site visits the Regional liaison would normally make the visit. He would have regular training sessions with the TSCs.

The states are the third tier. They are the clients of the TSCs and the Regional liaisons. If a State require aid or advice from a TSC it would contact the Regional liaison.

PROS

The major advantage of the Headquarters model are:

o All the national experts would be centrally located with access to the policy and broader program expertise in Headquarters.

- o. The TSC experts would be able to consult with each other should they need to.
- o By locating the one national TSC in Washington it will have immediate access to the DAA and to the other EPA program officers.

This may not always prove to be advantageous. The TSC experts may be diverted from their mission to serve on committees or lend their expertise to non-CGP work.

CONS

- One national TSC, located in Washington, for all the national experts would result in the TSC experts being removed from program implementation. This real and psychological separation between Headquarters and the program in the field could be detrimental to the success of the TSC. The Headquarters policy perspective could conflict with the necessarily more practical problem solving orientation of the TSCs, whose purpose would be to find specific ways to help or "steer" communities to a better evaluation of their options.
- o The states, who are the clients of the TSC, may perceive the centers as enforcers or watchdogs if they are located in headquarters. If the states think of the centers as watchdogs their ability to serve the states will be greatly hampered.
- o By creating one centrally located TSC at Headquarters we lose the ability to locate the expertise of the

center with problems that are geographically concentrated. For example, we would lose the opportunity to locate a TSC concerned with water conservation in Denver to serve Western States which have severe water supply problems.

B. Multiple Centers Dispersed Model

This model consists of multiple separate national centers of experts. It is also developed in three tiers.

For each functional area there will be one national center that is located away from Headquarters, perhaps in a Regional Office. Each TSC will be staffed with six to ten experts. This number of experts is necessary to cover the range of subareas in functional area and to serve the entire country in a timely manner. The centers will report to the Deputy Assistant Administrator for Water Program Operations. The TSC experts will have the same duties as the experts in the Headquarter model. This is the first tier of the model.

The second (regional liasion) and third tier (state role) of this model are the same as the Single Center Head-quarters Model.

PROS

The advantages of locating the TSCs in the Regional Offices under the direction of the DAA are as follows:

functional area. The specific expertise would not be scattered throughout the country, rather

it would be concentrated and directed.

- Locating the TSC in the Regional Offices would allow for interaction and cross fertilization with the Regional program staff. The centers will be closer to first hand acquaintance with the incidence
- The dispersion of TSCs among the Regional Offices, or away from Headquarters, allows them to be matched with problems that are Regionally or geographically concentrated.
- The TSC can use the regions as "labs" for developing and testing solutions before they are applied nationally.
- Locating the TSCs away from Headquarters will 0 establish a presence of national experts that merge policy, theory and practical application in the Regions.
- Allows for more frequent state interaction than the Headquarters Model.

CONS

- The TSC under the dispersed model are not centrally located within close proximity to the DAA.
 - Management and reporting problems may occur.
- Locating the centers in separate Regional Offices under the direction of the DAA may cause tension between the RA and DAA.
- If there are not ten TSCs, each specializing in a separate functional area, some Regional Offices

may not have a TSC. The result may be that TSCs become a political football in negotiations between RAs and the DAA concerning the location of the centers.

One way to avoid tension between the DAA and the RA is to make the TSCs a regional resource under the direction of the RA However, if the TSCs become a regional resource they would lose their national focus, and perhaps not effectively serve as national centers of expertise.

C. Regional Centers Model

The regional TSC model consists of one or two experts per region per functional area. These experts are regional resources and are under the direction of the R.A. In Headquarters there would be a small staff to oversee the TSC.

PRO T

The advantages of this model are:

