

PD-ABP-576

# VOLUME THREE

## WESTERN NEWLY INDEPENDENT STATES

### ANNEXES

# MID-TERM EVALUATION OF THE CH2M HILL COMPONENT OF THE ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT

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In association with:  
**Development Alternatives, Inc.**  
*7250 Woodmont Avenue*  
*Bethesda, MD 20814*

**Development Associates, Inc.**  
*1730 North Lynn Street*  
*Arlington, VA 22209-2023*  
*(703) 276-0677*

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## WESTERN NEWLY INDEPENDENT STATES

### I. INTRODUCTION

USAID goals for the Western Newly Independent States (WEST NIS) environment program are, in order of importance, to improve human health, to promote sustainable economic development and to protect the natural environment. USAID developed a series of delivery orders under its Environmental Policy and Technology Project (EPT) designed to help achieve these goals, and which would be implemented by CH2M Hill. There are currently three delivery orders (DOs) for WEST NIS, numbered 5, 9 and 13 which were developed separately and sequentially.

DO 5 was designed primarily to obtain the necessary environmental information in the region: to help identify priorities and build consensus, and to develop some quick-start activities that would result in rapid impact. DO 9, as modified, developed a full set of specific tasks and activities, based primarily on the information gathered under DO 5 in the agreed upon priority areas: industrial waste management, urban water supply, biodiversity, water quality, policy formulation, environmental health, farm environment management, and educational outreach. DO 13 expanded the work of one specific task in DO 9 addressing industrial waste management. (Annexes 1 through 11 describe and comment upon each task under DO 9.)

The WEST NIS evaluation team visited Ukraine and Moldova to assess the status of CH2M Hill project activities in these countries. All three team members were together in Lviv, Ukraine to review project work with local agencies involved in urban water supply. In Kiev, Ukraine the team was joined by Craig Olson, the deputy team leader of the overall evaluation. In Kiev, the team reviewed regional operations of the contractor and discussed contractor performance at sites the team could not visit. One member of the team went to the industrial city of Donetsk, Ukraine to examine the industrial waste problems the project had just started to address. The other two team members went to Chisinau, Moldova to inspect the environment risk assessment work and demonstrations of environmentally sound agriculture techniques.

Team members interviewed the CH2M Hill contractors and staff working on this project, other contractors working on associated activities, USAID and government officials, and host country counterparts and project participants. A list of these people and the subjects discussed may be found in Annex 12 to this report. The content of these interviews focused on the timeliness and quality of the contractor's performance, the relevance of the activities and the participant's involvement, and the interviewee's perception of the likely impact of the project.

Given that while general project activities in the region were operating for one and a half years and yet several key tasks were authorized only at the end of August 1995, the evaluation team nevertheless concluded that CH2M Hill and USAID were making substantial progress toward the achievement of project objectives and were obtaining significant cooperation and support from their host country counterparts. In Moldova, the project introduced the use of environmental risk assessment to health, agricultural and environmental analysts in real situations and into the university curriculum and, as a result obtained the cooperation of groups who had never worked

together before. The farm management demonstrations scheduled for the Spring of 1996 in Moldova, in addition to providing tangible examples for reducing environmental degradation, will potentially lower farming costs through reduced fertilizer and pesticide use, and reduce energy consumption through the use of low-till technologies. Both of these outcomes can have positive environmental impacts.

Unfortunately, not everything had proceeded smoothly. Two project tasks — Tatar Environmental Health and Farm Environmental Management Demonstration — suffered from procurement delays, primarily due to the need to arrange for an Environmental Impact Assessment by a third party, and to communications problems between the contractor's field and home office, USAID/Washington (AID/W) and USAID/Kiev regarding a report on how demonstration sites were selected. Other delays were caused by procedural problems in implementing the deliver orders, and by task order design issues which required time to modify the Delivery Order. The initial staffing in the field by USAID to support these activities was constrained by State Department policy, and limited to two full time staff (one AAAS fellow and one foreign national), under the supervision of a USAID direct hire with multiple responsibilities. This also negatively impacted the amount of time it took USAID to properly analyze and decide on appropriate actions to take.

These problems have been overcome. CH2M-Hill now seems thoroughly familiar with USAID procurement regulations and communications are improved. Three additional USAID/Kiev staff are in place or about to be approved. EPT activities in WNIS under CH2M-Hill's contract are now mostly on track, according to the draft Work Plans submitted in October by the contractor. As discussed further in this report, USAID/Kiev should now be delegated full authority to direct the technical implementation of the project in its region, in order to place decision making nearest to those most familiar with the problems.

## **II. ACHIEVEMENTS**

### **A. PROJECT MANAGEMENT**

**1. The contractor, CH2M Hill, has mobilized a sufficient number of competent, technical and management staff at its regional headquarters in Kiev and in all the field offices visited.**

The team was impressed with the general quality of the CH2M Hill consortium staff at all the sites visited. For example, in Lviv the resident CH2M Hill consortium activity coordinator is an experienced civil engineer, specialized in water, who was born in Lviv. He was in the process of adding two local engineers to his staff to begin system design analysis. The Chisinau coordinator is a Ph.D. agronomist with strong academic credentials, a USAID background, and real farm production experience; he is also knowledgeable about NIS farm practices having been on a short-term academic exchange program in Russia. Additional technical and administrative personnel were hired to support the tasks in Moldova. They are cooperating country nationals

including an office manager, office assistant, 2 secretaries /translators, a translator, driver, technical assistant, and program specialist.

CH2M Hill's regional office in Kiev employs a number of competent, experienced technical and administrative staff that support the Regional Director, who is an experienced environmental administrator. The Deputy Regional Director is a Ukrainian national with strong environmental credentials, who has worked on drafting existing environmental policies and who is in contact with all the key Ukrainian policy makers in this field. Other office staff include: a field finance director, senior secretary/translator, secretary, office manager, office assistant, and a driver.

As CH2M Hill field activities progress, it is clear that different specialists in finance, public policy, management, etc., will be required to augment the work done by the current staff who have predominately engineering and environmental backgrounds. CH2M Hill needs to ensure these other specialist become involved in project activities.

The basic structure of CH2M Hill management in the WEST/NIS region is shown in Annex 13.

**2. The contractor has established good working relationships with its Ukrainian, Moldovan and Mission counterparts.**

Throughout the visit, the team observed a genuine respect between the contractor's staff and the host country and Mission counterparts. In Lviv, the contractor appeared to have a good cooperative working relationship with the management of the Lviv Vodokanal (Water and Wastewater Management Department of the City of Lviv). Vodokanal management donated space in its building for the CH2M Hill resident coordinator and additional staff he is hiring. Ministry officials interviewed in Kiev were complimentary of CH2M Hill's staff and work. CH2M Hill and USAID have worked cooperatively with many key Moldovan organizations and a Technical Advisory Committee has been established for that purpose.

CH2M Hill has established a close working relationship with the highest levels of the Donetsk Oblast (similar to county government in the US), the Director of the Oblast office of the Ministry of Environmental Protection and Nuclear Safety. During the administration of the Former Soviet Union (FSU), the Director was very active in the preparation of an environmental inventory for the Oblast. Following this earlier work with the FSU, the Director prepared a "Conceptual Program for the Protection of the Environment in the Donetsk Oblast." This program has been adopted by the Donetsk Regional Council.

