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# Summary of Rationale, Selection Process and Awards

# Applied Demonstration Projects/Partnerships

# Regional Cooperation Activities

ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
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CCN-0003-Q-00-3165

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# I Water Information Management Applied Demonstration/Partnership Awards (Round I)

## Summary of Award Selections

In December 1994, the USAID Environmental Policy and Technology Project (EPT) held its first regional workshop under the Delivery Order Eight, Regional Cooperation Program This workshop, Water and Information Management in Central Asia, drew participation from all five republics During this event, EPT solicited proposals for funding under the applied demonstration project/partnership tasks of Delivery Order Eight The proposal solicitation received region-wide announcement in conjunction with workshop publicity

As part of the workshop activities, the Central Asian delegates generated a list of priority topics for information management study These topics included the following

1) Hydrologic/meteorologic monitoring system
2) Technical standards for uniform hydrologic observation and monitoring information reporting and storing
3) Satellite systems for uniform meteorologic and hydrologic data
4) GIS system that estimates snowpack glacier, and mudflow conditions
5) Information production and analyses training for CAR specialists
6) Legal basis for information sharing among CARs
7) Runoff and sediment yield models
8) Water resource data base for Central Asia
9) Automated forecast models
10) Water quality monitoring network
11) Drinking water standards

The proposal guidelines which accompanied the USAID EPT project solicitation requested one-year proposals addressing the above topics for "new" research The proposal guidelines specified that the highest priority for selection would be given to those projects that involve direct cooperation in water management between the republics Partnerships between CAR and USA institutions which include technical and professional exchanges were encouraged and the guidelines indicated that such proposals would also be given a high priority The guidelines specified that the projects would be evaluated upon the following criteria Program relevance (30%), Scientific Merit (40%), and Structural Merit (30%)

In response to its request, EPT/Almaty received 32 proposals for a total funding request of $560,808 Most of the proposals were prepared according to the requested format, although most did not provide necessary level of detail The number of proposals with collaboration was disappointing However, given that at the time the proposals were solicited, the republics had little opportunity to form collaborations prior to the grant competition announcement, this is not surprising The EPT Project did not receive proposals from Turkeminstan, Kyrgyzstan and Tajikistan This may have been due to the historical lack of technical institutes in these republics

The reviewers evaluated all 32 proposals The list of proposals with their project number, project name, principal investigator, rank, and budget total are in Attachment A The project selected seven proposals amounting to $257,300 for funding One partnership proposal was selected in addition to six proposals submitted from CAR institutions A summary of the top eight proposal candidates are provided below

1 Proposal No 29 (Partnership--$142,000) **Regional Water Allocation Model for the Amu Darya** Principal investigators Dr Akmal Karimov of IEI (Tashkent) and Dr Deane McKinney of the University of Texas at Austin Contract with these entities will occur separately Dr Karimov and parties will receive $52,000 The University of Texas will receive $90,000 This proposal is the highest rated and addresses priorities 5 and 9 It provides a critical data base for decision-making on water allocation in the Amu Darya The international and regional cooperation is strong in that it involves two Uzbekistan and one U S institution

2 Proposal No 14 ($12,000) **Assessment of Impacts of Human Activity on Upstream Syr Darya Basin** Principal Investigator L K Nekipelova, KazNIGMI This proposal is designed to assess the environmental impacts of human and economic activities (agriculture) on the upper Syr Darya and tributaries It is an important source of information to the overall management policies of the Syr Darya Basin The work plan is strong and addresses priority topics 5 and 8 above

3 Proposal No 5 ($54,000) **Creating an Optimal Water Quality Observation Network for the Aral Sea** Principal Investigator Dr Raisa V Toryanikova, SANIGMI This proposal involves the participation of all five republics, and addresses priority topic 10 The proposal's objective is to design a surface water quality monitoring network to aid in pollution control and water treatment and supports effective policy an management decision-making The proposal suggests the use of two specialists from each republic to provide excellent regional cooperation It presents a strong work plan and can achieve practical results

4 Proposal No 30 ($9,000) **Water Quality monitoring at the Epicenter of the Aral Sea Ecological Disaster** Principal investigator Dr B Zhollibelov, Head of the Laboratory of Soil Science and Biotechnology of the Institute of Bioecology Karakalpakistan Division of the Academy of Sciences, Republic of Uzbekistan The investigators will evaluate water and sediment pollution of the Aral Sea and estimate the impact of detected contaminant concentrations on human health addressing topic number 8 above The investigations will systematically sample and analyze water quality parameters using internationally established standards