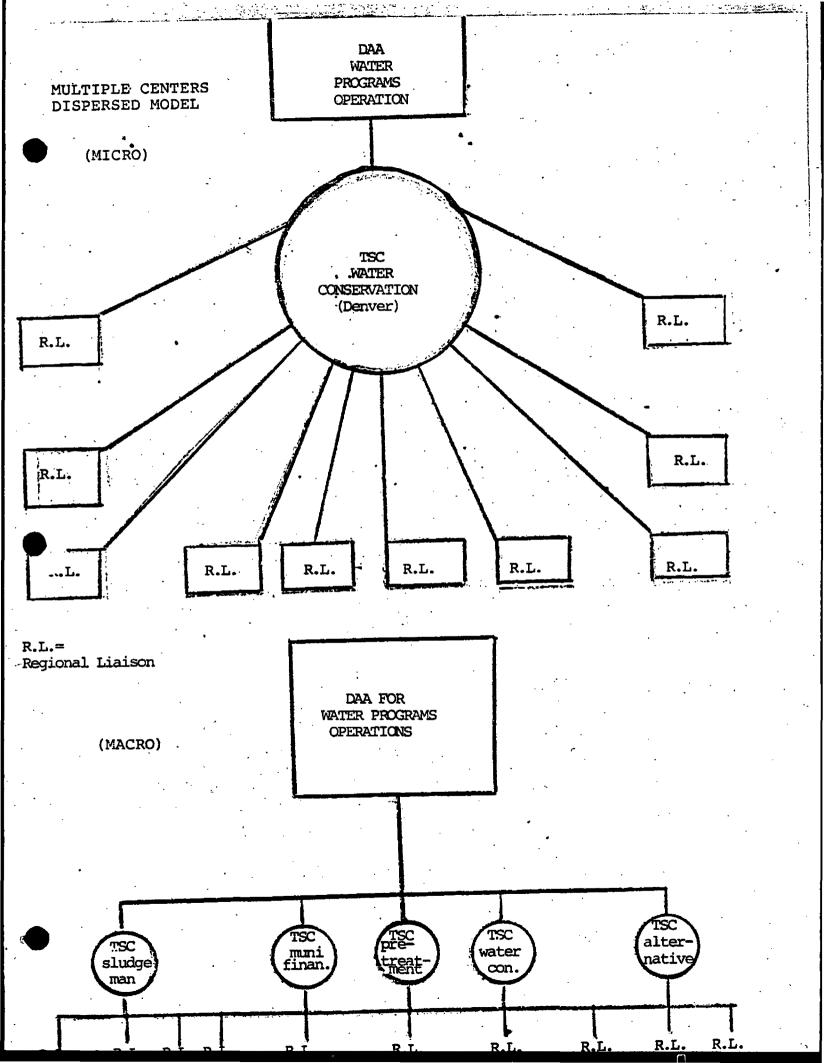
- o There would be an expert for each functional area in each region.
- o The expert could concentrate on the specific environmental, social, political and economic realities of the region.
- o The TSC would be under the direction of the R.A.,
 thus assuring that there would be no tension between
 the R.A. and the DAA.

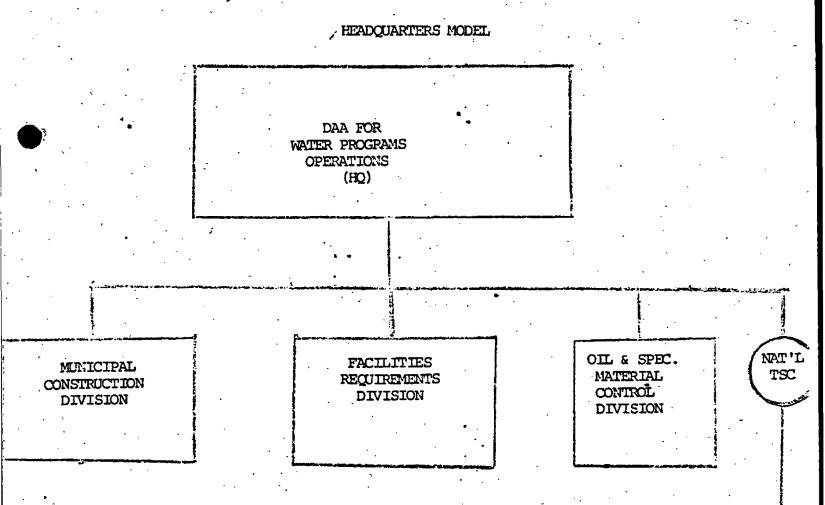
CONS

- o The Regional TSC model does not fit the concept of a center of expertise that:
 - allows for information collection and transfer,

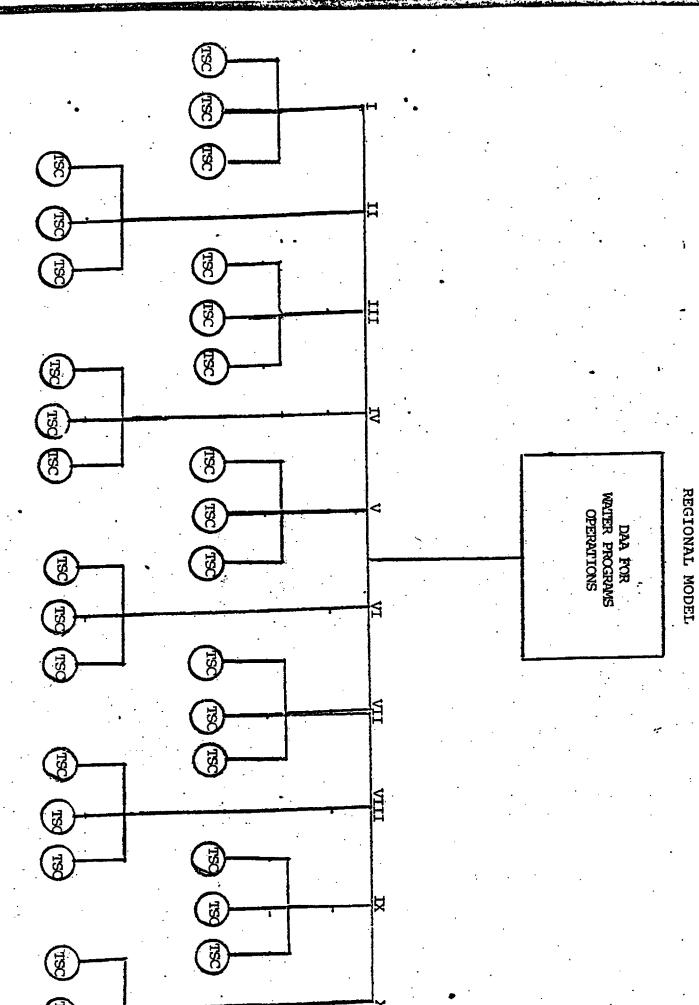
- advances the state of the art,
- maintains contact with the research components of Agency, and
 - is up-to-date onthe current theory and research in the academic and industrial community.
- o The Regional TSC proposal would require much more personnel and would not be delivering a better or comparable product.
- o It is unrealistic to expect that one or two people can be experts on every aspect of sludge management or know all about bonding, public finances, and economics. It is not likely that one or two persons would contain the proper mix of theoretical and practical knowledge required to create a TSC.
- The Regional centers do not have an economy of scale which would allow every Regional TSC to collect nation-wide information from all over the country on the different methods of solving a particular problem; this would be a massive duplication of effort and misue of resources. The point of having one national center per functional area is to not duplicate effort or misuse resources, rather to concentrate them and direct them in the most effective ways.
 - o As regional resources the centers will lose the national focus.