Both the Oblast Director and the Deputy Chairman of a local environmental council view USAID environmental activities as the next step in implementing their environmental protection program. CH2M Hill has established a good working relationship with the Enakievo Metallurgical Plant, a newly privatized large iron and steel producer. It appears that this company will be one of the prime candidates for participation in the environmental audit training to be conducted by CH2M Hill.

**3. The contractor has submitted detailed work plans for each task as required under Modification #3 to DO 9. These work plans are being used to manage and schedule work and to organize information for reporting purposes.**

The work plans relate the specific tasks to the EPT program objectives. Each task is described along with its subtasks, the approach to accomplishing the task, equipment to be procured, task outputs, indicators and targets, specific constraints to implementation, discrepancies between the DO and work plan, links to other DO tasks, sustainability features, and schedules. The work plans were submitted by the contractor within the October 27, 1995 due date, but have not yet been officially approved by USAID.

The contractor has established a sound reporting system that tracks delivery order performance. For illustrative purposes we have provided in the Appendix to Annex M4, a report on the status of tasks under Delivery Order 9 for Moldova. There will be a few missed deadlines for Task U1 in Donetsk due to a medical emergency that occurred. However, this should not affect overall contractor performance. In general, aside from some early-on procurement problems on the Tatar Environmental Health Task and the Farm Environmental Management Demonstration Task discussed below, the evaluation team found that the contractor was performing well in meeting its time table for deliverables under the contract.

**4. USAID/Kiev appears to have successfully transferred project monitoring and coordinating responsibility to a newly arrived team of US environmental specialists. The new staff appear to fully understand and support project goals and activities.**

The original design and initial implementation of regional field activities under this project was coordinated by one USAID direct hire employee (with multiple responsibilities), one AAAS contractor, and one local foreign service national. All three have recently left the Mission for various reasons and a new team is being assembled. Continuity has been provided by senior managers and AID/W staff. The former AAAS fellow is on a contract to continue to provide short term assistance.

Two new direct hire/PSC staff members have recently arrived and begun the process of familiarizing themselves with EPT activities. A supervisory direct hire person has been selected and was in the process of transferring to the Mission. Both staff members the team met seemed well qualified to coordinate the ongoing and planned activities, although both are new to USAID work and procedures. It was clear that additional staff were needed to adequately backstop all the regional environmental activities. This was particularly true because USAID has assumed lead responsibility to coordinate activities related to the international donor effort to clean up the Chernobyl reactor, an effort to be led by one of the new staff members. In response to this need, recruitment is progressing well for a senior local foreign service national, and Mission management approved the hiring of two additional local support staff while the evaluation team was in Kiev.

**5. The project has adopted a sound conceptual approach for implementing demonstration activities in order to influence other localities and national policy.**

Evaluation team members interviewed Mission staff and local officials, and discussed the progress of decentralization of authority to Oblasts. This radical change in central government policy enhances the prospect that local solutions to environmental problems can be tested, as in the case of Vodokanal in Lviv and selected industries in Donetsk. Once a suitable outcome has been developed and tested, it can be replicated in other areas of the country. There is no better practical incentive for host country counterparts to work with USAID.

One of the purposes of the national policy working groups is to act as a platform to present the findings from the demonstration sites, thereby informing key players about and encouraging them to replicate the program. If every aspect of this project had to be cleared through the central ministries, it is doubtful that consensus on activities and approaches would have been reached, if at all. Instead, project activities are coordinated to bring in national policy issues after the demonstration activities are well underway and producing preliminary results with which to share on a broader basis.

**6. EPT is well integrated into the national plans of the Ukraine and the aspirations of its citizens.**

On orders from the Presidium of the Supreme Rada of Ukraine, the Ministry of Environmental Protection and Nuclear Safety prepared a "National Program of Environmental Protection and Rational Use of the Natural Resources of Ukraine." The EPT Donetsk activities complement well the initial implementation of this program.

From discussions the evaluation team held in Lviv, it was clear that the provision of 24-hour water service was a citizens' priority as demonstrated during the recent local elections. An elected official promised to establish an independent office to monitor problems of Vodokanal performance. Everyone the team spoke with in the administration and the Vodokanal was aware of the desire of the citizens.

**B. PROJECT IMPLEMENTATION**

**1. CH2M Hill organized a successful water utility management workshop in Lviv (Task U2-2.5), based on knowledge gained by Vodokanal employees on a US study tour of water utilities. A significant transfer of knowledge to a larger group of Vodokanal employees appears to have occurred.**

The evaluation team attended this workshop on October 25, 1995. It was the first of several scheduled under the Lviv task of Delivery Order 9. CH2M Hill focused the workshop on information gaps identified during the Water Utility Management study tour to the U.S.A. (8/14/95 — 9/1/95) arranged through the NET Project and managed by AED, which provides training services throughout the NIS. Participants included key Lviv Vodokanal workers and

Lviv city officials. Lectures were given during the AED tours by the representatives of Valu-Add Management, Inc., N-Viro Environmental Co, the World Bank, the Institute for Public-Private Partnerships, Virginia-American Water Company, WSSC, and others. CDM International, which was the subcontractor to AED that arranged this tour, provided the professional site visits.

The purpose of the workshop was to share observations and knowledge gained by the Study Tour participants to other city officials and Vodokanal employees. The majority of the attendees were Vodokanal workers though representatives from the USAID Mission and CH2M Hill's home and regional offices also attended. In addition, the Deputy Head of the Lviv City Administration expressed a thorough understanding of ongoing CH2M Hill activities, was enthusiastic about working with CH2M Hill, and was willing to cooperate on EPT activities. He indicated that his current attitude and enthusiasm were based on recent meetings with USAID and CH2M Hill. He drew a complete picture of the structure of Water and Sewers Departments in the U.S.A. He was hoping that this project would succeed in the City of Lviv and Vodokanal and become a demonstration project for all of Ukraine.

The Deputy Director of the Vodokanal gave a very professional presentation. He brought a videotape and showed the operations of a water treatment plant and a pump station for a small town in a Boston suburb. He highlighted both differences and commonalities, and described attitudes toward work, the relationship between workers, management capabilities, and approaches to problems. In conclusion, he said that modeling the structure they had seen in the States would be a Vodokanal goal. After his presentation he answered numerous questions from the audience.

The last two speakers were a computer specialist from Vodokanal and a head of one of the district's Vodokanals. The district director discussed operational details, and expressed interest in further training by sending Vodokanal professionals to an American pump station for a few months to acquire professional skills which could then be applied to their work in the Ukraine. He noted that the interpreters on the study tour were not technically competent.

The workshop was very well organized and developed, and demonstrated full cooperation between the various parties.

## **2. Coordination between USAID/Kiev and other donors has been established and continues.**

The Mission and CH2M Hill Regional Director set up a donor coordinating committee for activities in Lviv, particularly as it related to developing a financially sustainable model for all Vodokanals to provide 24-hour water service. The World Bank, British Overseas Development Fund, and Danish interests are all represented. This is important to be sure consistent signals by the donors are being given to the city of Lviv and the Vodokanal, where there are still differences of opinion on how to solve the problem. This coordination is critical to achieving the long term objectives of the EPT project in Lviv, since World Bank financing is required if the model(s) developed through EPT in Lviv for the provision of water to customers on a 24-hour basis is to actually be implemented.