5 Proposal No 32 ($15 600) **Short-Term Runoff Forecasting for Amu Darya** Principal investigator Dr S V Myagkov, SANIGMI, Tashkent, Uzbekistan This proposal addresses priority topic 9 Its objective is to design a short term runoff regime for the Amu Darya for purposes of optimizing river operations for multiple functions A world standard SFR computer software program will be fitted to Amu Darya and conditions to optimize water services to Uzbekistan and Turkmenistan, and improve flows to the Aral Sea It has the potential for regional cooperation between Uzebekistan and Turkmenistan Although the proposal suggest the participation of a U S partner it does not go into detail It may be possible to link this effort with the collaboration Project No 29 proposes

6 Proposal No 15 ($9,700) **Impacts of Aral Sea Level Changes on Groundwater Levels** Principal investigator Mr E F Vlasenko, KazNIGMI This proposal addresses priority topic number 9 It evaluates the relationship of Aral Sea levels and ground water levels It will improve understanding of management options for management limited drinking water supplies near the Aral Sea

7 Proposal No 17 ($15,000) **Forecasts of Aral Sea Levels using Probability analysis** Principal Investigator Dr S P Shivarova, KazGIDROMET The project addresses priority topic number 9 The investigators will use probability analysis to forecast water balance of the Aral Sea basin The analysis will enable water managers to modify operating rules for reservoirs and rivers It may also provide an information base to enable policy makers to express the urgency of addressing the Aral Sea program in the short term to avert longer term consequences

## Equipment List for Round I Proposals

| *Investigator* | *Equipment Description* | *Budget* |
|---|---|---|
| | | |
| Akmal Karimov, Project No 29 | Pentium Computer ,<br>Notebook Computer<br>Laser Printer | <br><br>11000 |
| Lyudmila Nekipelova, Project No 14 | Personal Computer with printer, conditioner and software | 3500 |
| Raisa Toryanikova, Project No 5 | 6 computers<br>6 printers<br>software | 12000<br>3600<br>400 |
| S K Kamalov and Zholybekov, Project No 30 | Equipment not specified | 6120 |
| Sergey Maygkov, Project No 32 | 486 x, Miniature, 256 KB cache, 16 MB RAM, 1 MB VGA ac, HDD 700 MB, FDD 3 5" and 5 25<br><br>386 DX, Miniature, 128KB cache, 4 MB RAM, 512 KB VGA acc , HDD 210 MV, FDD 3 5" and 5 25"<br><br>Scanner<br>Software | 2500<br><br><br><br><br>1700<br><br>500<br>400 |
| E F Vlasenko, Project No 15 | 427 Computer | 2500 |
| S P Shivareva, Project No 17 | 427 Computer<br>Portable Computer<br>Printer<br>Software | 2000<br>2200<br>800<br>400 |

## II Water Resources Policy and Management Applied Demonstration Projects and Partnerships Summary of Award Selections

In conjunction with its "Water Resources Policy and Management" workshop in May of 1995, The USAID Environmental Policy and Technology project solicited proposals for funding under its Regional Cooperation Program The objective of the solicitation was to provide opportunities for regional and international collaboration in areas which offer potential solutions to the environmental crises of the Aral Sea The project requested proposals for research and analysis among partnership and collaborators The solicitation was widely advertised in conjunction with the workshop publicity The proposal guidelines which accompanied the solicitation specified that the projects be completed within one year

### Priority Topics

As part of the workshop activities, the Central Asian participants developed a list of priority topics for project funding The proposal guidelines requested proposals for these topics which include the following

1 Water Resources Policy,

2 Water Resources Planning and Management,

3 Water Resources Legislation and Regulation,

4 Water Services Pricing and User Fees,

5 Water Quality Standards-Development & Implementation

6 Compacts, Treaties and Regional Cooperation

Because the objective of the EPT Regional Cooperation Program is to facilitate regional cooperation in water management the applied demonstration projects and partnerships are designed to provide an opportunity for the Central Asian Republics to work together in solving regional water management problems In addition, the projects can provide an opportunity for technology and information transfer and capacity building in the area of policy analysis Therefore, the proposal guidelines encouraged proposals which involved partnerships between CAR and U S counterparts The guidance specified the following priorities for project funding

Projects which directly involved more than one Central Asian Republic, and,
Partnerships between CAR and USA which could include U S private sector as well as government agencies and universities

**Ranking Criteria**

The proposal guidelines outlined the criteria against which submitted proposals were be evaluated These criteria included the following

1 Program Relevance (30%) Does the proposal fit into the water management program needs and objectives? Does the proposal meet a short term practical need or application in the Central Asian Aral Sea Basins? Does the proposal address the priority topics?

2 Analytical Merit (30%) Is the proposal based on
sound technical, scientific, management economic, ecological principles Is the project one that has not been done before? Are the issues, objectives,
methodologies and expected results compatible Is there some prospect for short term applications and usefulness?

