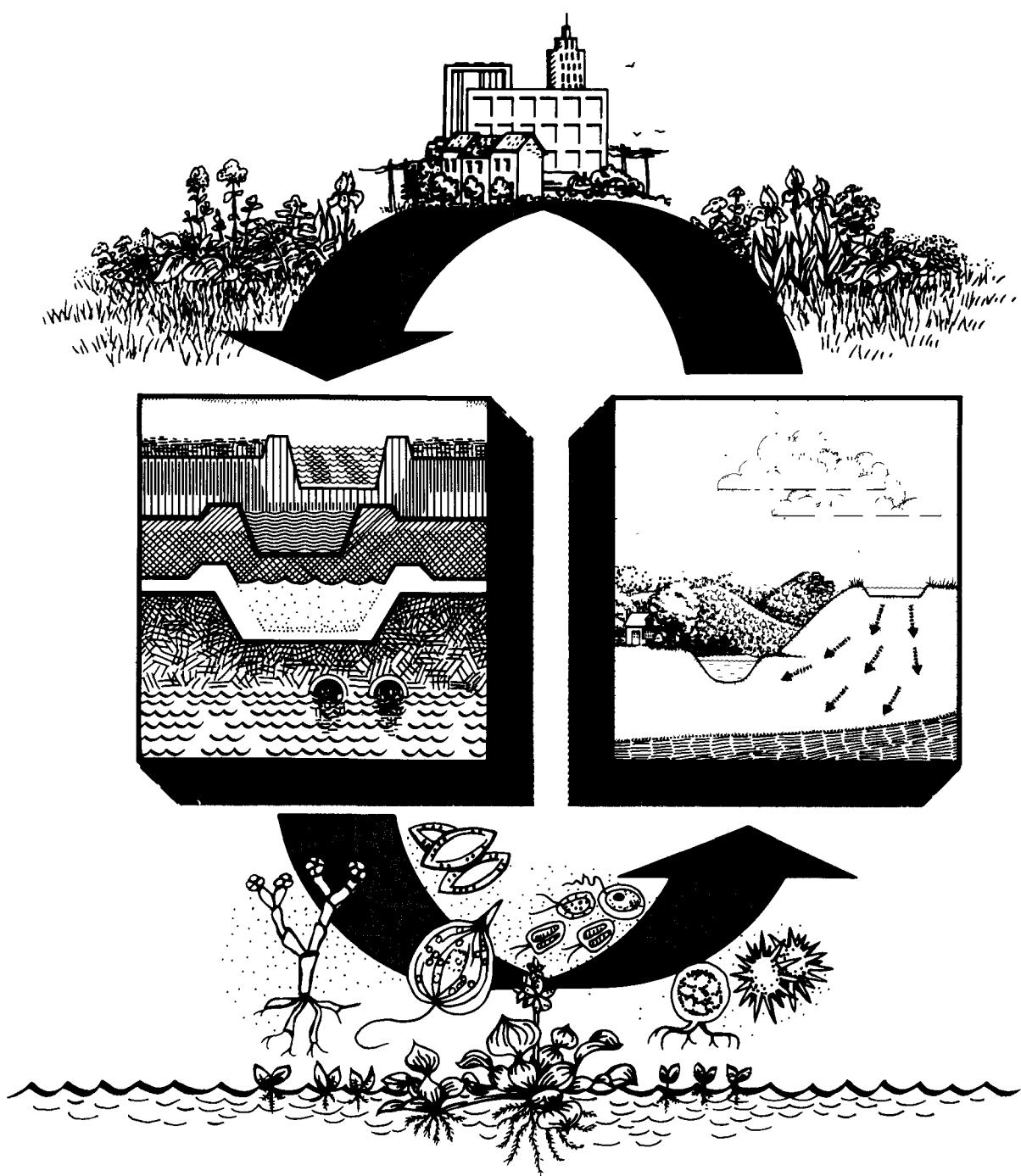




# Innovative and Alternative Technology Projects:

## 1985 Progress Report

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INNOVATIVE AND ALTERNATIVE TECHNOLOGY  
PROJECTS: 1985 PROGRESS REPORT

U. S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF MUNICIPAL POLLUTION CONTROL  
WASHINGTON, D. C. 20460

## P R E F A C E

The Office of Municipal Pollution Control issues this annual summary to provide interested parties with an overview of progress in the implementation of Innovative and Alternative (I/A) technologies under provisions of the Clean Water Act. The report is based upon information from grant awards through March for the year of issue as provided by state agencies and EPA regional offices. State, EPA region, and EPA headquarters staff have worked diligently to make the listings as accurate and helpful as possible. Richard E. Thomas, National I/A coordinator, who is listed in Table 8, should be contacted to report errors, omissions, or suggestions to improve the usefulness of the report.

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## OVERVIEW

The Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) authorized a major Federal funding program to abate water pollution from municipal treatment facilities. The language of P. L. 92-500 sent a clear message that use of the federal grant funds authorized by this law should encourage implementation of alternative technologies.

Specific provisions of the CWA of 1977 established a three-year test program that included a financial incentive, a mandatory reserve fund, and the authority to federally fund correction of failures. Alternative technology projects were eligible by definition and were named in the Environmental Protection Agency (EPA) regulations detailing the provisions of the I/A program. Individual projects or parts of projects could gain eligibility by being designated as innovative on a case-by-case basis.

The 1981 amendments to the CWA continued and strengthened the statutory mandate to encourage use of I/A technologies. The I/A provisions of the CWA of 1977 were extended through fiscal year 1985 with changes that increased the financial incentives and added a provision to fund a new category of projects designated as field testing. The mandatory set-aside was increased to four percent. The bonus grant for I/A projects became a mandatory 20 percent of eligible costs on October 1, 1984. Recognizing a need for flexibility, the Congress provided states the option to increase the mandatory four percent set-aside up to a seven and one-half percent maximum. The field testing program provides a mechanism to verify the basis of design for promising advances in treatment technology to reduce the risk of failure before funding construction of many similar projects.

In summary, there has been a consistent statutory trend from 1972 to the present for the purpose of directing federal funds to the implementation of innovations which are promising, but unproven for the proposed use, as well as proven but comparatively unknown alternatives for wastewater treatment. The increasingly stronger mandates of Congress have had substantial effects in a comparatively short time. Response to the I/A program at the local and state level has resulted in over 3,500 grant awards for I/A technologies from inception of the program on October 1, 1978 through March of 1985. There is every indication that the national response to the program will encourage the Congress to continue strong legislative support when it considers further authorization of the program.

## PROGRAM INFORMATION

The I/A program is now an integral part of the overall construction grants program. Most parts of the program are reaching stability while the field test and 100-percent modification/replacement grant activities are in a state of transition. The basic provisions of the 1977 law are stable as evidenced by the award of over 3,500 grants to design and/or construct over 1,600 facilities with innovative or alternative components. Over \$410 million of set-aside funds have been used to provide the I/A bonus for eligible components of these projects. Several awards have been made under the provision to provide 100-percent modification and replacement (M/R) funding to correct failures of innovative or alternative components. With over 300 of the I/A-funded facilities now in operation, it is reassuring that there have been less than twenty requests for 100-percent M/R funding. The new field test program established by the 1981 law is a new vehicle for verifying design of innovative projects.

## USING THE INFORMATION

Recognizing the value of specific project information, the Office of Municipal Pollution Control (OMPC) has compiled several tabulations to provide summary information on the I/A program.

Tables 1, 2, and 3 present information on projects funded as innovative.

Table 1. Innovative Technology Projects Funded Less Than Ten Times.

Table 2. Summary of Innovative Technologies Funded Ten or More Times.

Table 3. Selected Operating Innovative Technology Projects Funded Ten or More Times.

Table 1 lists the type of technology, location, design flow, basis for approval as innovative, consulting engineering firm, and whether the project is in operation. Table 2 is a numerical summary of those facilities utilizing an innovative technology which has been funded ten or more times. This listing is arrayed by the EPA regions and states to show the geographic distribution of facilities using these technologies. Table 3 provides additional information as to location, size, and the consulting firm for selected operating facilities using innovative technologies funded ten or more times.

Tables 4 and 5 present information on alternative technology projects.

Table 4. Summary of Alternative Technology Projects.

Table 5. Selected Operating Alternative Technology Projects.

In Table 4, a numerical summary of alternative technology projects is presented, while a list of operating facilities is presented in Table 5.

Table 6 lists the location, status, and technology for field test projects.

Table 7 lists the location, status, and technology for 100% M/R requests.

Table 8 lists the appropriate state and EPA contacts from which additional information on the I/A program can be obtained.

TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES

| <u>Description of Technology/Grantee</u>             | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>       |
|--|--------------------------|--------------------------|-------------------------------------|
| <b>AERATION/MIXING</b>                               |                          |                          |                                     |
| <b>Dome Diffused</b>                                 |                          |                          |                                     |
| Meriden, CT  | 11.6                     | energy                   | C. E. Maguire, Inc.                 |
| (1) Brockton, MA                                     | 18.0                     | cost & energy            | Fay, Spofford & Thorndike, Inc.     |
| (1) Madison Nine Springs, WI                         | 50.0                     | reg. discr.              | O'Brien & Gere                      |
| <b>Submerged Mixing of Equalization Tanks</b>        |                          |                          |                                     |
| Mankato, MN  | 10.0                     | cost                     | Bolton & Menck                      |
| <b>In-Situ Gas Cleaning of Fine Bubble Diffusers</b> |                          |                          |                                     |
| Michigan City, IN                                    | -                        | energy                   | -                                   |
| Alliance, OH   | 7.5                      | cost                     | FA Thomas & Assoc.                  |
| Lakewood, OH   | 18.0                     | cost                     | Watermatation, Inc.                 |
| Nenna-Manasha, WI                                    | -                        | cost                     | McMahon Assoc., Inc.                |
| <b>Draft Tube</b>                                    |                          |                          |                                     |
| Atmore, AL   | 2.0                      | energy                   | -                                   |
| Eufaula, AL  | 2.55                     | energy                   | -                                   |
| Foley, AL  | 1.0                      | energy                   | -                                   |
| Opelika, AL  | 0.94                     | energy                   | -                                   |
| Fairfield, IA  | 2.8                      | energy                   | French, Raneker & Assoc.            |
| (1) Presque Isle, ME                                 | 5.2                      | cost & energy            | Wright-Pierce                       |
| Star, NC   | 0.6                      | energy                   | -                                   |
| (1) Bonner Springs, KS                               | 1.4                      | cost                     | A.C. Kirkwood & Co.                 |
| Hallstead Great Bend, PA                             | 0.35                     | -                        | Bellante, Claus, Miller, & Partners |
| <b>Submerged Turbine Draft Tube</b>                  |                          |                          |                                     |
| Cranston, RI   | 23.0                     | energy                   | Universal Engineering Corp.         |
| <b>U-Tube</b>  |                          |                          |                                     |
| (1) Lewes, DE  | 0.75                     | cost                     | Kidde Consultants                   |
| <b>Submerged Propellor Mixer</b>                     |                          |                          |                                     |
| Ishpeming, MI  | 2.64                     | energy                   | Foth & Van Dyke & Assoc.            |
| (1) Storm Lake, IA                                   | 3.4                      | cost & energy            | Kuehl & Payer                       |
| <b>CLARIFIERS</b>                                    |                          |                          |                                     |
| <b>Aerated Clarifier</b>                             |                          |                          |                                     |
| (1,2) Choctaw, OK                                    | 0.5                      | reg. discr.              | Rea Engineering & Assoc., Inc.      |
| <b>Fixed-Media Clarifier</b>                         |                          |                          |                                     |
| (1) Waynesburg, OH.                                  | 0.4                      | energy                   | -                                   |
| <b>Aspirating Propellor Pump</b>                     |                          |                          |                                     |
| Welch, WV  | -                        | cost                     | -                                   |

(1) Indicates that this facility is listed under more than one innovative technology.  
 (2) Indicates that this facility is operational.

TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>  | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>              |
|---|--------------------------|--------------------------|--|
| <u>Flocculating Clarifier</u>             |                          |                          |  |
| Central Valley, UT                        | 50.0                     | energy                   | Coon, King & Knowlton/<br>Brown & Caldwell |
| (2) Denmark, WI                           | 0.5                      | reg. discr.              | -  |
| (1) Madison Nine Springs, WI              | 50.0                     | reg. discr.              | O'Brien & Gere                             |
| <u>Inclined Plate Settler</u>             |                          |                          |  |
| (2) Sanford, ME                           | 3.6                      | Reg. discr.              | Environmental Engineers, Inc.              |
| <u>Tube Settlers w/Chlorination</u>       |                          |                          |  |
| (1) Flagstaff, AZ                         | 6.0                      | cost                     | Brown & Caldwell                           |
| <u>COLLECTION SYSTEMS</u>                 |                          |                          |  |
| <u>Collection of Septic Tank Effluent</u> |                          |                          |  |
| Wasilla, AK                               | -                        | cost                     | CH M Hill, Inc.                            |
| (1) Marathon, IA                          | 0.04                     | cost                     | DGR & Assoc.                               |
| Kenneth, MN                               | 0.01                     | reg. discr.              | McCombs-Knutson, Assoc.                    |
| (1) Lincoln, MT                           | 0.11                     | env. ben.                | Stahly Eng. & Assoc.                       |
| Muskingum, OH                             | 0.04                     | cost                     | Friedl & Harris                            |
| <u>CSO Treatment</u>                      |                          |                          |  |
| Decatur, IL                               | 41.0                     | cost & env.<br>ben.      |  |
| Ogdensburg, NY                            | 6.5                      | cost                     | Sterns and Wheeler                         |
| Houston, TX                               | 320                      | cost                     | Lockwood, Andrews & Newnam                 |
| <u>Small Diameter Gravity Collection</u>  |                          |                          |  |
| (1,2) Lake Monroe, IN                     | 0.039                    | cost                     | Beam, Longest, & Neff                      |
| Alligator, MS                             | 0.03                     | cost                     | Ray Barker & Associates                    |
| (1) Lincoln, MT                           | 0.11                     | cost & envr.<br>ben.     | Staley Eng. & Assoc.                       |
| (1) Crawford, NY                          | 0.15                     | cost                     | Phillip J. Clark,<br>Engineers, Inc.       |
| (1) Woodstock, NY                         | 0.2                      | cost                     | Lombardo Assoc. of Boston                  |
| (1) Cornersville, TN                      | -                        | cost                     | John Coleman Hayes                         |
| Montgomery Co., VA                        | 0.25                     | cost & energy            | Draper-Aden                                |
| <u>Variable Grade Sewer</u>               |                          |                          |  |
| Cooksville, OH                            | 0.671                    | cost                     | Finkbeiner, Pettis, & Stron                |
| Roseville, OH                             | 0.671                    | cost                     | Design Enterprises, Inc.                   |
| Twin Cities, OHG                          | -                        | cost                     | W. E. Quicksall & Assoc.                   |
| Zanesville, OH                            | 8.0                      | cost                     | Dalton-Dalton-Little                       |
| <u>DISINFECTION</u>                       |                          |                          |  |
| <u>Ozonation</u>                          |                          |                          |  |
| Moorhead, MN                              | 6.0                      | reg. discr.              | Watermation, Inc.                          |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>    | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>                                |
|---|--------------------------|--------------------------|--|
| <u>Pre-Ozonation</u>                        |                          |                          |  |
| N. E. Ohio, OH                              | 50.0                     | -                        | Engineering Science  |
| <u>DISPOSAL OF EFFLUENT</u>                 |                          |                          |  |
| <u>Deep Well Injection of Effluent</u>      |                          |                          |  |
| (1)St. Petersburg, FL                       | 60.5                     | cost                     | -  |
| <u>Subsurface Filter/Surface Discharge</u>  |                          |                          |  |
| Lee County, FL                              | 10.0                     | cost & energy            | -  |
| Town of Newport, VT                         | 0.4                      | env. ben.                | Phillips & Emberley, Inc.                                    |
| <u>Water Supply/Aquifer Recharge</u>        |                          |                          |  |
| Lee Co. FL                                  | 10.0                     | env. ben.                | -  |
| (1)El Paso, TX                              | 10.0                     | env. ben.                | Parkhill, Smith & Cooper, Inc                                |
| <u>ENERGY CONSERVATION AND RECOVERY</u>     |                          |                          |  |
| <u>Active/Passive Solar Heating</u>         |                          |                          |  |
| (1)Hillsborough, NH<br>Providence, RI       | 0.45<br>60.0             | energy<br>energy         | Anderson-Nichols Assoc., Inc.<br>Universal Engineering Corp. |
| <u>Solar Heat/Hearth Shelter Insulation</u> |                          |                          |  |
| Lake Crystal, NH                            | 0.31                     | energy                   | Bolten & Menk  |
| <u>Active Solar Heating</u>                 |                          |                          |  |
| (1,2)Vinton, IA<br>City of Newport, VT      | 1.8<br>1.2               | energy<br>energy         | H. R. Green & Co.<br>Webster-Martin, Inc.                    |
| <u>Energy Recovery/Heat Pumps</u>           |                          |                          |  |
| (1)Storm Lake, IA<br>New York City, NY      | 3.4<br>110.0             | cost & energy<br>energy  | Kuehl & Payer<br>SEA Consultants, Inc.                       |
| (1)Hillsborough, NH                         | 0.45                     | energy                   | Anderson-Nichols Assoc., Inc.                                |
| (1)Los Angeles City, CA                     | 470.                     | energy                   | Montgomery & Parsons   |
| (1)Los Angeles County, CA                   | 400                      | energy                   | Foster-Wheeler/Babcock &<br>Wilcox/LA County staff           |
| <u>Hydroelectric Generation Station</u>     |                          |                          |  |
| Bonney Lake, WA                             | 2.0                      | energy                   | Phillip M. Botch & Assoc.                                    |
| <u>Solar Collectors/Energy Conservation</u> |                          |                          |  |
| Pine River, MN                              | 0.25                     | reg. descr.              | D. L. Floan  |
| <u>Solar Power System</u>                   |                          |                          |  |
| (1)Waynesburg, OH                           | 0.4                      | energy                   | -  |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u> | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>                    |
|--|--------------------------|--------------------------|--|
| <u>Solar Space Heating</u>               |                          |                          |  |
| Cornelia, GA                             | 3.0                      | reg. descr.              | -  |
| (2)Lake Monroe, IN                       | 0.039                    | cost                     | Beam, Longest & Neff                             |
| Gaffney, SC                              | 3.2                      | reg. descr.              | -  |
| (2)Jackson, WY                           | 3.5                      | energy                   | ARIX   |
| <u>Supplemental Solar Heating</u>        |                          |                          |  |
| (1)Flagstaff, AZ                         | 6.0                      | energy                   | Brown & Caldwell                                 |
| <u>Use Waste Steam From Power Plant</u>  |                          |                          |  |
| (2)Waukesha, WI                          | 11.6                     | energy                   | Alvord, Burdic & Howson                          |
| (1)Los Angeles City, CA                  | 470                      | energy                   | Montgomery & Parsons                             |
| (1)Los Angeles County, CA                | 400                      | energy                   | Foster-Wheeler/Babcock &<br>Wilcox/County Staff  |
| <u>Waste Heat Recovery</u>               |                          |                          |  |
| Macon-Bibb, GA                           | 28.0                     | joint munic.<br>/indust. | -  |
| (1)Greensboro, NC                        | 20.0                     | energy                   | -  |
| (1,2)North Tulsa, OK                     | 30.0                     | reg. descr.              | Black & Veatch/Fell, Brusso,<br>Bruton & Knowles |
| (1)Tri-City, OR                          | 13.5                     | cost & energy            | CH <sub>2</sub> M Mill Engineers                 |
| <u>FILTRATION</u>                        |                          |                          |  |
| <u>Continuous Clean Sand Filter</u>      |                          |                          |  |
| Eveleth, MN                              | 1.7                      | cost & energy            | Robert R. Wallace & Assoc.                       |
| Johnstown, OH                            | 0.75                     | cost                     | Evan, Mwechwart, Ambleton &<br>Tilton, Inc.      |
| <u>Floating Dredge Sand Filter</u>       |                          |                          |  |
| (2)Green River, WY                       | 1.5                      | reg. Discr.              | Culp, Wesner, Culp                               |
| <u>Intermittent Sand Filtration</u>      |                          |                          |  |
| (1)Marathon, IA                          | 0.04                     | cost                     | DGR & Assoc.                                     |
| <u>Microscreens</u>                      |                          |                          |  |
| (2)Sterling, CO                          | 3.88                     | reg. descr.              | ARIX   |
| Burley, ID                               | 2.25                     | cost & energy            | CH <sub>2</sub> M Hill                           |
| Newton, MS                               | 0.77                     | cost                     | Wayne Watts, Engineer                            |
| Scottsbluff, NE                          | 3.14                     | -                        | John E. Olsson & Associations                    |
| Henderson, NV                            | 1.5                      | cost                     | URS Engineers                                    |
| <u>Recirculating Rock Filter</u>         |                          |                          |  |
| (2)Marionville, MO                       | 0.49                     | cost                     | Hood-Rich  |
| (2)Seymour, MO                           | 0.25                     | cost                     | Hood-Rich  |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>                | <u>Design Flow<br/>(MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u> |
|---|------------------------------|--------------------------|-------------------------------|
| <u>Recirculating Sand Filter</u>                        |                              |                          |                               |
| (2)Port Costa, CA                                       | 0.033                        | energy                   | Harris & Assoc.               |
| (2)Miranda, CA  | 0.046                        | energy                   | Winzler & Kelley              |
| Damiansville, IL  | 6.0                          | reg. descr.              | Barttelbort & Rhutas          |
| Sandieville, KY   | 0.03                         | cost                     | -                             |
| (2)Alton, MO  | 0.1085                       | cost & energy            | Crane & Fleming Company       |
| Eminence, MO  | 0.29                         | cost & energy            | Missouri Engineering          |
| (2)Mountain View, MO                                    | 0.27                         | cost & energy            | Crane & Fleming Company       |
| Lane, OR  | 0.044                        | energy                   | Kramer, Chin & Mayo           |
| Little Black S.D.#1, WI                                 | -                            | cost                     | C. C. Crane, Inc.             |
| <u>Slow Rock Filter</u>                                 |                              |                          |                               |
| New Haven, IL   | 0.07                         | cost                     | Hunter H. Martin & Assoc.     |
| (1)West Monroe, LA                                      | 5.6                          | -                        | -                             |
| <u>Primary Effluent Filtration</u>                      |                              |                          |                               |
| DeKalb, IL  | -                            | -                        | -                             |
| Wheaton, IL   | 8.9                          | cost                     | Baxter & Woodman              |
| Corry, PA   | 9.0                          | cost & energy            | Lake Engineering              |
| Warminster, PA  | -                            | -                        | Carrol Engineering            |
| <u>LAGOONS</u>  |                              |                          |                               |
| <u>Total Containment Pond</u>                           |                              |                          |                               |
| Gerlach, NV   | 0.03                         | cost                     | Wingler & Kelly               |
| (2)Marietta, GA   | 0.3                          | -                        | -                             |
| <u>Controlled Discharge Stabilization Pond</u>          |                              |                          |                               |
| Jackman, ME   | 0.103                        | cost & energy            | Carroll & Taylor Assoc.       |
| <u>Deep Lagoons</u>                                     |                              |                          |                               |
| Dodge City, KS  | 4.25                         | reg. descr.              | Engineering Enterprises, Inc. |
| <u>Complete Mix Lagoon</u>                              |                              |                          |                               |
| (2)Douglas, WY  | 1.5                          | cost                     | Black & Veatch                |
| <u>Facultative Lagoons</u>                              |                              |                          |                               |
| Bristol Bay, AK   | 0.15                         | cost & energy            | Tryck, Nyman & Hayes          |
| Holbrook, AZ  | 1.3                          | energy                   | John Carollo Engineers        |
| <u>Lagoon in Lieu of Chlorination</u>                   |                              |                          |                               |
| Canton, ME  | 0.04                         | reg. descr.              | Woodward & Curran, Inc.       |
| <u>Lagoon in Lieu of Clarification/Sludge Treatment</u> |                              |                          |                               |
| Wilmington, VT  | 1.1                          | cost & energy            | Eberhard Engineering          |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>      | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>                        |
|---|--------------------------|--------------------------|--|
| <u>LAND APPLICATION OF EFFLUENT</u>           |                          |                          |  |
| <u>Aquaculture</u>                            |                          |                          |  |
| Paragould, AR                                 | 2.2                      | -                        | -  |
| Wilton, AR                                    | 0.09                     | env. ben.                | McClelland Consulting Engrs. Inc.                    |
| (1)Austin, TX                                 | 26.0                     | energy                   | Parkhill, Smith & Cooper, Inc.                       |
| San Benito, TX                                | -                        | -                        | -  |
| Craig-New Castle, PSD, VA                     | 0.18                     | -                        | Anderson & Assoc.                                    |
| <u>Duckweed</u>                               |                          |                          |  |
| Paragould, AR                                 | 2.2                      | Reg. descr.              | Black & Veatch                                       |
| <u>Rapid Infiltration</u>                     |                          |                          |  |
| (2)Waycross, GA                               | 7.0                      | cost                     | -  |
| Payette Lakes, ID                             | 1.8                      | cost                     | JUB Engineers, Inc.                                  |
| (1,2)Lincoln, MT                              | 0.11                     | env. ben.                | Stahly Engineers & Assoc.                            |
| (2)Madison, SD                                | 1.8                      | cost                     | Banner Assoc., Inc.                                  |
| <u>Silviculture</u>                           |                          |                          |  |
| (1,2)Dalton, GA                               | 40.0                     | reliability              | -  |
| Eagle Lake, NC                                | 0.023                    | env. ben. & reliability  | Carroll & Taylor & Assoc.                            |
| (2)Eagle Lake, ME                             | 0.146                    | env. ben. & reliability  | Carroll & Taylor & Assoc                             |
| <u>Steep Slope Spray Irrigation</u>           |                          |                          |  |
| (2)Craigsville, VA                            | 0.25                     | env. ben.                | Betz. Converse & Murdock                             |
| <u>Wetlands</u>                               |                          |                          |  |
| Granger, IA                                   | 0.311                    | env. ben.                | Veenstra & Kimm, Inc.                                |
| Norwalk, IA                                   | 0.633                    | env. ben.                | Associate Engineers, Inc.                            |
| Riverside, IA                                 | -                        | env. ben.                | Shive-Hattery & Assoc.                               |
| St. Paul, KS                                  | -                        | env. ben.                | Shetler, Griffith & Shetlar                          |
| Collins, MS                                   | 0.4                      | env. ben.                | Engineering Associates                               |
| Incline Village, NV                           | 2.14                     | cost                     | CH <sub>2</sub> M Hill<br>Engineers/Culp-Wesner-Culp |
| Cannon Beach, OR                              | 49.0                     | cost                     | CH <sub>2</sub> M Hill Engineers                     |
| <u>NITRIFICATION</u>                          |                          |                          |  |
| <u>Fixed Growth Biological Nitrification</u>  |                          |                          |  |
| Redwood Falls, MN                             | 0.7                      | reg. descr.              | -  |
| <u>Pure Oxygen/Single Stage Nitrification</u> |                          |                          |  |
| Indianapolis, IN                              | 125.0                    | reg. descr.              | Reld, Quebe, Allison Wilcox & Assoc.                 |
| <u>Upflow Packed Bed Nitrification</u>        |                          |                          |  |
| (2)Upper Eagle Valley, CO                     | 3.2                      | cost                     | M&I Engineers  |