The evaluation team found that this coordination was not occurring on an ad hoc basis, but rather that it was done in a systematic manner to keep all the main donors informed of what the others were doing.

**3. The local CH2M Hill representative in Moldova has substantial delegated authority from the regional CH2M Hill office director.**

The Regional Director for CH2M Hill in WEST NIS has delegated substantial authority to the Moldova Country Director to implement activities in the Moldovan work plan. This has enhanced the responsiveness of CH2M Hill to local conditions and lends itself to greater involvement of local participants. The discussion with the CH2M Hill Moldovan representative indicated that this freedom to operate, with appropriate overall guidance from the regional director in Kiev, had helped keep project activities on track and provided incentives for improved performance by both the CH staff as well as the local officials.

**4. In Moldova, CH support has been directed to workshops, English Language Summer Camp, and symposiums that have achieved a great deal of international data sharing and the introduction of advanced US technology.**

As a result of contacts made during the study tours, workshops and symposiums sponsored by CH2M Hill, host country participants have been exposed to vast amounts of data and have even been able to establish Internet links to some US data bases. This has greatly increased the interest in and support of EPT activities for many researchers, teachers and policy analysts. In addition, the introduction of the US Environmental Risk Assessment methodology has provided the Moldovans with a more unified way to look at related issues on a given topic and to share data among institutions (which had not been occurring before).

**5. Aside from comment 4 below under Problems, CH2M Hill and its counterparts appear to have established a clear understanding of EPT task objectives.**

In all our discussions with project participants, we were impressed with the detailed knowledge they possessed of the project's activities. This showed good coordination between the field Mission, the contractor, and collaborating country counterparts.

**C. PROJECT IMPACT**

**1. USAID/Kiev, through EPT and with the assistance of CH2M Hill in implementation, has designed a system of Working Groups that have the potential to affect national policy.**

The implementation of this portion of the Ukraine program has not yet begun, but the working groups are structured and staffed in a manner that has great potential to influence national policy. There are 5 working groups specializing in each of the major EPT areas of responsibility. CH2M Hill is responsible for 3 of these groups. Each working group will have key local and national policy decision makers, as well as contractor, Mission and donor representatives. By exposing

the working groups to the project activities and findings, it is expected that the value of this work will be recognized for the country as a whole, and policy changes will be implemented to permit other localities to take advantages of solutions that the project has developed.

**2. Activities that may form the basis for significant environmental impact have already taken place.**

In Moldova:

- 1) The Director of the Department of Environmental Protection has established a new position of Public Relations Director after the study tour to the United States;
- 2) A US methodology has been adopted as the primary method of analyzing cause and effect linkages between farm practices and health; and
- 3) A course curriculum intended to teach this methodology is being prepared for several university faculties; course development has already been approved.

CH2M Hill was able to arrange data sharing among participating entities to an extent that has never before been accomplished. This increases the expectation that participants will be able to achieve project objectives. However, the existing time constraints limit the potential influence and replication of new technologies. In particular, there is only one year remaining for project activities such as the farm demonstration work, which may not be long enough to experience different farming conditions and develop comparative data. All of the participants interviewed thought that a three-or four-year period was more appropriate for the activities to achieve maximum results.

### **III. PROBLEMS**

#### **A. PROJECT MANAGEMENT**

1. **The environmental program, as currently constituted by USAID/Kiev, does not appear to have a high priority relative to other Mission objectives. The environmental program's success depends on the Mission allocating adequate funding, and authorizing additional local staffing.**

The Mission priorities related to environmental issues were reviewed with senior Mission staff. The issues that the project is addressing are part of the overall Mission Strategic Performance Objectives and Indicators System. However, when we sought a prioritization of these objectives, environmental problems were not among the top six listed. This does not bode well for project activities when budgets come under pressure.

The Mission's position related to reformulating its strategic objectives is to have environmental issues support cross cutting objectives. In particular, addressing environmental issues associated

with industry was one way to help position some of these industries to be privatized, which was a key objective of the Mission. Nevertheless, outside of Chernobyl, environmental issues did not appear to be accorded as high a priority as other concerns.

**2. USAID/Kiev has not been delegated the necessary authority from USAID/W to implement this project in the most efficient manner.**

This issue has been one of the major causes for delays in implementation. It took a considerable amount of time to design and approve the delivery orders for Ukraine and Moldova under EPT because of the fact that contracting authority was located in AID/W yet required necessary input from the field Mission. Under the original DOs 5 and 9, project activities were initiated with an Approved Implementation Plan (AIP) signed by the field Mission staff. The contractor proceeded to implement these activities at some financial risk, since the formal official/contractual approval must come from the COTR in AID/Washington and no AIPs had these formal approvals. There was not always agreement between AID/W and the field Mission on what should be done and how it should proceed. This presented a difficult situation for contractor personnel in the field as they believed they should be most responsive to Mission personnel even though Mission personnel did not have formal authority over EPT activities.

Even after DO 9 was in place, the contractor was told that some of the tasks would be modified and that no work could begin until this happened. Yet, at the same time, the contractor was expected to carry out DO 9 activities as originally specified, even while not being sure that the work it performed would be authorized in the modified DO when it was released. It is not uncommon to have some lag between verbal direction and the official documentation. All contractors deal with this, but the delay should be minimized to avoid unnecessary risks. This situation made for overly cautious implementation.

**3. Past problems in the contractor's project management have delayed implementation.**

Project management problems in procurement, related to water pipes for the Bachcisaraj Vodokanal and demonstration agriculture farm equipment for Moldova, threatened timely achievement of project objectives.

Before the necessary equipment could be procured for the Bachcisaraj Vodokanal in the Crimea, a legal requirement had to be met by having an independently prepared Environmental Impact Assessment. This was delayed, causing a significant political problem for the US because the Vodokanal began to think the USG would not honor its commitment. While a temporary solution was found when the Vodokanal procured the pipe itself, relations with the Vodokanal were strained until the project honored its original promise and provided, belatedly, the pipes which were used to replace the stock drawn down by the Vodokanal.

The second issue, delays in procuring demonstration farm equipment in Moldova, relate directly to a misunderstanding between the contractor's field and home offices over the need for preparing a report on how the sites were selected. This caused the project to miss the originally

intended summer planting season and to have to request an extension until the spring for completion of Task M2 — Farm Environment Management Demonstration Project (despite the fact that the resident advisor is due to leave in January and that his continued support will have to be provided from Ukraine on a short term basis).

Several Moldovan officials expressed significant concern about the veracity of USAID's promise to deliver the equipment and to complete the activities, despite repeated assurance from the resident CH2M Hill project director. USAID and the US Government lose considerable credibility in the eyes of collaborating country officials and citizens when delays occur for reasons they cannot understand. Problems of this type have been since corrected by the contractor.

**4. Internal coordination among various USAID/Kiev offices, which manage activities overlapping or indirectly affecting this project, needs strengthening.**

While donor coordination is good, it appeared to the team that some uncoordinated actions by one USAID contractor could prove to have very serious negative impacts on the success of the project. The team noticed in its initial interviews in Lviv that one USAID funded advisor to the city administration, provided through another office's contract, might be working at cross purposes to EPT objectives which involve creating an independently financed Vodokanal.

When this was pointed this out to the field Mission's EPT project coordinator, she acknowledged that she had recently discovered this problem and had begun discussions with the other office to ensure closer cooperation. Still, this will require close attention over the life of the activity.