3 Operational Merit (30%) Can the proposal be done within the time frame and with the resources at hand and requested? Are the budget and financial plans reasonable? What plans are there to use the results? Are the cooperators well integrated into the proposal development and work plan?

4 Institutional Merit (10%) Can the grant be managed within existing institutions? Is the proposed work sustainable within existing institutions? Is there a plan to share the results with peers and other institutions?

**Proposal Evaluation and Award Selection**

EPT began the proposal solicitation process in May 1995 and accepted proposals until August 31, 1995 By that date, 28 proposals had been received Ten proposals involve collaboration between two or more republics, one proposal involves a partnership between a U S institution and the Republics of Kazakstan, Uzbekistan and Kyrgystan, and 16 single entity proposals that do not involve direct collaboration between two or more republics The funding request total for all 28 projects was $1,088,963

During the first round request the EPT only received proposals Kazakstan and Uzbekistan However, in response to this request we received projects from all five republics The proposals EPT received were of much higher quality than those received last time The proposals were more complete and were policy-directed, and the level of sophistication in considering inter-republic collaboration was heartening

**Review and Evaluation**

Two EPT consultants reviewed all twenty-eight proposals according to the above criteria, and the evaluator scores for each project were averaged The EPT also solicited the Regional Cooperation Working Committee's review and evaluation of the ten proposals which involved collaboration between two or more republics A ranking sheet which included the proposal guideline's ranking criteria for each of the ten proposals was provided to the Committee members They were also provided a tally sheet to use to fax final scores of the 10 proposals to us

**Selection**

The selection of proposals for awards was based on the ranking score and the distribution of projects across priority topics The project selected five proposals at a total funding level of $416,250 A brief description of these projects are provided below

Project No 1 **"Integrated Data management for the Syr Darya Basin,"** Research Triangle Institute, USA Principal Investigators Eugene Brantly, Tim Bondelid and counterparts from Kazakstan, Uzbekistan and Kyrgystan ($282,000 RTI, $30,000 for Central Asian counterparts) This proposal addresses priority topics 1 2, 3, 4, and 6 The investigators will identify and collaborate with Central Asian counterparts to adapt the Danube Emissions Management and Decision Support System (DEMDESS) to the Syr Dayra Basin This system will evaluate water resource management issues such as hydrology, water use and water flows, water allocation and water pricing This activity will promote cooperation and data sharing among counterpart institutions within and among countries, with the objective of demonstrating the value of sharing and integrating analyses across disciplines and geographic areas In addition, the investigators will demonstrate analyses of key water resource management issues in selected case study areas

Project No 20 **"Scientifically-Based Methods of Water Pricing,"** Dr Dyushen Mamtkanovich (Kyrgystan), Dr Shavva Kuzma Ivanovich (Kyrgyzstan) Dr Farikov Albert Abdullaevich (Uzbekistan), and Dr Boltov Victor Vasilevich (Tajikistan) ($52,000) This project addresses priority topic number 4 The investigators of this project will develop methods of tariffs and prices with regard to pricing water for use in irrigation, tariffs for use of underground waters, methods for determining interstate tariffs and tariffs for pollution discharges (pollution taxes) The proposal addresses a high-priority topic, and provides an opportunity for collaboration among three republics In addition, it provides an excellent opportunity for involvement of U S collaborators in the pricing area

Project No 16 **"Drinking Water Standards for the Syr Darya Basin "** Dr Dushyen Mamatkonovieh and scientific experts from Uzbekistan, Tajikistan, and Dr Kenneth Rasmusen, USA $50 000 ($15,000 for each republic, $5000 for U S expert) This project addresses priority topics number 2 and 5 The objective of this project is to develop regional drinking water standards and 2) and to determine management measures which can ensure potable drinking water supplies in the Syr Darya basin The researchers will determine water quality in the Syr Darya determine pollution sources and provide recommendations on an optimal regime of water exchange in water reservoirs to prevent eutrophication

Project No 4 **"Pricing Water During Transition During Paid Water Use in the Republics of Central Asia,"** Dr Pinkhasov Mier Arievich, et al (Uzbekistan) and Dr Kukhoviniyy Victor Abramovich et al (Tajikistan), ($42,000) This project addresses priority topic number 4 The goals and objectives of this project are to formulate pricing models for different water uses, and

to establish tariffs for water supply services for irrigation and non-irrigation purposes The investigators plan to explore the impact water pricing schemes can have on incentives for water conservation They also mention a Mr Worth from the USA as a consultant to the project and provide expertise and $10,000 is budgeted for his assistance, but detail is lacking