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 (2)Indicates that this facility is operational.

TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>  | <u>Design Flow (MGD)</u>             | <u>Basis of Approval</u>                        | <u>Design Consulting Firm</u>   |
|---|--------------------------------------|---|---|
| <u>RBC Nitrification</u>  |                                      |   |   |
| Milford, ME<br>(1,2)Oak View, CA  | -<br>3.0                             | reg. discr.<br>cost & energy                    | Haley & Ward, Inc.<br>James Montgomery Engineers  |
| <u>Specialized Bacteria</u>   |                                      |   |   |
| Hornell, NY   | 3.25                                 | cost  | LaBells Associates  |
| <u>NUTRIENT REMOVAL</u>   |                                      |   |   |
| <u>Allied Treatment for Phosphorus Removal</u>  |                                      |   |   |
| Big Fork, MT  | 0.5                                  | cost & env. ben.                                | Thomas, Dean & Hoskins, Inc.  |
| <u>Bardenpho</u>  |                                      |   |   |
| Ft. Meyers, FL<br>(1)Payson, AZ   | 24.0<br>2.4                          | energy<br>cost                                  | -<br>Moore Knickerbocker & Assoc.   |
| <u>Breakpoint Chlorination for Ammonia Removal</u>                                    |                                      |   |   |
| Longmont, CO  | 11.55                                | cost  | McCall, Ellington, &<br>Morrill, Inc.   |
| <u>Chemical Addition to Lagoon for P Removal</u>                                      |                                      |   |   |
| Albany, MN<br>Albertville, MN   | 0.4<br>0.12                          | cost<br>cost                                    | Rieke-Carroll-Muller & Assoc.<br>Meyer Rohlin, Inc.   |
| <u>PhoStrip</u>   |                                      |   |   |
| (1)Brockton, MA<br>(1)Rochester, MN<br>Reno, NV<br>Amherst, NY<br>Ithica, NY          | 18.0<br>19.1<br>40.0<br>12.0<br>10.0 | cost & energy<br>energy<br>cost<br>cost<br>cost | Fay, Spofford & Thorndike, Inc.<br>Kirkham-Michael & Assoc.<br>Kennedy, Jenks Engineers<br>Neussbaumer, Clark & Velzy<br>Sterns and Wheeler |
| <u>Biofilter/Diffused Air TKN Removal</u>   |                                      |   |   |
| Oakland, MD   | 0.9                                  | cost  | Franklin Assoc.   |
| <u>Waste Pickle Liquor/P Removal</u>  |                                      |   |   |
| (1)Baltimore, MD  | 170.0                                | cost  | Whitman, Regardt & Assoc.   |
| <u>Anoxic/Oxic System</u>   |                                      |   |   |
| Fayetteville, AR<br>Largo, FL<br>(1)Baltimore, MD<br>(1)Tri-City, OR<br>Lancaster, PA | 17.0<br>13.0<br>70.0<br>13.5<br>30.0 | -<br>cost<br>cost<br>cost & energy<br>cost      | CH <sub>2</sub> M Hill Engineers<br>-<br>Whitman, Regardt & Assoc.<br>CH <sub>2</sub> M Hill Engineers<br>Huth Engineers                    |
| <u>OXIDATION DITCH</u>  |                                      |   |   |
| <u>Anoxic Oxidation Ditch</u>   |                                      |   |   |
| Chatham, VA   | 0.45                                 | cost & energy                                   | Olver, Inc.   |

(1)Indicates that this facility is listed under more than one innovative technology.  
 (2)Indicates that this facility is operational.

TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>  | <u>Design Flow (MGD)</u>                                  | <u>Basis of Approval</u>  | <u>Design Consulting Firm</u>   |
|---|---|---|---|
| <u>Over-Under Aeration</u>  |   |   |   |
| Cleveland, VA<br>Fries, VA  | 0.04<br>0.22  | energy<br>energy  | Dewberry, Nealon, & Davis<br>Dewberry, Nealon, & Davis  |
| <u>Benthal Stabilization</u>  |   |   |   |
| Wellsboro, PA   | 2.0   | cost  | Tatman & Lee  |
| <u>Carrousel Oxidation Ditch</u>  |   |   |   |
| (2)Mount Holly Springs, PA  | 0.3   | cost & energy   | Tracy Engineers   |
| <u>ROTATING BIOLOGICAL CONTACTORS</u>   |   |   |   |
| <u>Hydraulically Assisted RBC's</u>   |   |   |   |
| (1)Hardinsburg, KY  | 0.73  | energy  | -   |
| <u>Air Driven RBC's</u>   |   |   |   |
| (1,2)Oak View, CA   | 3.0   | cost & energy   | James Montgomery Engineers  |
| <u>SLUDGE TECHNOLOGY</u>  |   |   |   |
| <u>Thickeners, Belt Filter Presses</u>  |   |   |   |
| (1)Cape May Co., NJ   | 6.3   | reg. discr.   | Pandullo, Quirk & Assoc.  |
| <u>Lateral Flow Thickeners</u>  |   |   |   |
| (1)Bonner Springs, KS<br>(1)Hutchison, KS   | 1.4<br>8.3  | Energy<br>cost  | A. C. Kirkwood & Co.<br>Wilson & Co.  |
| <u>Carver-Greenfield</u>  |   |   |   |
| (1)Los Angeles City, CA<br>(1)Los Angeles County, CA<br>Mercer Co., NJ  | 470.0<br>400<br>56.0                                      | energy<br>energy<br>cost, energy<br>& env. ben.   | Montgomery & Parsons<br>Foster-Wheeler/Babcock &<br>Wilcox/LA County Staff<br>Clinton-Bogart Assoc.   |
| <u>Belt Filter Presses with Lime Feed</u>   |   |   |   |
| Ewing-Lawrence, NJ  | 18.0  | cost & energy   | Buck Siefert & Jost   |
| <u>Vacuum Sludge Drying Beds</u>  |   |   |   |
| (2)Nevada City, CA<br>Brighton, CO<br>Belle Plaine, IA<br>Gilman, IL<br>(2)Portage, IN<br>(2)Union City, IN<br>Gantier, MS<br>(1)Chinook, MT<br>Buena Vista, VA | -<br>1.76<br>0.61<br>0.5<br>3.5<br>1.5<br>2.6<br>0.5<br>- | energy<br>cost<br>reg. discr.<br>reg. discr.<br>reg. discr.<br>reg. discr.<br>cost<br>cost &<br>env. ben.<br>cost | -<br>Henningson, Durham, Richardson<br>H. R. Green Co.<br>Jerry Lacy & Assoc.<br>American Engineering<br>M. W., Inc.<br>Barth and Associates<br>Robert Peccia & Assoc.<br>White & Co. |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>                         | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u>   | <u>Design Consulting Firm</u>            |
|--|--------------------------|----------------------------|--|
| <u>Vacuum/Belt Series</u>  |                          |                            |  |
| Oklahoma City, OK  | 40.0                     | energy                     | Benham-Blair & Affiliates, Inc.          |
| <u>Odor Control for Sludge Lagoons</u>                           |                          |                            |  |
| (2)Sacramento, CA  | -                        | cost & energy              | Sacramento Area Consultants              |
| <u>Facultative Sludge Lagoons</u>                                |                          |                            |  |
| (1)Flagstaff, AZ   | 6.0                      | cost & energy              | Brown & Caldwell                         |
| <u>Travelling Guns to Land Apply Sludge</u>                      |                          |                            |  |
| Grand Strand, SC   | 6.0                      | cost                       | -  |
| <u>INCINERATION</u>  |                          |                            |  |
| <u>Chromium Detoxification of Fluidized Bed Ash</u>              |                          |                            |  |
| S. Essex, MA   | 41.0                     | reg. descr.                | Tighe and Bond                           |
| <u>Co-Incineration</u>   |                          |                            |  |
| Macon Co., GA  | 14.0                     | cost                       | -  |
| Glen Cove, NY  | 8.0                      | reg. descr.                | Wm. F. Cosulich & Assoc/<br>E.F.W. Frank |
| Memphis, TN  | 80.0                     | cost & energy              | -  |
| <u>Starved Air Combustion of Sludge</u>                          |                          |                            |  |
| (2)St. Louis, MO   | 167.0                    | energy                     | Consoer, Townsend & Assoc.               |
| (1)Greensboro, NC  | 20.0                     | energy                     | -  |
| <u>Thermal Processing w/Production of Construction Aggregate</u> |                          |                            |  |
| Philadelphia, PA   | 100.0                    | reg. descr.                | Franklin Research Institute              |
| <u>SLUDGE COMPOSTING</u>   |                          |                            |  |
| <u>Aerated Static Pile Composting</u>                            |                          |                            |  |
| (1)Lexington-Fayette, KY   | 16.0                     | env. ben &<br>reliability  | -  |
| Myrtle Beach, SC   | 12.5                     | env. ben &<br>reliability  | -  |
| <u>Modified Windrow Composting</u>                               |                          |                            |  |
| Tampa, FL  | 60.0                     | cost                       | -  |
| <u>Invessel Mechanical Composting</u>                            |                          |                            |  |
| Brunswick, GA  | 10.0                     | -                          | -  |
| (1)Cape May, NJ  | 6.3                      | reg. descr.                | Pandullo, Quirk & Assoc.                 |
| Clinton Co., NY  | -                        | cost                       | Metcalf & Eddy                           |
| New York, NY   | 280.0                    | cost                       | NY City/Compost Systems, Inc.            |
| (1)East Richland, SC   | 7.0                      | env. ben. &<br>reliability | -  |

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 (2)Indicates that this facility is operational.

TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>         | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>  |
|--|--------------------------|--------------------------|--------------------------------|
| <u>Sludge Composting</u>                         |                          |                          |                                |
| Jefferson Co., AL                                | 35.0                     | env. ben. & reliability  | -                              |
| Juneau, AK                                       | -                        | -                        | Arctic Environmental Engineers |
| (2) Beatrice, NE                                 | 1.9                      | cost                     | Hoskings, Wester & Sonderegger |
| (1) El Paso, TX                                  | 10.0                     | env. ben.                | Parkhill, Smith & Cooper, Inc. |
| <u>Sludge Digestion</u>                          |                          |                          |                                |
| <u>Aerobic Digestion</u>                         |                          |                          |                                |
| (1) Weiser, ID                                   | 2.3                      | env. ben.                | CH <sub>2</sub> M Hill         |
| (1) Chinook, MT                                  | 0.5                      | cost & env. ben.         | Robert Peccia & Assoc.         |
| <u>Anaerobic Digestion</u>                       |                          |                          |                                |
| (1) Aroostook/Presque Isle, ME                   | 1.3                      | energy                   | Wright-Pierce, Inc.            |
| <u>Dual Aerobic/Anaerobic Digestion</u>          |                          |                          |                                |
| (1) Hagerstown, MD                               | 8.0                      | cost & energy            | Buckhart-Horn                  |
| (1,2) Henderson, NC                              | 4.14                     | env. ben. & reliability  | -                              |
| (2) Lackawanna, NY                               | 4.5                      | reliability              | Neussbaumer, Clark & Velzy     |
| <u>MISCELLANEOUS</u>                             |                          |                          |                                |
| <u>Aerobic Pure Oxygen Fluidized Bed Reactor</u> |                          |                          |                                |
| (2) East Bay Dischargers, CA                     | 13.1                     | cost & energy            | Kennedy/Jenks Engineers        |
| Nassau Co., NY                                   | 10.0                     | reg. discr.              | Consoer, Townsend & Assoc.     |
| <u>Biological Aerated Filter</u>                 |                          |                          |                                |
| Oneonta, Al                                      | 2.2                      | cost                     | -                              |
| Wallace, NC                                      | 0.64                     | cost                     | -                              |
| Harrah, OK                                       | -                        | -                        | -                              |
| St. George, SC                                   | 0.8                      | cost                     | -                              |
| <u>Captor</u>                                    |                          |                          |                                |
| Moundsville, WV                                  | 2.75                     | cost                     | Cerrone & Vaughn, Inc.         |
| <u>Chemical Air Scrubber Odor Control</u>        |                          |                          |                                |
| Western Lake Superior, MN                        | 43.9                     | reg. discr.              | Southwest Survey Eng.          |
| <u>Community Mound System</u>                    |                          |                          |                                |
| Elbe, WA   | 0.4                      | cost                     | Byrne-Stevens & Assoc.         |
| <u>Computerized Financial Management</u>         |                          |                          |                                |
| Passaic Valley, NJ                               | -                        | cost                     | Arthur Young & Company         |
| <u>Digestor Supernatant Treatment</u>            |                          |                          |                                |
| Mokena, IL                                       | 1.10                     | reg. discr.              | Mulford Engineering            |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>           | <u>Design Flow (MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>     |
|--|--------------------------|--------------------------|-----------------------------------|
| <u>Dissolved Air Flotation</u>                     |                          |                          |                                   |
| (1) Weiser, ID                                     | 2.3                      | env. ben.                | CH <sub>2</sub> M Hill            |
| <u>Earthen Pond System</u>                         |                          |                          |                                   |
| Quincy, CA   | 0.72                     | cost & energy            | John Carollo Engineers            |
| <u>Eductor Induced Vacuum Chemical Addition</u>    |                          |                          |                                   |
| Washington, DC                                     | 309.0                    | cost                     | -                                 |
| <u>Enclosed Impeller Screw Pumps</u>               |                          |                          |                                   |
| (1) Hutchison, KS                                  | 8.3                      | cost                     | Wilson & Co.                      |
| Westborough, MA                                    | 7.68                     | reg. descr.              | SEA Consultants, Inc.             |
| Republic, MD                                       | 0.93                     | energy                   | Hood-Rich                         |
| (1) Hillsborough, NH                               | 0.45                     | cost & energy            | SEA Consultants, Inc.             |
| <u>Intermittent Cycle Extended Aeration System</u> |                          |                          |                                   |
| Cornersville, TN                                   | -                        | cost                     | John Coleman Hayes                |
| Tullahoma, TN                                      | 3.0                      | cost                     | -                                 |
| Union City, TN                                     | 4.03                     | cost                     | -                                 |
| <u>Modular Activated Sludge</u>                    |                          |                          |                                   |
| Edgar Springs, MO                                  | 0.04                     | cost                     | Heagler & Marshall                |
| Norwood, MO  | 0.04                     | cost                     | Scott Consulting Eng.             |
| <u>Permafrost Construction</u>                     |                          |                          |                                   |
| Naknek, AK   | -                        | cost                     | Tryck, Nyman & Hayes              |
| <u>Powdered Activated Carbon/Regeneration</u>      |                          |                          |                                   |
| Sauget, IL   | 27.0                     | reg. descr.              | Russell Axon & Assoc.             |
| Kalamazoo, MI                                      | 53.3                     | cost                     | Jones & Henry                     |
| (2) Burlington, NC                                 | 9.5                      | cost                     | -                                 |
| Bedford Heights, OH                                | 2.5                      | reg. descr.              | Dalton, Dalton, Little            |
| N. Olmsted, OH                                     | 8.0                      | cost                     | Dalton, Dalton, Little            |
| (1) El Paso, TX                                    | 10.0                     | env. ben.                | Parkhill, Smith & Cooper          |
| <u>Primary Treatment Facility</u>                  |                          |                          |                                   |
| E. Millinocket, ME                                 | 0.5                      | cost                     | Camp, Dresser & McKee, Inc.       |
| <u>Sequencing Batch Reactor</u>                    |                          |                          |                                   |
| Idaho Springs, CO                                  | 0.6                      | cost                     | McCall, Ellingson & Morrill, Inc. |
| (2) LaClaire, IA                                   | 0.5                      | reg. descr.              | Shive Hattery & Assoc.            |
| (2) Grundy Center, IA                              | 0.83                     | reg. descr.              | Clapaddle Garber & Assoc.         |
| Sabula, IA   | 0.7                      | reg. descr.              | Shive Hattery & Assoc.            |
| Horn Point, MD                                     | 0.04                     | cost                     | -                                 |
| Poolesville, MD                                    | 0.6                      | cost & energy            | Kamber Engineers                  |
| (1,2) Choctaw, OK                                  | 0.5                      | reg. descr.              | Rea Engineering & Assoc., Inc.    |
| Rush/Ryan, PA                                      | 0.05                     | cost & energy            | Nassaux-Hensley                   |
| Huron, SD  | 2.3                      | cost                     | Wells Engineering                 |

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TABLE 1 - INNOVATIVE TECHNOLOGY PROJECTS FUNDED LESS THAN 10 TIMES (cont'd)

| <u>Description of Technology/Grantee</u>  | <u>Design Flow<br/>(MGD)</u> | <u>Basis of Approval</u> | <u>Design Consulting Firm</u>           |
|---|------------------------------|--------------------------|---|
| <u>Shallow Bed Trickling Filter Media</u> |                              |                          |   |
| Delmont, PA                               | -                            | cost                     | Duncan & Assoc.                         |
| <u>Soil Purification Treatment</u>        |                              |                          |   |
| Kapehu, HI                                | 0.016                        | cost and energy          | Do Joker                                |
| <u>Swirl Concentrators</u>                |                              |                          |   |
| (2)Auburn, IN                             | 1.7                          | cost                     | Howard, Needles,<br>Tammen & Bergendoft |
| (1)Presque Isle, ME                       | 5.2                          | cost & energy            | Wright-Pierce                           |
| (2)Toledo, OH                             | 160.0                        | cost                     | Jones & Henry                           |
| <u>Teacup Separator for Grit Removal</u>  |                              |                          |   |
| (1)Lewes, DE                              | 0.75                         | cost                     | Kidde Consultants                       |
| Omaha, NE                                 | 46.0                         | reg. descr.              | Camp, Dresser & McKee, Inc.             |
| <u>Trickling Filter-Solids Contact</u>    |                              |                          |   |
| (2)Coeur D'Alene, ID                      | 4.2                          | cost                     | Brown & Caldwell                        |
| Genesee, IL                               | 1.48                         | cost                     | Belling Engineering                     |
| Albuquerque, NM                           | -                            | -                        | Wilson and Company                      |
| Claremore, OK                             | -                            | -                        | -                                       |
| Chemung Co., NY                           | 12.0                         | cost                     | Lozier Engineers                        |
| <u>Tubular Screw Pumps</u>                |                              |                          |   |
| Ft. Meade, FL                             | 1.0                          | env. ben.                | -                                       |
| (1)Aroostock-Presque Isle, ME             | 1.3                          | energy                   | Wright-Pierce, Inc.                     |
| Gardiner, ME                              | 1.8                          | reg. descr.              | SEA Consultants, Inc.                   |
| <u>Wind Turbine Generators</u>            |                              |                          |   |
| Erie, NY                                  | 16.0                         | cost                     | U.R.S. Company, Inc.                    |
| <u>Windmill Compressed Air Aeration</u>   |                              |                          |   |
| Menan, ID                                 | 0.218                        | -                        | Thompson Engineers, Inc.                |

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TABLE 2  
SUMMARY OF INNOVATIVE TECHNOLOGY PROJECTS FUNDED 10 or MORE TIMES

| EPA Region | State   | Wastewater                      |                          |                 |                          |                                   |             |               |           |             |                 |
|------------|---|---------------------------------|--------------------------|-----------------|--------------------------|-----------------------------------|-------------|---------------|-----------|-------------|-----------------|
|            |   | Counter Current Aeration        | Inlet Channel/ Clarifier | UV Disinfection | Digester Gas Utilization | One Cell Lagoon/ Dual Sand Filter | High Lagoon | Overland Flow | Slow Rate | Draft Tube  | Oxidation Ditch |
| I          | Connecticut<br>Maine<br>Massachusetts<br>New Hampshire<br>Rhode Island<br>Vermont                         |                                 | 1<br>3                   |                 |                          |                                   |             |               |           |             |                 |
| II         | New Jersey<br>New York<br>Puerto Rico<br>Virgin Islands   |                                 | 1<br>4                   |                 |                          |                                   |             |               |           | 4           |                 |
| III        | Delaware<br>Wash., D.C.<br>Maryland<br>Pennsylvania<br>Virginia<br>West Virginia                          | 1                               | 1<br>3                   | 1               |                          |                                   |             |               |           | 1<br>3<br>1 | 3               |
| IV         | Alabama<br>Florida<br>Georgia<br>Kentucky<br>Mississippi<br>North Carolina<br>South Carolina<br>Tennessee | 5<br>1<br>1<br>1<br>5<br>1<br>6 | 7<br>2                   | 1               | 1<br>2<br>1              | 5<br>8<br>1                       | 1<br>2      | 1<br>1        | 1<br>1    | 4           |                 |
| V          | Illinois<br>Indiana<br>Michigan<br>Minnesota<br>Ohio<br>Wisconsin   |                                 | 1                        |                 | 10                       |                                   |             | 1             | 1         |             | 1               |
| VI         | Arkansas<br>Louisiana<br>New Mexico<br>Oklahoma<br>Texas  |                                 | 1                        | 1               |                          |                                   | 1           | 3<br>8        |           | 1           | 1               |
| VII        | Iowa<br>Kansas<br>Missouri<br>Nebraska  |                                 | 1<br>1<br>4              | 1               | 1                        | 1                                 | 1           | 2             |           | 2<br>1      |                 |
| VIII       | Colorado<br>Montana<br>North Dakota<br>South Dakota<br>Utah<br>Wyoming                                    |                                 | 2                        |                 |                          |                                   |             | 1             |           |             |                 |
| IX         | Amer. Samoa<br>Arizona<br>California<br>Guam<br>Hawaii<br>Nevada<br>N. Marianas Is.<br>Pac. Islands       |                                 | 1                        |                 | 2                        |                                   |             |               |           |             |                 |
| X          | Alaska<br>Idaho<br>Oregon<br>Washington   |                                 |                          |                 |                          |                                   |             |               |           |             |                 |
| Total      |   | 22                              | 24                       | 33              | 15                       | 10                                | 18          | 21            | 12        | 15          | 11              |