**5. It is not clear that officials at the Lviv Vodokanal fully understand the limited nature of USAID assistance, as compared with the ultimate objectives of the Vodokanal organization.**

The water supply operated by the Lviv Vodokanal is derived from approximately 180 wells surrounding the city at a distance of 30 to 100 km. The wells are arranged in 21 well fields. Each well in a field discharges to the wet well of a transmission pump station. There are approximately 10 main transmission lines which carry water from the pump stations into the city of Lviv proper.

In the city, water flows into distribution pump stations where it is again pumped to the consumer. An unusual factor is that the city does not use a system of elevated tanks to maintain pressure in the system. Since the water is taken from groundwater sources, no treatment of the source water is needed to maintain quality related to disease transmission. (The treatment occurs naturally during the recharge of the groundwater through the overlying soil mass.)

The major technical problems in the Lviv water supply system are twofold: that the bulk of the operational cost is the electrical energy consumed, and (2) the distribution system has been constructed of thin walled steel pipe which is rapidly corroding leading to extensive leaks which,



to an extent, increases energy costs. Additionally, the pumps used in the system were often selected based on availability; accordingly, the pumps may be inefficient.

The system is operated to minimize energy costs. During certain hours of the day many of the pumps are shut down, markedly reducing the pressure in certain areas of the distribution system. The reduced pressure creates a situation in which users in high elevation areas, particularly in multi-storied buildings, may get no water supply for much of the day.

This variation in water pressure produces a condition allowing "cross connections." With cross connections, contaminated water may be drawn into the distribution system compromising the safety of water in the entire system. Accordingly, the water supply of Lviv must be considered unsafe; to assure safety, users should use bottled or boiled water for their drinking water supply.

In addition, the Vodokanal has serious financial problems. The city supplies water to residences, to industries, and for public use. The city collects only about 60% of the operating and maintenance costs, then distributes these revenues between the Vodokanal and other municipal users in a competitive process. This arrangement makes long-term financing of debt by the Vodokanal problematic if not impossible. One objective of Vodokanal is to obtain financing to rehabilitate its water system in order to provide 24-hour water service.

The EPT project in Lviv, however, will only prepare preliminary technical plans designed to achieve Vodokanal's objective and to propose solutions to major problems in administration and finance after testing water meters at selected sites. CH2M Hill, its consultants, and the staff of the Vodokanal are studying the entire system to ascertain the actions needed to produce a regular, safe, and energy efficient supply. This plan will probably consist of a program to gradually replace many of the water mains in the city system with competent pipe along with the construction of a series of elevated tanks. These actions would greatly improve the safety of the supply and minimize energy consumption in the system.

At the time of the evaluation only the initial engineering work of analyzing the system had begun. Subtasks to look at the financial and management issues, and to test metering options, had not yet been initiated. It was not clear to the team that the Vodokanal understood that USAID was not financing a good portion of the rehabilitation work. Therefore, the team had some concern that eventually there could be a major misunderstanding.

## **B. PROJECT IMPLEMENTATION**

### **1. There appear to be two municipal agencies functioning at cross purposes in Lviv.**

The Vodokanal and the Lviv city government appear to be independently attempting to reach financial solutions to the problems of funding future improvements in the city water system. This could constitute a serious threat to ultimate project success. We have apprised the contractor and appropriate Mission staff of this problem and believe that actions are underway to make sure this does not become a problem.

**2. Early USAID involvement in developing the DO for Moldova created high expectations by some local participants who now view the project as delivering less than promised.**

The Moldovan Department of Environmental Protection (DEP) initially expected to have a much more significant role in the project because they thought that enforcement was going to be supported. However, as USAID gathered more facts it became clear that other problems were more pressing. Therefore, emphasis shifted from enforcement to agricultural and health related issues. The DEP expressed disappointment at this change in focus. In the view of the team, this change was a natural and correct development in the project. The situation will, however, require the continued attention of the site manager.

**3. CH2M Hill's initial poor internal coordination on procurement of agriculture equipment for Moldova caused its Country Director to fail to prepare a necessary report in a timely fashion so that the equipment could arrive when needed for the summer growing season in Moldova.**

This required the project to be extended beyond its original due date and led to considerable disappointment by participants. Their concern that the project would deliver less than expected was increased. This was particularly troublesome to the farm environment management demonstration because land preparation had to be done in advance and will be costly if the proper equipment does not arrive on time.

**4. The local farm community could be put at risk by participation in the project at a time when the margin for error is small.**

The farm demonstration activities are tying up some land and, if not successful, they could put at risk the potential income from that land.

## **C. PROJECT IMPACT**

**1. The Farm Environment Management Demonstration Project in Moldova has the potential to significantly affect the environment but its culminating activities will not have full time oversight at a critical time.**

There has been substantial overuse of fertilizers in Moldova, coupled with excessive and inappropriate plowing. This has increased the costs of production and led to extensive soil erosion and ground water pollution. The farm equipment demonstration will show plowing techniques that reduce soil erosion, cut fuel consumption by 75%, and reduce significantly the need for fertilizer. However, this is all to occur after the current CH2M Hill resident project manager must relocate to Kiev, Ukraine and cover Moldova activities on a part time basis.

This raises the question of whether intermittent oversight will be as effective and efficient as permanent oversight. Although the local office staff will remain in Moldova, the evaluation

team does not believe the part time availability of the country director would be as effective. Therefore, the real potential impact of this task may be put at risk. It is clear from our interviews that Moldovan farmers are eager to learn new techniques of farming, especially when they are more environmentally sound and can significantly reduce operating costs. If the project can successfully demonstrate these techniques, it is highly probable they will be adopted by many other farmers and increase income and health prospects for a large group of people.

#### IV. RECOMMENDATIONS

1. USAID should delegate full technical implementation authority for EPT to USAID/Kiev based on the fact that the Mission has approved adequate staff for the office to accommodate the contractual and program management functions this implies. This will insure timely responses to local needs and put authority in the hands of those most familiar with the activities.

Given the NIS-wide nature of this project, financial management of the project should remain in Washington.

2. Project activities appear generally to be on track toward achieving intended programmatic impact. However, USAID must stay the course on funding these activities and must carefully consider additional investments to insure that the localized project outcomes are able to support higher level program impact.

3. USAID's standard procurement regulations and approval processes, together with bifurcated USAID field and Washington project management led to several delays in the timely provision of equipment. USAID should review procurement requirements to establish an effective framework for administering them in programs of high political impact. It seemed clear from discussions with host country participants that US prestige has suffered at all sites due to the disappointing delays in the arrival of commodities. Standard USAID procurement processes may simply be inappropriate for highly political programs that should be a showcase of US efficiency.

4. Studies tours to the USA have in all cases produced very positive results in showing host country participants activities similar to their area of specialization. The observations and experiences during these tours (many of which were arranged through the NET project managed by AED) appear to have made lasting impressions on most participants and stimulated ideas that are spontaneously implemented or suggested upon the return of participants to their country. These should be widely supported and continued.

5. USAID\Kiev needs to coordinate all related contractor activities in Lviv so that they are not working at cross purposes. Two city government departments are independently working toward the solution of Lviv's water problem: EPT is working with the Vodokanal (Water Authority) and another USAID project is working with the Water Inspector. Both departments are interested in World Bank financing to improve the provision of water.