Proposal No 25 **"Economic Damage Evaluation in Water Use,"** Dr Sarkosov Mikhailovich of Turkmenistan ($10,000) This project addresses priority topics number 3 and 4 The investigators will develop a scheme of damage assessment and identify and work with collaborators from Uzbekistan in developing a bilateral, long-term agreement between Turkmenistan and Uzbekistan on border water supply activities The investigators will examine agricultural damage, damage assessment from industrial and municipal water pollution, damage from fish farms, etc This work could be important for settling differences of border states on water management issues

**Water Resources Policy and Management Projects**
**Anticipated Equipment Needs**

| # | Project Name | Equipment Needs | Budget |
|---|---|---|---|
| 28 | Integrated Data Management System for the Syr Darya Basin | Computer workstation with internal fax/data modem with capacity to handle DEMDESS Two for each republic or 10 @ $5000/each One for each counter part---3 @$5000 | $65,000 |
| 20 | Scientifically Based Methods of Water Pricing | Equipment was not included in budget However, based on discussions with investigators one high capacity computer with fax/data modem will be needed for at least 3 collaborators 3 @ $5000<br><br>Fax machine for each collaborator @ $1500 each | $19,500 |

Applied Demonstration Projects/Partnership

Round I and Round II Funded and Unfunded Lists

| PROJECT NO | PROJECT NAME | | RANK | COST USD | RUNNING TOTAL $ |
|---|---|---|---|---|---|
| | *Funded Round I* | | | | |
| 29 | REGIONAL WATER ALLOCATION MODEL FOR THE AMU | MCKINNEY USA | 1 | 90000 | $90 000 |
| 29 | REGIONAL WATER ALLOCATION MODEL AMU DARYA | KARIMOV, IEI | 1 | 52000 | $142 000 |
| 14 | IMPACTS OF HUMAN ACTIVITY ON UPSTREAM SYR DAR | NEKIPELOVA (KasNIGMI | 2 | 12000 | $154 000 |
| 5 | OPTIMUM WATER QUALITY OBSERVATION NETWORK | Toryanikova, SANIGMI | 3 | 54000 | $208 000 |
| 30 | MONITORING WATER QUALITY OF ARAL SEA ECONOLO | KAMALOV,KARALKAPA | 4 | 9000 | $217 000 |
| 32 | SHORT-TERM RUNOFF FORECASTING MODEL-AMU DAR | MYAGKOV SANIGMI | 4 | 15600 | $232 600 |
| 15 | IMPACTS OF ARAL SEA LEVEL CHANGE ON GROUNDWA | Vlasenko, KazNIGMI | 5 | 9700 | $242 300 |
| 17 | FORECASTS OF EXPECTED ARAL SEA LEVELS | Shiraviova KazNIGMI | 6 | 15000 | $257 300 |
| | Funded Round II | | | | |
| 28 | Information and Decision Support System for Syr Darya | Brantly, RTI | 1 | 262000 | $519 300 |
| 20 | Scientifically Based Methods of Water Pricing,Tariffs, Taxes | Shavva, IWPE (Bishkek) | 1 | 52000 | $571 300 |
| 16 | Drinking Water Standards for the Syr Darya | Mamatkhanov IWPE (Bishk | 2 | 50000 | $621 300 |
| 4 | Pricing of Water in Transition Period in CARS | Nasyrov, Tadjikistan | 3 | 42000 | $663 300 |
| 25 | Methods of Economic Damage Evaluation of Water Use | Sarkisov, Turkmenistan | 3 | 10000 | $673 300 |