TABLE 3  
SELECTED OPERATING INNOVATIVE TECHNOLOGY PROJECTS  
FUNDED TEN OR MORE TIMES

| State                                       | Community          | Selected Operational Facilities |   | Selected Operational Facilities |                            |                      |   |
|---|--------------------|---------------------------------|---|---------------------------------|----------------------------|----------------------|---|
|   |                    | Design Flow<br>(MGD)            | Design Consulting Firm                                | State                           | Community                  | Design Flow<br>(MGD) | Design Consulting Firm                                  |
| <u>Counter-Current Aeration</u>             |                    |                                 |   |                                 |                            |                      |   |
| TN  | (1) Clairborne Co. | 0.32                            | -   | AL                              | Blountsville               | 0.275                | --  |
| <u>UV Disinfection</u>                      |                    |                                 |   |                                 |                            |                      |   |
| AR  | (1) Lamar          | 0.011                           | Burrough-Uerling-Brassell, Consulting Engineers, Inc. | AL                              | Linden                     | 0.45                 | --  |
| KS  | Hesston            | 0.586                           | Wilson & Co., Engineers and Architects                | LA                              | West Monroe                | 5.6                  | --  |
| KS  | McPherson          | 0.16                            | Wilson & Co., Engineers and Architects                | MS                              | Raleigh                    | 0.2                  | Cook-Cogglin Engineers                                  |
| MD  | Clear Spring       | 0.2                             | Wilson & Co., Engineers and Architects                | MS                              | Vaden                      | 0.15                 | Bartch & Assoc.   |
| MD  | Smithsburg         | 0.2                             | Fellows & Reed  | AR                              | (1) Lamar                  | 0.11                 | Burrough, Uerling, Brassell, Consulting Engineers, Inc. |
| MN  | Albert Lea         | 3.4                             | Toltz, King, Duvall, Anderson & Assoc.                | AR                              | Wabbaseka                  | 0.104                | Affiliated Engineers                                    |
| ME  | Northfield         | 2.5                             | Bonestroo, Rosene, Anderlik, & Assoc.                 | FL                              | Raiford                    | 1.3                  | Wm. Bishop Consulting Eng.                              |
| NY  | Evanston           | 2.9                             | Exhoff, Watson, Preator                               | IA                              | Esterwood                  | 0.018                | Alex Theriot, Jr. & Assoc.                              |
| NY  | Lander             | 2.12                            | Western Design Consultants                            | IA                              | Hall Summit                | 0.056                | Alex Theriot, Jr. & Assoc.                              |
| NY  | Worland            | 1.12                            | ARIX  | IA                              | Horse                      | 0.09                 | Alex Theriot, Jr. & Assoc.                              |
| ND  | Thurmont           | 1.0                             | Harrington, Lacey & Assoc.                            | MS                              | Cleveland                  | 3.0                  | Clark Dietz Engineers                                   |
| ND  | Cassville          | 0.5                             | Allgeier, Martin & Assoc.                             | ME                              | Clay Center                | 0.12                 | Johnson, Erickson & O'Brien                             |
| <u>Digester Gas Utilization</u>             |                    |                                 |   |                                 |                            |                      |   |
| IA  | Glenwood           | 1.43                            | Henningson, Durham, & Richardson                      | TX                              | Corsicana                  | 1.0                  | Gilbreth & Assoc.                                       |
| OK  | N. Tulsa           | 30.0                            | Black & Veatch/Fell, Burton, & Knowles                | IA                              | Fredericksburg             | 0.95                 | Bennett & Assoc.  |
| <u>Oxidation Ditch</u>                      |                    |                                 |   |                                 |                            |                      |   |
| IA  | (1) Vivian, IA     | 1.8                             | H. R. Green & Co.                                     | IA                              | Sanborn                    | 0.34                 | Kirkham-Michael & Assoc.                                |
| VA  | King George County | 0.05                            | Gilbert W. Clifnor                                    | NE                              | Fullerton                  | 0.2                  | Bruce Gilmore & Assoc.                                  |
| VA  | Smithfield         | 0.5                             | R. Kenneth Weeks                                      | NE                              | Gordon                     | 0.4                  | Baker & Sweeney   |
| VA  | Southampton County | 0.303                           | Henry T. Sadler                                       | NE                              | Schuylerville              | 0.6                  | Kirkham-Michael & Assoc.                                |
| <u>Hydrograph Controlled Release Lagoon</u> |                    |                                 |   |                                 |                            |                      |   |
| 18  |                    |                                 |   | UT                              | Heber Valley               | 2.5                  | Horrocks Engineers                                      |
|   |                    |                                 |   | WV                              | Draft Tube Oxidation Ditch |                      |   |
|   |                    |                                 |   | WV                              | Crab Orchard               | 1.0                  | Gates Engineering                                       |

(1) Indicates that this facility is listed under more than one innovative technology.

TABLE 4  
SUMMARY OF ALTERNATIVE TECHNOLOGY PROJECTS

| EPA Region | State   | Wastewater                                       |                       |                       |   |                               |                                    |                        |                       | Sludge                   |                                 |                                      |                                     |    |     |
|------------|---|--|-----------------------|-----------------------|---|-------------------------------|------------------------------------|------------------------|-----------------------|--------------------------|---------------------------------|--------------------------------------|-------------------------------------|----|-----|
|            |   | Aquaculture/<br>Vetlands<br>Containment<br>Ponds | Direct Reuse          | Overland Flow         | Rapid Infiltration/<br>Aquifer Recharge | Slow Rate<br>Irrigation       | Alternative Collec-<br>tion System | On-Site Treatment      | Sepage Treatment      | Soil Methane<br>Recovery | Self-Sustaining<br>Incineration | Composting Prior<br>Land Application | Drying Prior to<br>Land Application |    |     |
|            |   |  |                       |                       |   |                               |                                    |                        |                       |                          |                                 |                                      |                                     |    |     |
| I          | Connecticut<br>Maine<br>Massachusetts<br>New Hampshire<br>Rhode Island<br>Vermont                         |  |                       |                       | 2<br>3<br>1                             | 2<br>1<br>5                   | 2<br>1<br>5                        | 2<br>1<br>5            | 6<br>13<br>8          | 3<br>2<br>1              | 1<br>2<br>1                     | 9<br>7<br>6                          | 1<br>10                             |    |     |
| II         | New Jersey<br>New York<br>Puerto Rico<br>Virgin Islands   |  |                       | 4                     | 3<br>3                                  | 38                            | 1<br>2                             | 16<br>4                | 1<br>17               | 1                        | 6<br>4                          | 3                                    |                                     |    |     |
| III        | Delaware<br>Wash., D.C.<br>Maryland<br>Pennsylvania<br>Virginia<br>West Virginia                          | 1  |                       | 2<br>1<br>2           | 1<br>1<br>1                             | 3<br>27<br>16                 | 2<br>5<br>3                        | 3                      | 3<br>1<br>1           |                          | 1<br>2<br>3                     | 1<br>2<br>2                          | 1<br>3                              |    |     |
| IV         | Alabama<br>Florida<br>Georgia<br>Kentucky<br>Mississippi<br>North Carolina<br>South Carolina<br>Tennessee |  | 1                     | 1<br>1<br>14          | 4<br>1<br>2<br>3<br>22<br>2             | 12<br>10<br>10<br>3<br>3<br>9 | 2<br>1<br>10<br>3<br>3<br>6        | 2<br>2<br>2            |                       | 1<br>2<br>2<br>5<br>1    | 1<br>2<br>1                     | 1<br>4<br>5<br>5<br>2                | 1<br>4<br>9<br>5<br>4               |    |     |
| V          | Illinois<br>Indiana<br>Michigan<br>Minnesota<br>Ohio<br>Wisconsin   |  |                       | 1                     | 1<br>6<br>11                            | 3<br>8<br>10<br>1<br>6        | 6<br>4<br>4<br>1<br>5              | 3<br>3<br>10<br>1<br>1 | 1<br>3<br>1<br>1<br>1 | 6<br>5<br>4<br>1<br>4    | 1                               | 3                                    | 14<br>4<br>11<br>12<br>5<br>6       |    |     |
| VI         | Arkansas<br>Louisiana<br>New Mexico<br>Oklahoma<br>Texas  | 1<br>1   | 1<br>1<br>4           |                       | 4<br>5<br>6<br>24<br>8                  | 12<br>6<br>6<br>4             | 2<br>2<br>2<br>1                   | 2                      | 2<br>2<br>1<br>4      |                          | 1<br>1<br>1<br>4                | 1                                    | 1                                   |    |     |
| VII        | Iowa<br>Kansas<br>Missouri<br>Nebraska  | 24<br>22   | 1                     | 5<br>1                | 1<br>1<br>4                             | 2<br>12<br>8<br>16            | 2<br>2<br>1                        |                        | 1<br>6<br>2<br>1      | 1<br>6<br>2<br>1         | 1<br>1<br>2<br>1                | 1<br>1<br>1<br>1                     | 13<br>17<br>18<br>4                 |    |     |
| VIII       | Colorado<br>Montana<br>North Dakota<br>South Dakota<br>Utah<br>Wyoming                                    | 1<br>3<br>16<br>8<br>3                           | 1<br>1<br>1<br>2<br>2 |                       | 1<br>6<br>6<br>2<br>1                   | 2<br>6<br>1<br>22<br>2        | 1<br>1<br>5<br>1                   | 1<br>2<br>1            |                       |                          | 1<br>1<br>1<br>1                | 1<br>2<br>6<br>10<br>1<br>2          | 1<br>2<br>6<br>1<br>1<br>2          |    |     |
| IX         | Amer. Samoa<br>Arizona<br>California<br>Guam<br>Hawaii<br>Nevada<br>N. Marianas Is.<br>Pac. Islands       | 1<br>1<br>1<br>4<br>4                            | 3<br>2<br>5<br>3<br>3 | 1<br>2<br>2<br>4<br>4 | 2<br>12<br>12<br>2<br>2                 | 1<br>6<br>6<br>1<br>5         | 1<br>1<br>22<br>1<br>1             |                        | 1<br>2<br>2<br>1      | 3<br>6<br>2              | 2<br>2<br>1                     | 1<br>1<br>1                          | 1<br>2                              |    |     |
| X          | Alaska<br>Idaho<br>Oregon<br>Washington   | 1<br>1   | 3<br>1                | 1                     | 1<br>1<br>1<br>4                        | 6<br>4<br>5<br>3              | 1<br>4<br>3<br>2                   | 1<br>1                 |                       | 1<br>2<br>2              |                                 | 1<br>1                               | 2<br>4                              |    |     |
| Total      |   | 7  | 113                   | 18                    | 42                                      | 74                            | 237                                | 267                    | 70                    | 64                       | 105                             | 10                                   | 48                                  | 35 | 187 |