6. There is a difference between the verbal articulation of objectives in Lviv by USAID/Kiev and the contractor on the one hand, and by the language in the DO 9 on the other hand. This needs to be clarified by issuing an amendment to the DO which indicates that the primary purpose of the activity is to develop a method to get water customers to pay for the service, and that the meter demonstration activity is only one attempt to test financing methods. The goal of the demonstration project should be clarified.

Both parties agreed that they intend to modify the deliverables as more is learned about the Water Authority, yet this is not specifically noted in the Delivery Order or the approved Work Plan. This should be corrected through a DO amendment. Resolution of this issue is critical to achieving DO tasks U5 and U6 (regarding Tatar water supply).

One intended output of the Lviv activity is to produce a preliminary design of a water system that could provide improved water and be funded by an outside source. Care should be taken to insure that the Water Authority is aware of the limited provision of demonstration equipment under the Lviv DOs so that no misunderstandings arise.

7. USAID and CH2M Hill should reconsider the potential consequences of its no-cost extension to the Farm Environment Management Demonstration Project task in Moldova. This will require the resident CH2M Hill project manager to leave in January, after the equipment has arrived but before any of it will be field tested or the demonstrations performed. It is fortunate that this person is intended to be transferred to Ukraine by CH2M Hill, to take on responsibilities for the Agriculture and Agriculture Chemicals work group, and to be available to travel to Moldova on a short-term basis.

Nevertheless, this action increases the risk that the farm equipment demonstrations may not be as successful as planned. These demonstrations could have a significant impact on the environment and agricultural practices in the country. Short-term oversight at this critical point in the project can never be as efficient as permanent on-site management.

**ANNEXES**

**ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT**

**CH2M HILL EVALUATION**

**WEST NIS REGION: FIELD REPORT  
UKRAINE AND MOLDOVA**

Annex 3BI-1

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## INTRODUCTION

As a part of the United States program of assistance and cooperation with the Newly Independent States of the Former Soviet Union, the United States Agency for International Development (USAID) has undertaken an Environmental Policy and Technology (EPT) Project. EPT was organized regionally and a series of Delivery Orders under EPT were issued to the contractor(s) to execute the desired activities. In the Western Newly Independent States (WEST NIS), comprised of the Ukraine, Moldova and Belarus, there were three Delivery Orders specific to the region — 5, 9 and 13.

The first, Delivery Order 5 (DO 5), was signed on July 7, 1994, some eight months after the original contract was signed. The purposes of this Delivery Order were to: acquire immediate environmental information, set priorities and build consensus with counterparts, develop some quick-start activities and specify long term programs, and initiate the first stages of the quick-start activities. USAID and CH2M Hill mobilized field-based and stateside staff to carry out a series of field visits and workshops related to these tasks.

Both USAID and CH2M Hill succeeded in identifying the important environmental problems that the host country counterparts were interested in solving. This work led to initiating activities under DO 5 in the Crimea, assisting the Bachcisaraj Vodokanal in completing a water pipeline to a large resettled Tatar community for health and sanitation purposes. Work continued under DO 5 by introducing environmental risk assessment methodology in assessing the importance of suspected problems.

The culmination of these workshops, consensus building exercises and field investigations was the development and issuance of Delivery Order 9 on September 30, 1994. This Delivery Order specified a program of Tasks for CH2M Hill in all three countries of the region — Ukraine, Belarus and Moldova. Subsequent to its issuance, it was determined, for political reasons, not to proceed with any activities in Belarus. In addition, the contractor was informed that USAID desired other modifications to this Delivery Order. However, an informal understanding was reached between USAID and the contractor that other activities could proceed as these modifications were being work out.

This left the contractor in the awkward position of not knowing with certainty what portion of the activities and costs it was incurring would be part of the modified Delivery Order (DO). At the same time, the contractor was being pressed to show progress and results by both the field and Washington offices of USAID. The final modification (number 3) to the original DO was not signed until August 28, 1995, eleven months after DO 9 was first signed.

This modified DO is now the heart of the program in WEST NIS, and accordingly was the focus of the team's evaluation in the field. Presented in the following Annexes are: a Task by Task description of the evaluation team's assessment to support its finding and recommendations, charts illustrating CH2M Hill WEST NIS management structure, and a description of the staff with whom the evaluation team met and subjects discussed. Delivery Order 13, signed just

recently, is a planned extension of activities under one of the Ukraine Tasks. Therefore, the evaluation team made no attempt to review DO 13.

Annex 3BI-3

**ANNEX 1**

**UKRAINE TASK U1**

**DEMONSTRATION OF ENVIRONMENTAL MANAGEMENT OF  
INDUSTRIAL WASTE AND INDUSTRIAL WASTE  
MINIMIZATION  
IN DONETSK**

Annex 3B1-1

## **Task U1: Demonstration of Environmental Management of Industrial Waste and Industrial Waste Minimization in Donetsk**

### **I. OBJECTIVES**

The Delivery Order states that the objective of Task U1 is to undertake a demonstration project to promote more effective control of enterprise releases into the environment. The approach that is prescribed in the Delivery Order is to establish a foundation for a practical waste management program which can be undertaken by the Oblast. The task includes: environmental auditing of the enterprises, efforts to establish better control of waste handlers, identification of alternative control strategies for the government to regulate its enterprises, logistical support for the interventions, promoting public involvement in the environmental decision making process, and logistical support in coordinating efforts of other USAID implementors including, USEPA and the World Environment Center (WEC).

CH2M Hill has interpreted these objectives in the following manner: to help to provide the Ukrainian government and Ukrainian enterprises with a more thorough understanding of environmental issues; to help realign thinking on control of environmental releases; to help realign thinking on recovery of lost commodities; to provide experience in participatory democracy; and, to demonstrate improved management and regulatory techniques which can result in a significant reduction in the level of contaminants released to the environment from industrial enterprises.

Technical assistance is to be concentrated on low cost/no cost process control intended to contribute to the profitability of enterprises. Technical assistance will aid the Donetsk Oblast in the conceptualization and planning of off-site waste disposal options suitable for use by the enterprises. Because emissions are a significant contribution to public health, environmental risk assessment methodology was determined to be the best way to evaluate options. The work should employ institutional lessons of US Superfund, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, and the Resource Conservation and Recovery Act of 1976, yet not attempt to replicate these programs in the Donetsk Oblast.

According to its work plan, CH2M Hill will: train local personnel in environmental auditing; evaluate and conceptualize better programs for enterprise off-site disposal of hazardous waste residues; identify institutional alternative control strategies directed toward enterprises and offsite hazardous waste disposal activities; provide logistical support for interventions promoting public involvement in environmental decision making and; provide logistical support in coordinating other USAID implementors including USEPA and WEC.

The interpretation of the work by CH2M Hill seems consistent with the objectives as presented in the Delivery Order. Further, the work is addressing important environmental problems that will affect the potential future privatization of these industries.