Applied Demonstration Projects/Partnership

Round I and Round II Funded and Unfunded Lists

| PROJECT NO | PROJECT NAME | | RANK | COST USD | RUNNING TOTAL $ |
|---|---|---|---|---|---|
| | **Unfunded Round I** | | | | |
| | LONG TERM RUNOFF FORECAST METHODS-NARYN & VAH | AGALTSEVA SANIGMI | 11 | 8000 | **$681 300** |
| 24 | RUN OFF FREQUENCIES (RISKS) IN URAL RIVER DELTA | OSTROUMOVA KAZNIGMI | 12 | 10000 | **$691 300** |
| 4 | OPTIMAL WATER MANAGEMENT/INTENSIVE IRRIGATION | TOLSTUNOV BVO SYRDA | 13 | 16000 | **$707 300** |
| 7 | OPTIMAL SNOW COVER OBSERVATION NETWORK-MTN BA | PICHUGINA SANIGMI | 14 | 10000 | **$717 300** |
| 21 | NATURAL AND ANTHROPOGENIC FLOWS OF SYR DARYA | POPENKOVA KZA HYDR R | 14 | 8800 | **$726 100** |
| 8 | UNIFIED REGIONAL ESTIMATION OF WATER CHEMISTRY | RUBINOVA SANIGMI | 15 | 6000 | **$732 100** |
| 16 | IMPACTS OF SAN/SALT STORMS ON ARA SEA ISLANDS | SEMENOV SZA HYD RESE | 15 | 9300 | **$741 400** |
| 18 | NOMOGRAMS FOR ELEVATION AND STABILIZATION-ARAL | SMERDOV KZA HYDR RES | 16 | 4000 | **$745 400** |
| 1 | SATELLITE FORECASTING OF MOUNTAIN RIVER RUNOFF | PICHUGINA, TSARYEV SA | 17 | 5000 | **$750 400** |
| 12 | MODELING CASPIAN SEA WATER CONSUMPTION | VICTOROVICH, HYDR ME | 18 | 9800 | **$760 200** |
| 10 | HYDROMET MONITORING-ARAL SEA AND SYR DARYA BA | SHAMENOV, KZA HYDR | 19 | 9200 | **$769 400** |
| 31 | CREATING A TECHNICAL BASIS FOR HYDROMET OBSERVA | SANIGMI, UZ | 19 | 45800 | **$815 200** |
| 23 | AGRICULTURAL CLIMATE DATA IN PRE-ARAL REGION | SHAMENOV, A M | 20 | 9800 | **$825 000** |
| 26 | IMPACT OF CASPIAN SEA LEVELS ON URAL RIVER FLOODS | OSTROUMOVA KAZNIGM | 20 | 10000 | **$835 000** |
| 9 | EVALUATION OF PRE ARAL AREA FRO STATELLITE DATA | L V LEBED KZA HYDR R | 21 | 9000 | **$844 000** |
| 19 | ARAL SEA WATER TEMPERATURES AND FLOWS IN FREEZE | SHIVARIOVA, KZA KDR R | 21 | 9200 | **$853 200** |
| 27 | ESTIMATING ECOLOGICAL DAMAGES IN LOWER AMU DAR | KALANDAROV URGENCH | 21 | 0 | **$853 200** |
| 11 | CLIMATE CHANGE IMPACTS ON SMALL SEA FORMATION | CHICHASOV KZA HYDR R | 22 | 6500 | **$859 700** |
| 22 | IMPACT OF CLIMATE CHANGE ON GRAZING PRE-ARAL | SHAMENOV, KZA HYDR R | 22 | 7000 | **$866 700** |
| 25 | HYDROMETEROLOGICAL REGIME OF EASTER CASPIAN | SHIVAREVA KAZNIGMI | 23 | 7800 | **$874 500** |
| 13 | MAPPING DISASTER RISKS IN CAR MOUNTAINS | V P MACHALOV KZA HY | 24 | 8700 | **$883 200** |

Applied Demonstration Projects/Partnership

Round I and Round II Funded and Unfunded Lists

| PROJECT NO. | PROJECT NAME | | RANK | COST TO RUN USD | RUNNING TOTAL |
|---|---|---|---|---|---|
| | **Unfunded Round II** | | | | |
| 14 | Water Quality Standards Development and Administration | Saikisov | 4 | 35000 | **$918 200** |
| 3 | Operat'l Plan and Mgt Water Consumption in Irrig'td Agric | Nasyrov | 5 | 49000 | **$967 200** |
| 23 | Water Pricing and Taxes for Water Utilization | Baranov | 6 | 9975 | **$977 175** |
| 22 | Plan'g and Mgt of Ecological Situation in Aral-Syr Darya Basin | Bondar | 7 | 10000 | **$987 175** |
| 19 | Ecological Situation in Syr Darya River Basin | Mustaffaev | 7 | 10000 | **$997 175** |
| 5 | Pricing Criteria Considering Quality of Irrigation Water | Karmanchuk | 8 | 10000 | **$1 007 175** |
| 24 | Comparative Evaluation of Agricultural Crop Production | Sarkisov | 9 | 30000 | **$1 037 175** |
| 1 | Price for Underground Waters | Gorodnyanskii | 10 | 43000 | **$1 080 175** |
| 2 | Plan and Mgt Water Resources Shu,Talas and Asa River Basins | Aimenov | 10 | 10000 | **$1 090 175** |
| 6 | Mathematical Model Vashh Amu Darya River Basin | Tashpulatovich | 11 | 10000 | **$1 100 175** |
| 22 | Planning and Mgt of Flows in Karakorum Canal | Sarkisov | 12 | 50000 | **$1 150 175** |
| 18 | Water Distribution Mgt in Karakorum Canal | Khudai-Berenov | 12 | 45000 | **$1 195 175** |
| 8 | To Develop Technique for Optimal Mgt of Water Distrib and Cons'tn | Stepanovich | 12 | 50000 | **$1 245 175** |
| 9 | To Develop Hard/software for Water Control Facilities of Int'l Import | Stepanovich | 13 | 50000 | **$1 295 175** |
| 13 | Local Desalinators for Potable Water | Khanmamedov | 13 | 45000 | **$1 340 175** |
| 26 | Creation of Computer Variant of Medical-Ecological Atlas/Kazakhsta | Marat | 14 | 39570 | **$1 379 745** |
| 21 | Sprinkler Irrigation for Almaty s Parks | Balgreev | 14 | 33933 | **$1 413 678** |
| 10 | Organization of Irrigated Farms of Former Collective State Farms | Nikolayevich | 15 | 50000 | **$1 463 678** |
| 12 | Organization of Zonal based Scientific Production Centers of Irrig'td | Fedotov | 16 | 35000 | **$1 498 678** |
| 27 | Snow Resources of Syr Darya Basin | Severskii | 16 | 0 | **$1 498 678** |
| 7 | Models for Irrig Water Saving Sloped Fields, Arid Areas | Sattorov | 17 | 7235 | **$1 505 913** |
| 11 | Creation of Self pumped Sprinklers in foothills of Kyrgyzstan | Fedotov | 18 | 50000 | **$1 555 913** |