TABLE 5

## SELECTED OPERATIONAL ALTERNATIVE TECHNOLOGY PROJECTS FUNDED

| <u>Selected Operational Facilities</u> |                          |                          |                                     |              |                     | <u>Selected Operational Facilities</u> |                                    |              |                  |                          |                               |
|--|--------------------------|--------------------------|-------------------------------------|--------------|---------------------|--|------------------------------------|--------------|------------------|--------------------------|-------------------------------|
| <u>State</u>                           | <u>Community</u>         | <u>Design Flow (MGD)</u> | <u>Design Consulting Firm</u>       | <u>State</u> | <u>Community</u>    | <u>Design Flow (MGD)</u>               | <u>Design Consulting Firm</u>      | <u>State</u> | <u>Community</u> | <u>Design Flow (MGD)</u> | <u>Design Consulting Firm</u> |
| <b>WASTEWATER TREATMENT</b>            |                          |                          |                                     |              |                     |  |                                    |              |                  |                          |                               |
|  | <u>Containment Ponds</u> |                          |                                     |              |                     |  |                                    |              |                  |                          |                               |
| AZ                                     | Alpine                   | 0.08                     | Ellis, Murphy & Holgate             | ND           | Ross                | 0.012                                  | Viegel Engineering                 |              |                  |                          |                               |
| AZ                                     | Show Low                 | 0.8                      | Johannessen & Gerlaf/Rod. Gomez     | ND           | Turtle Lake         | 0.099                                  | Wold Engineering                   |              |                  |                          |                               |
| CA                                     | Pali River Mills         | 0.071                    | Rolls, Anderson & Rolls             | NV           | Schurz              | 0.05                                   | Indian Health Services             |              |                  |                          |                               |
| ID                                     | Brunceau                 | 0.025                    | Tudor Eng. Co.                      | NV           | Jackpot             | 0.237                                  | J.U.B. Engineers                   |              |                  |                          |                               |
| KS                                     | Lorraine                 | ---                      | Evans, Bierly, Hutchinson & Assoc.  | NV           | Eureka              | 0.05                                   | Chilton Engineers                  |              |                  |                          |                               |
| MT                                     | Gilford                  | 0.023                    | Lightowler & Johnson                | OK           | Fox Rural           | 0.032                                  | Fox & Drechsler                    |              |                  |                          |                               |
| ME                                     | Brainard                 | 0.02                     | Johnson, Erickson, O'Brien & Assoc. | OK           | Mooreland           | 0.15                                   | C. H. Guernsey & Co.               |              |                  |                          |                               |
| ME                                     | Broadwater               | 0.018                    | Baker, Sweeney & Assoc              | SD           | Redfield            | 0.28                                   | Clark Engineering                  |              |                  |                          |                               |
| ME                                     | Craig                    | 0.03                     | Consolidated Engineers              | SD           | Ravinia             | 0.005                                  | Shumacker, Paul, Hohr, & Assoc.    |              |                  |                          |                               |
| ME                                     | Edgar                    | 0.098                    | Johnson, Erickson, O'Brien & Assoc. | SD           | Westport            | 0.015                                  | Clark Engineering                  |              |                  |                          |                               |
| ME                                     | Harvard                  | 0.01                     | Price, Johnson & Erickson           | SD           | White River         | 0.07                                   | Alliance of Architects & Engineers |              |                  |                          |                               |
| ME                                     | Maywood                  | 0.032                    | Paul House & Assoc.                 | SD           | Lake Norden         | ---                                    | Schoell & Matson                   |              |                  |                          |                               |
| ME                                     | Overton                  | 0.068                    | Great Plains Eng.                   | WY           | LaGrange            | 0.035                                  | Wells Engineering                  |              |                  |                          |                               |
| ME                                     | Stapleton                | 0.03                     | Bruce L. Gilmore & Assoc.           | WY           | Glendo              | 0.095                                  | HSR Consultants, Inc.              |              |                  |                          |                               |
| ND                                     | Courtney                 | 0.014                    | Interstate Engineering              | WY           | Yoder               | 0.03                                   | Wells Engineers                    |              |                  |                          |                               |
| ND                                     | Drake                    | 0.033                    | Viegel Engineering                  | AZ           | Hayden (Industrial) | 0.18                                   | V.E.A. Ltd. Consulting Engineers   |              |                  |                          |                               |
| ND                                     | Marmath                  | 0.014                    | North Central Consultants           | AZ           | Page                | 1.0                                    | Dibble & Associates                |              |                  |                          |                               |
| ND                                     | Martin                   | 0.009                    | Houston Eng.                        | CA           | Las Virgenes        | 8.0                                    | Boyle Engineers                    |              |                  |                          |                               |
| ND                                     | McHenry                  | 0.007                    | Becker Engineering                  | CA           | Martin              | 2.7                                    | Marin Mid Engineers                |              |                  |                          |                               |
|  |                          |                          |                                     | CO           | North Glen          | 4.0                                    | Schaffer & Roland                  |              |                  |                          |                               |
|  |                          |                          |                                     | SD           | Yankton             | 3.6                                    | Dewalt, Grant, Rechert, & Assoc.   |              |                  |                          |                               |

TABLE 5 (cont'd)

| <u>Selected Operational Facilities</u> |                       |                          | <u>Selected Operational Facilities</u>        |                  |                          |
|--|-----------------------|--------------------------|---|------------------|--------------------------|
| <u>State</u>                           | <u>Community</u>      | <u>Design Flow (MGD)</u> | <u>State</u>                                  | <u>Community</u> | <u>Design Flow (MGD)</u> |
| <u>Overland Flow</u>                   |                       |                          |   |                  |                          |
| CA                                     | Davis                 | 5.0                      | Brown & Caldwell                              | NV               | Henderson                |
| CA                                     | Newman                | 1.1                      | Brown & Caldwell                              | NV               | Mountain City            |
| ID                                     | Santa-Fernwood        | 0.1                      | J-O-B Engineers                               | NV               | Tonopah                  |
| MS                                     | Sumrall               | 0.2                      | --  | SD               | Oacoma                   |
| NV                                     | Carson City           | 3.15                     | Vasey Engineering                             | SD               | Madison                  |
| NV                                     | Minden-Garderville    | 1.8                      | Resource Concepts                             | WI               | Grandon                  |
| TX                                     | Waco                  | 0.076                    | --  | WI               | Hayward                  |
| VA                                     | Kenbridge             | 0.3                      | Environmental Technology<br>Consultants, Inc. | WY               | Jackson                  |
| AZ                                     | Mammoth               | 0.162                    | Dooley-Jones                                  | WY               | Laramie                  |
| AZ                                     | Pima Co./Green Valley | 2.1                      | Dooley-Jones/Montgomery Eng.                  |                  |                          |
| CA                                     | Boron                 | 0.21                     | BPW Engineers                                 | AL               | Dallas Co.               |
| CA                                     | San Bernardino        | 0.48                     | CM Engineering Assoc.                         | CA               | Santa Ynez               |
| CA                                     | Sonoma                | 0.067                    | Brelje & Race                                 | CA               | South Lake Tahoe         |
| CA                                     | Woodbridge            | 0.24                     | Darrhl Dentoni & Assoc.                       | CO               | Three Lakes              |
| CO                                     | Sterling              | 3.9                      | ARIX  | IN               | Hamilton Lake            |
| KS                                     | Syracuse              | 0.23                     | Evans, Bierly, Hutchison & Assoc.             | ID               | Avery                    |
| MT                                     | Bozeman               | 5.75                     | Thomas, Dean & Hoskins                        | ID               | Rocky Point              |
| MT                                     | Corvallis             | 0.051                    | Morrison-Mairele                              | KY               | Fancy Farms              |
| MT                                     | Last Glacier          | 0.91                     | Kehnlein, Lightower & Johnson                 | MD               | Queen Annes              |
| NV                                     | Elko                  | 2.5                      | Chilton Engineers                             | MI               | Rudyard Township         |

\*There are slow rate infiltration projects in most states. Contact the local I/A coordinator for the location of individual projects.

#### ALTERNATIVE COLLECTION SYSTEM

|    |                  |       |                             |
|----|------------------|-------|-----------------------------|
| AL | Dallas Co.       | 0.9   | Goodwyn & Mills             |
| CA | - Santa Ynez     | 0.2   | Montgomery Engineers        |
| CA | South Lake Tahoe | 0.056 | Swanson & Oswald            |
| CO | Three Lakes      | 1.34  | ARIX                        |
| ID | Avery            | 0.023 | David Welch & Assoc., Inc.  |
| ID | Rocky Point      | 0.06  | J-O-B Engineers             |
| IN | Hamilton Lake    | 0.3   | C. E. Williams & Assoc.     |
| KY | Fancy Farms      | 0.3   | Lenard A. Griggs & Assoc.   |
| MD | Queen Annes      | 0.8   | O'Brien & Gere Engrs., Inc. |
| MI | Rudyard Township | 0.077 | McNamee, Porter & Seely     |