Modification 3 to Delivery Order 9 includes the following specific subtasks:

- Subtask U1.1. Industrial Pollution Control Assessments/Audits
- Subtask U1.2. Assessment of Hazardous Waste Issues in the Oblast
- Subtask U1.3. Resident Donetsk Industrial Waste Management Project Manager

## **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

On orders from the Presidium of the Supreme Rada of Ukraine, the Ministry of Environmental Protection and Nuclear Safety prepared the "National Program of Environmental Protection and Rational Use of the Natural Resources of Ukraine." The Donetsk Project integrates well into the implementation of this program. The current Director of the Donetsk Oblast Office of the Ministry of Environmental Protection and Nuclear Safety has prepared a "Conceptual Program for the Protection of the Environment in the Donetsk Oblast". In October 1995, this program was adopted by the Donetsk Regional Council. This task is the next step in the implementation of the Oblast's program.

The management of this task seems to be progressing well at this time. The task seems well designed to help achieve the general objectives of the overall program and the contractor has positioned itself well to achieve good results. At this stage in the conduct of the program the potential for the achievement of the program objectives is excellent.

### **Subtask U1.1 Industrial Pollution Control Assessments/Audits**

This subtask has just started. CH2M Hill is behind on the deliverables because the Resident Project Manager had to return home due to a death in the family, after only two weeks on the job. He will be gone approximately three weeks. This has disrupted the schedule for the submission of several deliverables, but in our assessment it should not greatly affect the time frame for the other deliverables under this task.

Activity 1.1, Audit Training, has begun in that a draft training plan, including elements of environmental auditing, has been submitted to USAID. Additionally, a standardized methodical approach for conducting enterprise audits for pollution reduction has also been initiated. CH2M-Hill has submitted criteria to USAID based on a list of the 65 worst cases in the Oblast. The list was provided by the Oblast Office of the Ministry of Environmental Protection.

Activity 1.2, Enterprise Audits, required that a Plan for Environmental Audits be submitted by October 27, 1995. While this Plan has been drafted, it was not be submitted on time due to the unexpected absence of the Resident Project Manager. We expect a one month delay in submitting this document. The next due date for a deliverable under this activity is May 27, 1996 by which time two environmental audits should be conducted. This activity should be back on the original schedule by that time.

The contractor has established an excellent working relationship with the Director of the Oblast Office of the Ministry of Environmental Protection and Nuclear Safety, and with the Deputy Chairman of the Donetsk Council. The Director and the Deputy Chairman view the USAID financed assistance as the next step in the implementation of their environmental protection program. The contractor also has established a good working relationship with the Enakievo Metallurgical Plant, a newly privatized large iron and steel producer. It appears that this company will be one of the prime candidates for participation in the audit training to be conducted by USEPA.

At this stage it appears that CH2M Hill is optimally positioned to achieve the objectives of the project.

### **Subtask U1.2 Assessment of Hazardous Waste Issues in the Oblast**

There are ten specific activities under this subtask. The deadlines for the summary report on Waste Management Practices (Activity U1.2.1, due December 29, 1995), and the Workshop on Waste Management Practices (Activity U1.2.2, due November 30, 1995) will probably not be met. Because of the current situation of the Resident Project Manager, we estimate that these activities will be late by 30 to 45 days. In an effort to keep the project on schedule, CH2M Hill has submitted the required Plan for Waste and Risk Management Studies and the Draft Training Plan (respectively deliverables under Activities U1.2.1 and U1.2.2, both due October 27, 1995) and begun efforts for the report on waste management practices. Considering the likely problems with coordination of other agencies involved in the training, and the problems of winter travel in Ukraine as a practical matter, this subtask is probably close to being on schedule.

The other deliverables under Activities U1.2.3 to U1.2.10 have been provided on time or are not yet due. CH2M Hill management in the field believes that it will meet the remaining due dates. Any delays will most likely be associated with the unexpected absence of the Resident Project Manager.

### **Subtask U1.3 Resident Donetsk Industrial Waste Management Program Manager.**

Again, the resident program manager is in place, though he unfortunately had to return to the US due to a death in the family. He was scheduled to return to Donetsk on Monday 13 November 1995, just after the departure of the evaluation team. The final report on this task is not due until September 30, 1996, which allows ample time to move the activities back on schedule.

## **III. PROJECT IMPACT**

On orders from the Presidium of the Supreme Rada of Ukraine, the Ministry of Environmental Protection and Nuclear Safety prepared a "National Program of Environmental Protection and Rational Use of the Natural Resources of Ukraine". The EPT Donetsk activities integrate well into the initiation of the implementation of this program.

The evaluation team believes that this set of activities is well supported and organized, and is highly likely to provide the region and its industries with pragmatic solutions to difficult environmental waste management problems. Support from both the city and industry give the evaluation team the reassurance that the work will be sustained after the activities of the project are over.

#### **IV. RECOMMENDATIONS**

At this early stage, the project is being implemented in accordance with applicable work orders without significant problems. The various persons and agencies who will be working on the Donetsk program should realize that the financial resources of the government, and of the industrial enterprises involved are, currently, extremely limited. Accordingly, the optimal approach to achieving progress in the region, will most probably minimize regulation and response, and maximize planning and cooperation.

The notion of identifying cost effective methodologies which can be implemented and communicating those possibilities to the participants will be central to realizing success in this task.

**ANNEX 2**

**UKRAINE TASK U2**

**URBAN WATER AND WASTEWATER MANAGEMENT  
DEMONSTRATION:  
LVIV**

Annex 3B2-1

## Task U2: Urban Water and Wastewater Management Demonstration: Lviv

### I. OBJECTIVES

Delivery Order 9 states that the purpose of this task is to address water supply, wastewater treatment and disposal systems in the Municipality of Lviv. The overall objective of the Lviv Vodokanal demonstration project is to develop technical and management model methodologies that can be used nationwide to support broad-gaged municipal water and wastewater reforms and, at the same time, reduce environmental health threats from poor drinking water quality if implemented.

Note: Although the foregoing uses the word "wastewater", both CH2M Hill and USAID appear to understand that "wastewater" is not a part of this project — the project deals only with water supply. All documentation should be corrected to reflect this correction.

CH2M Hill and another USAID contractor, PADCO, are implementing parts of this task. According to the Delivery Order 9, CH2M Hill is to develop: guidelines to identify, prioritize and address the operations, repair or upgrading of high priority facilities in an economic manner; a program to increase the revenues and decrease the costs while increasing the proportion of billings based on metered water use; and, a strategic plan for the future institutional set up of the Vodokanal, including a statement of strategic corporate objects and policies with specific monitorable annual targets for the next 5 years.

PADCO will identify, sort and reconfigure the accounting system data to present financial information in a more functional manner for use in the remainder of the study; and, evaluate the legal basis of the powers and duties of the Vodokanal and write position papers or agreements which clarify the relative roles of the city, the Vodokanal or other relevant parties in the provision of water and wastewater services.

Modification 3 to Delivery Order 9 includes the following specific tasks:

- Subtask U2.1: Coordinate with PADCO, (the other USAID contractor).
- Subtask U2.2: Develop Guidelines for Priority Repair or Upgrade of Water System.
- Subtask U2.3: Develop a Program to Increase Share of User Charges
- Subtask U2.4: Institutional Assessment and Recommendations

The evaluation team found that the task's objectives are relevant to a significant problem. The water system in Lviv is inadequate. At a minimum, the existing system is energy intensive and has been constructed using inferior materials and incorrectly specified pumps. In a free market economy, it will be necessary for the community to borrow the funds necessary to make improvements to the system. To borrow the funds, three basic needs must be satisfied: a reliable

Annex 3B2-2

estimate of the amount of cash needed, a basic cash flow in order to demonstrate the potential to repay any loans which may be made by financial institutions, and a reliable institutional structure to satisfy lending institutions that the borrower is credit worthy.