# Draft Scopes of Work

# Selected CAR-Based Applied Demonstration Projects

# Submitted November 7, 1995

**Name of Project** Water Allocation Model for the Amu Darya

**Principal Investigator** Dr Akmal Karimov

**Scope of work** The project investigator will provide technical assistance to the Environmental Policy and Technology Project through working with the University of Texas at Austin, USA

**Task 1** The University of Texas at Austin and Dr Karimov will work together to compare water management techniques of the State of Texas USA and Central Asia Dr Karimov will travel to the United States to conduct this research and prepare a report by June 1 1996 Results of the comparison of water allocation methods will be presented to the Environmental Policy and Technology Project seminar, Integration of Water Management Policies in July 1995

**Task 2** The collaborators will work together to adapt the University of Texas water allocation model to a geographic segment of the Amu Darya of Central Asia

The collaborators will also present results of the model adaption and its significance to Central Asian water management problems to an audience attending the EPT project's regional conference in the fall of 1996 The investigators will work together to prepare a final report of the efforts taking place under this scope of work

**Deliverables**

Workplan and detailed equipment list-within two weeks of completed contract negotiations

Report -- Comparative study of water management practices in the State of Texas USA and Central Asia

Water allocation model for a geographic subset of the Amu Darya on computer diskette--September 30, 1996

Presentation of water management practice report findings during Integration of Regional Water Management Policies--July 1996

Presentation of model adaptation--September 1996

Final report--September 30, 1996

**Name of Project** Impacts of Human Activities on the Upstream Syr Darya

**Principal Investigator** Lyudmila Nekipelova

**Scope of Work** The objectives of the subcontract are the preparation and demonstration of a runoff model for the upper Syr Darya River in Kazakstan The contractor will develop this model, calibrate the model for current conditions in the basin, and test it for forecast future conditions of human activities in the basin The contractor will submit a workplan for carrying out the work under this scope within two weeks after completed negotiation of this contract

**Task 1** The investigator will conduct a statistical evaluation of the drain series

**Task 2** The investigators will conduct and evaluation of the drain variation by combined analysis of simulated water inflow into the surface water collector and the measured drain

**Task 3** The evaluators will determine the effect of economic activity on the drain of Syr Darya tributaries

**Deliverables** -

Workplan and detailed equipment list within two weeks of final contract negotiations

Final Report--Impact of Human activity on the Syr Darya--September 30, 1996

**Name of Project** Creating an Optimal Water Quality Observation Network for the Aral Sea

**Principal Investigator** Raisa Toryanikova

**Scope of Work**

The Contractor will provide technical assistance to the USAID-funded Environmental Policy and Technology Project (EPT) for the development of an observation network for water quality on the main tributaries to the Aral Sea The design of this network will include the water quality parameters to be measured and the sampling and analyses to be performed The design of the network will be provided to the EPT project in the form of a final report and in presentation form to the project's regional conference in the fall of 1996

The Contractor will provide a workplan and detailed equipment list to the EPT Project within two week after final negotiation of this contract

Workplan and detailed equipment list within two weeks of final negotiation of contract

Water quality monitoring network design with maps of observation station locations--final report--September 30, 1996