The major goal of the TSC is to ensure that the most efficient, economical and appropriate treatment facilities are designed and constructed. In order to meet this goal the TSCs will develop and concentrate expertise that is unavailable elsewhere. The expertise will be used to advance the Construction Grants Program and to help the states solve complex problems.





RI= Regional Liaison



Appendix

Example of How a TSC Would Address

A Particular Problem

A small community in a rural state has a seriously failing septic system. The community is located next to a Class I stream. Sport fishing, especially trout, has made the stream an important recreational and wildlife resource.

The septime failings have become so serious that the community has decided to build a sewage treatment plant. The outfall will be in the trout stream.

The small community has never had to work with an A/E firm before on such a large, costly, federally-financed project. The community is too small for housing grants, and the highway grants are handled by the county or state. This is the community's first experience with financing, and directing the planning, design and construction of a publicly owned facility. The project is so overwhelming for the community Aldermen, that they are totally dependent on the A/E firm.

As the A/E firm puts together the facility plan and during the first phases of the design the community operates on a pay-as-you-go basis. It isn't until well into the design on the facility (Step 2) that the Board of Aldermen finally realize the tremendous financial and technical burden they are imposing on themselves. They halt the project immediately.

the state. The community and the state decide that the best course of action is to redesign the plant to reduce costs. It becomes clear to the state that some expertise in municipal finance is needed in order to help the community finance even a redesigned, less costly facility. The community has always operated on a pay-as-you-go basis it has no experience with municipal bonding or financing. (The state environmental program does not have the level of expertise in municipal finance or the time to offer the community.)

The Regional Office program staff have little experience in AWT. However, there is a TSC for AWT. The Regional Office program staff calls the TSC, and outlines the problem for the TSC experts. The TSC experts request that specific information be sent to them (via telex). This includes information about the community, the size of the sewage problem, the environmental state of the stream, and other data necessary to develop a resolution to the problem.

Concurrently, the Regional program staff get in touch with the TSC that specializes in municipal financing. The Regional program staff agree with the state that the community will need some expert aid and advice on municipal bonding, and financial management.

The two TSC must work together because not only does the community need a treatment facility that will protect the Class I trout stream, it must be able to finance the construction and pay for the operation of the facility.

The TSCs approach their specific problem in a similar fashion. If there are any similar problems in another part of the country they search out the problem and resolution to see if it is applicable. They are aware of the literature, the theory and the current research that is being done that relates to AWT and municipal finance. The experts are able to select the relevant information, analyze the data they receive and produce option(s).

When the AWT experts come up with an option(s), they inform the municipal finance TSC so that the possible options for financing the facility can be examined. The TSCs keep in close contact with the Regional liaison who communicates regularly with the state and grantee.

when an option that is acceptable to all parties is decided on, two things occur. The TSC expert meet with a state representative, the A/E firm representing the grantee, the grantee and the regional liaison. The TSC experts on AWT present a skelton design and explain to the A/E firm how the design should be finished according to the communities special circumstances.

The TSC experts on municipal finance will do some video tape training with the grantee and state on how to finance the facility. The training need not be extensive. In fact the TSC experts need only to explain how the financing should be carried out and then recommend a private firm which will do all the work for the community.

When the facility design is completed and a municipal financing program is designed by an investment firm the TSC experts may review them for the state and grantee, if so requested. All the comments will go to the state.

The TSC will keep in contact with the regional liaison to make sure that the project's implementation is smooth. There will not be any need for the TSCs experts to make any on-site visits. The particular problem will become part of the experience and information that the TSC can transfer and apply elsewhere in the country.

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