The subtasks address pressing needs and are, therefore, relevant to the local and national problem in Lviv and Ukraine.

## II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES

The water supply operated by the City of Lviv, Vodokanal, is derived from approximately 180 wells surrounding the city at distance of 30 to 100 km. The wells are arranged in 21 well fields, each well in a field discharges to the wet well of a transmission pump station. There are approximately 10 main transmission lines which carry water from the pump stations into the city of Lviv. The Vodokanal management and staff appear to be working closely with CH2M Hill in a very open manner. For example, all data on the existing system are available to CH2M Hill.

In the city, the water flows into distribution pump stations where it is once again pumped to reach the consumer. An unusual factor is that the city does not employ a system of elevated tanks to maintain pressure in the system. Since the water is derived from groundwater sources, no significant treatment (with the possible exception of chlorination) of the source water is needed to maintain quality as related to disease transmission. The treatment occurs naturally during the recharge of the groundwater through the overlying soil mass.

The major technical problems in the system are two, namely: (1) that the bulk of the operational cost is incurred by the electrical energy consumed and (2) the distribution system has been constructed of thin-walled steel pipe which is rapidly corroding and leading to extensive leaks which, to an unknown extent, increases energy costs. The leaked water simply recharges as groundwater; thus, it is not lost. Additionally, the pumps used in the system were often selected based on availability rather than engineering optimization; thus, the pumps may be relatively inefficient, further exacerbating the problem of wasted electrical energy.

The system is operated to minimize energy costs. During certain hours of the day many of the pumps are shut down, markedly reducing the pressure in certain areas of the distribution system. The reduced pressure presents a situation in which users in high elevation areas, particularly in multi-storied buildings, may not be provided with a water supply for much of the day. This variation in water pressure produces a greatly enhanced opportunity for "cross connections". With cross connections, contaminated water may be drawn into the distribution system compromising the safety of the water in the entire system. For this reason, the water supply of Lviv must be considered unsafe; to assure personal safety, users should use bottled or boiled water for their drinking water supply.

CH2M Hill, its consultants and the staff of the Vodokanal are studying the entire system to ascertain the actions needed to produce a regular, energy efficient, safe water supply. This will

probably consist of a program to replace many of the water mains in the city system with competent pipe, along with the replacement of some pumps and the construction of a series of elevated tanks. These actions should greatly improve the health related-safety of the supply and minimize the energy consumption of the system. The improvements will be costly. CH2M Hill will be preparing an estimate of the funds required to improve the system.

The Vodokanal has serious financial problems in that the city supplies water to residences, to industries and for public use but, essentially, only industries pay their water bills. Funds are collected by, and allocated to, the Vodokanal by its parent organization, the city of Lviv. Because funds are collected by the city, the Vodokanal gets its allocation in a competitive environment with the rest of the city's needs. This arrangement makes long-term financing of debt by the Vodokanal problematic if not impossible. The principal work of this project must address the major problems of administration and finance.

The four subtasks have been subdivided into more specific activities. Some of these activities have begun or have been completed. Others have yet to be initiated. The following discusses the progress of the EPT project on Task U2, at the time of this evaluation.

#### **Subtask U2.1 Coordinate with PADCO (and other USAID contractors).**

PADCO has established an office in Lviv and the CH2M Hill staff is in regular contact with that office. CH2M Hill reports that there are regular meetings between its representatives in Washington and the PADCO office in that location. A report on these activities has been delivered to USAID on time.

However, the evaluation team believes internal coordination among various USAID/Kiev offices, which manage activities overlapping or indirectly affecting this Task, needs strengthening. The evaluation team met with other USAID contractors working on related matters of city government. It appeared that some conflict could arise as different objectives about city finances and Vodokanal privatization might clash. Uncoordinated actions by USAID and its other contractors could have negative effects on the success of the project.

The team discovered that one USAID advisor to the city administration provided through another USAID office's contract, might be working at cross purposes to the objectives of the EPT project concerning the creation of an independently financed Vodokanal. When the team pointed this out to the field Mission's EPT project coordinator, she said that she had just become aware of the same problem and had already begun discussions with the other office to ensure closer cooperation. Still, this will require close attention over the life of this activity.

#### **Subtask U2.2 Develop Guidelines for Priority Repair or Upgrade of Water System**

The only deliverable due at the time of our evaluation was one of five planned workshops (Subtask U2.2.5). The first workshop, Organization and Operations, was held on October, 25, 1995 to inform city and Vodokanal employees of the results of a Water Utility Management

Study Tour taken of US facilities by their colleagues. The Tour had been arranged through the USAID NET project, implemented by the Academy for Educational Development. This tour proved to be very beneficial to the participants. The workshop was well attended and seemed to be most profitable to the attendees.

Work had just been initiated on subtask U2.2.1, Collect Data on Current System, with the renovation of space in Vodokanal for staff and computers to begin developing a General Schematic of the System for delivery by January 31, 1996. Other activities to collect data had also begun and seemed on target. The analysis of financial issues was not scheduled to begin for some time.

While there are no specified deliverables under Subtask U2.2.6, Coordinate Efforts to Assist in Development of Feasibility Study, CH2M Hill regularly meets with other contractor leadership involved in Lviv (see the Appendix). This includes COWI Consult (a Danish firm working on wastewater problems) and Booz Allen & Hamilton, Inc. of Poland. These meetings are designed to produce a consistent presentation of the engineering/institutional realities to the City and Vodokanal officials. When World Bank representatives are in town, all of the contractors associated with Vodokanal programs meet and to discuss their work. USAID representatives also attend these meetings and strategy sessions.

### **Subtask U2.3 Develop Program to Increase Share of User Charges**

None of the activities under this subtask has started. The activities include: collecting data on metering, billing and revenues (Subtask U2.3.1, due 28 Jun 96); studying the problems of managing the system (Subtask U2.3.2, due 30 Apr 96); developing and implementing a Demonstration Program (Subtask U2.3.3, a proposal is due by 30 Nov 95); and, coordinating efforts regarding the feasibility study (Demonstration Program). It is not clear that the contractor places a great deal of priority on these policy-related tasks, compared to task U2.2 which deals with engineering-related activities and with which the contractor may feel more comfortable.

### **Subtask U2.4 Institutional Assessment and Recommendations**

Activities under this subtask will eventually produce a strategic policy for the Vodokanal, an institutional assessment, and a program for institutional strengthening.

It is not clear that the Vodokanal understands fully the limited nature of USAID assistance. The ultimate engineering objective of the Vodokanal is to rehabilitate its system to provide 24-hour water supply. EPT will, however, only prepare preliminary technical plans to achieve this objective. It will also propose ways to address Vodokanal's administration and finance issues. CH2M Hill, its subcontractors, and the staff of the Vodokanal are studying the entire system to ascertain the actions needed to produce a regular, energy efficient safe supply. But the actual rehabilitation will only come about if external financing is available. It was not clear to the team that Vodokanal understood the limits of USAID financing, and that USAID would not be

financing any of the rehabilitation work. Therefore, the team is concerned that there is room for a major misunderstanding on this activity.

### III. PROJECT IMPACT

A. The financial, management and engineering analysis will allow Vodokanal and Lviv officials to determine if donor financing is feasible to rehabilitate the system to provide 24 hour water supply.