Regional Conference Presentation--Fall 1996

**Name of Project** Water Quality Monitoring at the Epicenter of the Aral Sea Disaster

**Principal Investigator** S K Kamalov and B Zholybekov

**Scope of Work**

The objective of this subcontract is to investigate the existing water quality conditions of the Aral Sea region and impacts of contamination on human health The Contractor will provide technical assistance to the USAID funded Environmental Policy and Technology Project (EPT) for the analysis of water quality in the vicinity of the Aral sea Results of this effort will be analyzed and presented in final report The EPT may also request the Contractor to present results of this project to its regional conference in the fall of 1996

The Contractor will provide a workplan and a detailed equipment list to EPT within two weeks of final negotiation of this contract

Deliverables

Workplan and detailed equipment list within two weeks of final negotiation of this contract

Final Report--September 30, 1996

Conference Presentation, if requested

**Name of Project** Short-term Forecasting for the Amu Darya River

**Principal Investigator** Sergey Myagkov

**Scope of Work** The objective of the subcontract is to develop the computer software for modeling the hydrologic conditions in the Amu Darya basin The Contractor will provide technical assistance to the USAID funded Environmental Policy and Technology Project (EPT) for the development of a hydrological model for forecasting runoff in the Amu Darya The Contractor will provide a copy of the model to the EPT project and a final report In addition, the contractor will present results of the work undertaken in this scope to the project's regional conference in the fall of 1996, if requested

The Contractor will provide a workplan and a detailed equipment list to EPT within two weeks of final negotiation of this contract

**Deliverables**

Workplan and detailed equipment list must be provided to the EPT project no later than two weeks after final negotiation of this subcontract

Final Report -- September 30, 1996

Presentation at regional conference (fall 1996) if requested

**Name of Project** Evaluation of the Impact of the Drop in Aral Sea Levels on Surrounding Groundwater Levels

**Principal Investigator** E F Vlasenko

**Scope of Work** The objective of this project is to determine the impact of declining Aral Sea levels on groundwater levels of the surrounding territories In carrying out the work under this scope the Contractor will provide technical assistance to the USAID Environmental Policy and Technology Project The contractor will provide the project with a workplan and equipment list within two weeks of final negotiation of this contract In addition, the Contractor will provide the results of this evaluation in the form of a final report

Deliverables

Workplan and detailed equipment list must be provided to the EPT project no later than two weeks after final negotiation of this subcontract

Final Report -- September 30, 1996

**Name of Project** Probability Forecast of Aral Sea Water Levels

**Principal Investigator** S P Shivareva

**Scope of Work** The objective of the subcontract is to provide a probability analysis of long-term water levels in the Aral Sea The contractor will provide technical assistance to the Environmental Policy and Technology Project (EPT) through collecting monthly hydrometerological information for the period of observation and provide this data on disk to the project In addition the contractor will model Aral sea levels under various climate and anthropogenic conditions The contractor will provide a final report to the project which provides a comparison of sea level changes based on various climate and activity scenario and copy of the final model on computer diskette A written final report summarizing activities under this scope will be provided to EPT

The Contractor will provide the EPT a detailed workplan and equipment list no later than two weeks after final negotiation of this contract

**Deliverables**

Workplan and equipment list no later than two weeks after final negotiation of this contract

Data and Models on computer diskette--September 30, 1996

Final Report -- September 30, 1996

**Project Name** Scientifically Based Methods of Water Pricing, Tariffs and Taxes

**Principal Investigators** Dr Dyushen Mamatkanovic (Kyrgystan), Dr Kuzma Ivanovich Shavva (Kyrgystan), Dr Albert Abdullaevich Rafikov (Uzbekistan), and Dr Victor Vasilevich Boltov (Tajikistan)

**Scope of Work** The principal investigators of the three countries will collaborate on development of scientifically based water pricing, taxes and tariff for management of water resources in Central Asia, and more specifically, the Aral Sea Basin

The goals, objectives and expected results of this international collaboration include the development of economical evaluation of water as a natural resource, determination of prices taxes and tariffs, development of the justification for pricing norms and development of international water tariffs The results of this project will support the dialogue between Central Asian Republic and Water Pricing

The collaborators will work in partnerships with counterparts of the United States on water pricing issues

The results will be published in a final report, complete with international recommendations for water pricing in the Aral Sea basin The investigators will determine means of elevating the report recommendations to high-level decision-makers, including the Interstate Council for the Aral Sea and the Environmental Policy and Technology Project Regional Conference in the fall of 1996

**Deliverables**

| | | |
|---|---|---|
| I | Mid-term report | May 1996 |
| II | Final report | September 30, 1996 |
| III | Presentation at Regional Conference | Fall 1996 |

**Budget** This project is funded at a level of $50,000 USD Funding shall include participation of collaborators from all three republics