TABLE 5 (cont'd)

| Selected Operational Facilities |                  |                         |                                      | Selected Operational Facilities  |                  |                         |                               |
|---------------------------------|------------------|-------------------------|--------------------------------------|--|------------------|-------------------------|-------------------------------|
| <u>State</u>                    | <u>Community</u> | Design<br>Flow<br>(MGD) | Design<br>Consulting Firm            | <u>State</u>   | <u>Community</u> | Design<br>Flow<br>(MGD) | Design<br>Consulting Firm     |
| MO                              | McKane           | 0.1                     | Williams & Works                     | AZ   | Flagstaff        | --                      | Brown & Caldwell              |
| MS                              | Granada          | 0.06                    | Hillier, Whiry & Lee                 | AZ   | Phoenix          | 150.0                   | John Carollo/Bethlehem Corp.  |
| NY                              | Gardiner         | 0.05                    | Erikson & Silber                     | AZ   | Pima Co.         | 30.0                    | Black & Veatch                |
| NY                              | Orleans          | 0.053                   | Sargeant, Webster, Crenshaw & Folley | CA   | Contra Costa     | --                      | CDM/KKA Consultants           |
| SD                              | Mina Lake        | 0.03                    | Doss Engineering                     | KS   | Topeka           | 20.0                    | Van Doran, Hazard & Stallings |
| TN                              | Belle Meade      | 0.325                   | Barge, Waggener & Assoc.             | MI   | Charlotte        | 1.2                     | Capital Consultants           |
| TX                              | East Cedar Creek | --                      | Johnson Eng. Co.                     | NV   | Carson City      | 4.15                    | Vasey Engineers               |
| WA                              | Black Diamond    | 0.03                    | Kramer, Chin & Mayo, Inc.            | NV   | Elco             | 2.5                     | Chilton Engineering           |
| WA                              | Eastsound        | 0.08                    | ARC Engineering                      | NV   | Reno             | 40.0                    | Kennedy/Jenks Engineers       |
| <u>ON-SITE TREATMENT</u>        |                  |                         |                                      | SD   | Milbank          | 1.5                     | Banner & Associates           |
| CA                              | Taylorsville     | 0.045                   | Walters Engineering                  | WA   | Enumclaw         | 2.4                     | Kramer, Chin & Mayo, Inc.     |
| ME                              | Isleboro         | 0.014                   | Edward C. Jordan Co., Inc.           | WI   | Waukesha         | 11.6                    | Alvord, Burdic & Howson       |
| MI                              | West Traverse    | 0.006                   | Williams & Works                     | Composting Prior to Land Application   |                  |                         |                               |
| NH                              | Weare            | 0.25                    | Anderson-Nichols                     | CA   | San Francisco    | 8.2                     | George S. Nolte Assoc.        |
| SD                              | Mina Lake        | 0.03                    | Doss Engineering                     | ME   | Old Town         | --                      | James W. Sowall Co., Inc.     |
| WA                              | Chelan           | 0.025                   | City of Wenatchee                    | ME   | South Portland   | 5.5                     | Wright-Pierce                 |
| WA                              | Eastsound        | 0.08                    | ARC Engineering                      | NE   | Falls City       | 0.52                    | Garber & Work                 |
| <u>SEPTAGE TREATMENT</u>        |                  |                         |                                      | <u>Land Application</u>  |                  |                         |                               |
| ID                              | Avery            | 0.023                   | David Welch & Assoc., Inc.           | *There are sludge land application projects in most states. Contact the local I/A coordinator for the location of individual projects. |                  |                         |                               |
| MI                              | Michiganne       | 0.042                   | McNamee, Porter & Seely              |  |                  |                         |                               |
| MI                              | West Traverse    | 0.006                   | Williams & Works                     |  |                  |                         |                               |
| SD                              | Mina Lake        | 0.03                    | Doss Engineering                     |  |                  |                         |                               |

TABLE 6  
FIELD TEST PROJECTS

| <u>Location</u>    | <u>Status</u>      | <u>Technology Involved</u>  |
|--------------------|--------------------|---|
| Phoenix, AZ        | under construction | Digester Gas Scubbing for Resale  |
| Clinton, AR        | planned            | Biological Aerated Filter   |
| Fayetteville, AR   | planned            | Biological Nutrient Removal   |
| San Diego, CA      | in progress        | Aquaculture, Pulsed Bed Filter, Fixed Bed Anaerobic Filter, Hybrid Rock/Reed Filter |
| San Diego, CA      | planned            | Advanced Water Treatment for Potable Re-use   |
| Wauconda, IL       | under construction | Trickling Filter/Solids Contact   |
| Winnfield, LA      | planned            | Boat Clarifier  |
| Boston, MA         | in progress        | Composting  |
| Rising Sun, MD     | completed          | Photozone Disinfection  |
| Jackman, ME        | under construction | Phosphorus Removal  |
| Charleston, MS     | proposed           | Rock/Reed Filter  |
| Whitefish, MT      | planned            | Phosphorus Removal Via Phased Isolation Ponds                                       |
| Roswell, NM        | in progress        | Aerobic Composting  |
| Chemung County, NY | completed          | Trickling Filter/Solids Contact   |

Table 6 (cont'd)

|                |           |                                   |
|----------------|-----------|-----------------------------------|
| Hornell, NY    | completed | Seeded Bacterial<br>Nitrification |
| Toledo, OH     | completed | Swirl Concentrators               |
| Choctaw, OK    | planned   | Sequencing Batch<br>Reactor       |
| Clear Lake, WI | completed | Primary Effluent<br>Filtration    |

TABLE 7

## 100% M/R REQUESTS

| <u>Location</u>         | <u>Status</u> | <u>Technology</u>   |
|-------------------------|---------------|---|
| Flagstaff, AZ           | under review  | Tube Settlers/<br>Disinfection  |
| Fallen Leaf<br>Lake, CA | awarded 9/83  | Valves, Controls, and<br>Air Ejection System<br>in Vacuum/Pressure<br>Collection System |
| Manila, CA              | awarded 8/83  | STEP System Sonic<br>Level Detectors  |
| South Portland, ME      | under review  | Composting  |
| Rising Sun, MD          | under review  | UV Disinfection   |
| Fall River, MA          | under review  | Self-Sustaining<br>Incineration   |
| Northfield, MN          | under review  | UV Disinfection   |
| Scottsbluff, NE         | under review  | Microscreens  |
| Santa Fe, NM            | under review  | Draft Tube Aerators   |
| Lawrence, NY            | award pending | Mound System  |
| Clifford, ND            | under review  | Mound System  |
| Campbellsport, WI       | under review  | Rapid Infiltration  |

TABLE 8

EPA AND STATE I/A TECHNOLOGY  
COORDINATORS AND CONTACTS  
EPA REGION I

US EPA - REGION I

Charles Conway  
U.S. EPA Water Management Div.  
JFK Federal Building,  
Room 2203  
Boston, MA 02203  
(617) 223-3990  
(FTS) 223-3990

Connecticut

William Hogan  
Connecticut Department of  
Environmental Protection  
165 Capital Avenue  
Hartford, CT 06115  
(203) 566-2373

Maine

Dennis Purington  
Department of Environmental  
Protection  
Hospital Street  
Augusta, ME 04333  
(207) 289-3901

Massachusetts

Robert Cady  
Division of Water Pollution  
Control  
Massachusetts Department of  
Environmental Quality  
Engineering  
One Winter Street  
Boston, MA 02108  
(617) 292-5713

Rhode Island

Pierce Glazer  
Rhode Island Division of  
Water Supply and  
Pollution Control  
75 Davis Street  
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(401) 277-2243

Vermont

Edward Leonard  
Environmental Engineering  
Vermont Agency of  
Environmental Conservation  
State Office Building  
Montpelier, VT 05602  
(802) 828-3345

New Hampshire

Paul Currier  
New Hampshire Water Supply and  
Pollution Control  
Commission  
P. O. Box 95, Hazen Drive  
Concord, NH 03301  
(603) 271-2755

Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
COORDINATORS AND CONTACTS  
EPA REGION II

US EPA - REGION II

Bruce Kiselica  
U. S. EPA Water Management Div.  
26 Federal Plaza, Room 813  
New York, NY 10278  
(212) 264-5670  
(FTS) 264-5670

New Jersey

Bob Simicsak  
New Jersey Department of  
Environmental Protection  
P. O. Box CN-029  
Trenton, NJ 08625  
(609) 292-2723

New York

John Marschilok  
Technical Assistance Section  
New York State Department of  
Environmental Conservation  
50 Wolf Road  
Albany, NY 12233  
(518) 457-3810

Puerto Rico

Jose Bentacourt, Chief  
Local Assistance Grants Section  
I/A Coordinator  
Puerto Rico Environmental  
Quality Board  
P. O. Box 11488  
Santurce, PR 00910  
(809) 725-5140, ext 355

Virgin Islands

Francine Lang, Director  
Natural Resources Management  
Office  
Virgin Islands Department of  
Conservation and Cultural  
Affairs  
P. O. Box 4340  
Charlotte Amalie, St. Thomas,  
Virgin Islands 00801

Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
COORDINATORS AND CONTACTS  
EPA REGION III

US EPA - REGION III

Lee Murphy  
U.S. EPA Water Management Div  
841 Chestnut Building  
Philadelphia, PA 19107  
(215)597-8399  
(FTS)597-8399

Delaware

Richard Aurich  
Delaware Department of Natural  
Resources and Environmental  
Control  
Division of Environmental Control  
Tatnall Building  
Dover, DE 19901  
(302) 736-5081

District of Columbia

Lester Slocum  
District of Columbia  
Department of Environment  
5000 Overlook Avenue, S.W.  
Washington, D.C. 20032  
(202) 767-7603

Maryland

Hitesh Nigram  
Office of Environmental  
Protection  
Department of Health and  
Mental Hygiene  
201 W. Preston Street  
Baltimore, MD 21201  
(301) 383-6346

Virginia

Walter Gills  
Virginia State Water  
Control Board  
P. O. Box 11143  
Richmond, VA 23230  
(804) 257-6308

West Virginia

Elbert Morton  
West Virginia Department of  
Natural Resources  
Division of Water Resources  
1201 Greenbrier Street  
Charleston, WV 25311  
(304) 348-0633

Pennsylvania

Terry Killian  
Pennsylvania Department of  
Environmental Resources  
Bureau of Water Quality  
Management  
P. O. Box 2063  
Harrisburg, PA 17120  
(717) 787-3481

Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
COORDINATORS AND CONTACTS  
EPA REGION IV

US EPA - REGION IV

Bob Freeman  
U.S. EPA Water Management Div.  
345 Courtland St., N.E.  
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(404) 881-4180  
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Alabama

David Hutchinson  
Alabama Department of  
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Montgomery, AL 36130  
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Florida

Bhupendra Vora  
Bureau of Wastewater  
Florida Department  
of Environmental Regulation  
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Table 8 (cont'd)  
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Table 8 (cont'd)

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Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
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Table 8 (cont'd)

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Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
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Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
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Table 8 (cont'd)

EPA AND STATE I/A TECHNOLOGY  
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Table 8 (cont'd)

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