**Project Name** Drinking Water Standards for the Syr Darya Basin

**Principal Investigators** Dr Dyshen Mamatkov (Kyrgystan) and others from Kyrgyzstan, Uzbekistan and Tajikistan

**Scope of Work**

The investigators will provide technical assistance to the U S AID funded Environmental Policy and Technology Project The objectives of this project are to develop unified regional drinking water standard and develop water management solutions for improving water quality in the Syr Darya basin The investigators will form an ecological working group from the three countries mentioned above

The investigators will undertake the following

I determine current hydrochemical background in the Syr Darya basin
II determine production processes in water reservoirs
III determine contamination sources
IV determine level of pollution
V recommend management solutions

The collaborators of Kyrgystan, Uzbekistan and Tajikistan will work together to identify problems and solutions and work to elevate project recommendations to high-level policy makers and decision-making institutions If requested, results of this project will be presented at the EPT Regional Conference on Water Management in the Aral Sea in the Fall of 1996

**Deliverables**

Mid-term Report May 1996
Final Report September 30, 1996
Conference Presentation, if requested Fall 1996
**Budget** The budget for this proposal is $50,000 USD and includes funding for collaborators from Kygystan, Uzbekistan, and Tajikistan

**Project Name** Surface Water Quality Standards development and execution
**Principal Investigators** Dr Moses Mikhailovich Sarkisov (Turkmenistan)

**Scope of Work**
The principal investigator will provide technical assistance to the USAID funded Environmental Policy and Technology Project The investigators will include member from the three republics of Turkmenistan, Uzbekistan, and Tajikistan on a working committee to develop water quality standards at the border of the three countries The goals and objects of this project is the create an ecological-mathematical model of water quality control for the Amu Darya and to explore policy solutions to the identified problems

In undertaking this project the collaborators will

I develop hydrochemical indicators for each point of concentration at the state borders, and,
II develop preliminary proposals for economic sanctions for water quality standards violations

The investigators agree to design water quality control programs for the major pollution sources and recommend conservation measures The results of this project could result in an interstate agreement on water quality control and the project collaborators will work, throughout the duration of the project, to have its recommendations presented and accepted by high-level decision makers and policy institutions

**Deliverables**

| | | |
|---|---|---|
| I | Water quality model | September 1996 |
| II | mid-term report | May 1996 |
| III | Final report | September 30, 1996 |

**Budget** The budget for this project is $35,000 55% of the funding is provided to Turkmenistan, 30% of the total funding is to be provided to Uzbekistan, and 15% of the total funding is to be provided to Tajikistan

Project Name Economic Damage Evaluation for Water Uses

Principal Investigators Dr Moses Mikhailovich Sarkisov, collaborators from Uzbekistan

Scope of Work

The investigators will develop scientifically justified methods of damage assessment using activities of border countries to develop a long-term bilateral agreement They will conduct the following tasks

I develop a scheme of damage determination
II develop a proposed agreement between Turkmenistan and Uzbekistan on water supply activities along their shared borders

The methodology used will include agricultural damage assessment, industrial and municipal water use damages, fish farm damage, and ecological damage

The collaborators will work thought the duration of this subcontractor to elevate their work and recommendations to high level officials and institutions that affect change in water management policy in Central Asia

**Deliverables**

| | |
|---|---|
| Mid-term Report | May 1996 |
| Final Report | September 30, 1996 |

Budget A budget of $10,000 USD is allotted for work of collaborators from both countries

**Project Name** Problems of water price formation under transition to paid water use in the Republics of Central Asia

**Principal Investigators**
Mier Arievich Pinkhasov
Favaria Kadiyrovich Kayumov
Victor Abramovich Dukhovinyy
Irina Sergeevna Avakyan
Abrar Asraovich Kadiyrov
Rakhmankul Rakhmatillaevich Rakhmatillaev
Nabi Kasiymovich Nosirov

**Scope of Work**

The investigators will provide technical assistance to the USAID funded Environmental Policy and Technology Project in the area of water pricing The objectives of the project are to formulate water price model for different water users and to establish different tariff types for water supply services The focus of the project the transition from nonpricing to pricing of water in Central Asia

The complete project will result in integrated cooperation between two republics of Uzbekistan and Tajikistan The issues of resolution of costs and compensation to water users and development of alternative water service tariffs will be investigated

The investigators will work throughout the life of the project to elevate its results and recommendations to high level policy makers and institutions with and among their republics

**Deliverables**

| | |
|---|---|
| Mid-term report | May 1996 |
| Final Report | September 30, 1996 |

**Budget** A budget of $44,500 USD is provided for this project, including counterpart funding from both Uzbekistan and Tajikistan