B. The analysis for Lviv Vodokanal may, through the Working Group, affect national policies regarding water supply investments and Municipal Vodokanal Water Supply investment plans.

C. An improved water supply will reduce the health risk from contaminated water.

### IV. RECOMMENDATIONS

It appears to the evaluation team that, at this time, the project is well established and the relationship between Ukrainian counterparts and CH2M Hill personnel is excellent. The contractor is well staffed for the engineering activities of the Lviv task. The contractor needs, however, to give more consideration to how it will provide the staff needed to carry out the non-engineering activities involved in tasks U2.3 and U2.4.

The larger goals of this project involve citizen education and major restructuring of institutions. Necessarily, political and communication problems will probably develop. It will require a great deal of short-term planning and tact on the part of CH2M Hill and USAID to overcome such problems. These problems could easily upset the planned timetable.

The major problems which must be addressed are institutional. Vodokanal must be capable of collecting money and repaying lending institutions.

The need to force citizens to pay their bills appears to have become confused with a water meters program. The notion appears to be, that if a citizens are made aware of the amount of water they are using, they will somehow be motivated to pay their water bills. Citizens know that they use water, but may be concerned that their payments are subsidizing industry or public users. If meters are to be part of this project, it would probably be wise, for cost reasons, to install them only with industries and public users. In this way, citizens could be assured that these large users are paying their fair share, thus paving the way for citizens to pay their share as well.

The demonstration in Lviv should probably be focused on the development and adoption of an institutional structure that will permit financing of capital improvements. This would, of course, include a methodology to collect service fees from system users. This contrasts with the impression given to the team that the DO demonstration will involve the small scale installation of meters to demonstrate how these meters would induce the population to pay their bills.

Further, USAID\Kiev needs to coordinate all related contractor activities in Lviv to insure that they are not working at cross purposes. There are two city government departments independently working toward the solution of Lviv's water problem. EPT is working with the Water authority and another project is involved with the Water Inspector. Both are interested in World Bank financing to improve the provision of water.

There is a difference between the verbal articulation of objectives in Lviv by USAID\Kiev and the contractor, on the one hand, and the language of Delivery Order 9, on the other hand. The difference relates to the nature of the demonstration project and supporting activities. This needs to be clarified by issuing an amendment to the DO which indicates that the primary purpose of the activity is to develop a method to get customers to pay for water and that the meter demonstration activity is only one attempt to test financing methods. The goal of the demonstration project should be clarified.

USAID and CH2M Hill have agreed that they intend to modify the deliverables as more is learned about the Water Authority; yet this is not specifically noted in the Delivery Order or the approved Work Plan. This problem should be addressed through a DO amendment. Resolution of this issue is critical to achieving DO Tasks U.5 (Working Groups) and U.6 (regarding the Tatar water supply, one subtask of which relies on the analysis done for the Lviv Vodokanal ).

A principal output of the Lviv activity is a preliminary design of a water system that could provide 24-hour water and be financed by an outside source. Care should be taken to insure that the Vodokanal Water Authority is aware of the limited provision of demonstration equipment under the Lviv DO so that no misunderstanding arises.

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Annex 3B2-7

**APPENDIX**

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## Summary of Work by Contractors Related to the Lviv Vodokanal

	Contractors			
Finances	Yes - will devise a methodology to approach the financial impacts of various actions	Yes - will develop information on expenditures and revenues in the Vodokanal	No	Yes - oriented towards capacity to support investments and ability to repay WB loans.
Implementation plan for future water projects	Yes - as part of an overall strategy	No	Yes - oriented to what should be funded by the WB	No
Implementation plan for future wastewater projects	No	No	Yes - oriented to what should be funded by the WB	No
Demonstration project on the distribution system	Yes	No	No	No
Organization structure	Yes - develop a program for overall institutional strengthening	No	Yes but to be oriented to establishing an autonomous utility	Yes but to be oriented toward possible private sector participation
Ability of community to pay increased water tariffs	No	No	Extensive study	No
Examine the legal relationship between the Vodokanal & other government agencies	No	Yes	No	Yes
Develop guidelines for use with all Ukrainian Vodokanals	Yes - strategic planning and institutional strengthening	Yes - legal & financial reforms	No	No
Write terms of reference for contract operations or privatization	No	No	No	Yes

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### Summary of Work by Contractors Related to the Lviv Vodokanal

	Contractors			
Investigations	CH2M HILL	PADCO	COWIconsult <i>12</i>	Booz, Allen & Hamilton
Contract with	USAID - Environmental Policy & Technology program	USAID - Shelter Sector Reform program	Danish Environmental Protection Agency (DEPA)	The British Know-How Fund
Working with	USAID	USAID	The World Bank	The World Bank
Topic	Water only	Water only	Water & wastewater	Water & wastewater
Physical aspects of the water supply & distribution system	Yes - tentatively will concentrate on distribution in the city	No	Yes - tentatively will concentrate on water supply and transmission to the city	No
Physical aspects of the wastewater system	No	No	Yes	No
Evaluate water system operation & maintenance	Yes	No	No	No
Evaluate wastewater system operation & maintenance	No	No	Yes	No
Investigate water quality	No	No	Yes	No
Tariff structures	No	Yes - will develop new methodology & recommendations for improved revenue connections (water only)	Yes - for wastewater using some data from the PADCO study for water	No

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**ANNEX 3**

**UKRAINE TASK U3**

**PREPARATION OF THE BIODIVERSITY CONSERVATION  
STRATEGY OUTLINE**

Annex 3B3-1

**Task U3: Preparation of the Detailed, Annotated, Draft Biodiversity Conservation Strategy Outline and Development of Support Information needed to Prepare Scopes of Work for Future Elaboration of a Biodiversity Conservation Strategy and Action Plan**

**I. OBJECTIVES**

The objectives of this task are to provide technical assistance and advice, and to transfer American experience on special topics related to the implementation of Ukraine's National Program of Environment Protection and Rational Use of Natural Resources. The evaluation team learned on its field trip that this task was undertaken predominately to help the Ukraine qualify for some grants under the World Bank administered Global Environmental Fund.

There are four subtasks included to execute the planned activities:

Subtask U3.1 Pre-Departure Meeting.

Subtask U3.2 Preparation of detailed annotated draft Biodiversity Conservation Strategy outline and selection of two or three demonstration sites.

Subtask U3.3 Preparation of reports that can support draft scopes of work for future activities on development of a Biodiversity Conservation Strategy and Action Plan.

Subtask U3.4 Equipment

**II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

The first three subtasks have been completed on time, however responses from both USAID/Kiev and USAID/Washington on the draft strategy document were delayed. The procurement of the equipment has not yet been authorized by USAID.

**III. PROJECT IMPACT**

It is the understanding of the team that the primary purpose of preparing this Action Plan was to help the Ukraine Government position itself to obtain World Bank Global Environmental Funds. However, it also appeared from what the team could learn that biodiversity was not a high priority on the part of the current leadership in the Government. Therefore, it is not clear that this work will have any impact.

**IV. RECOMMENDATIONS**

The contractor was facing significant delays in obtaining comments on the draft Biodiversity Strategy. Since it was about to miss one of its due dates, the contractor submitted its final report without input from USAID. This problem may not happen if the authority to implement these activities is devolved to the field.

The contractor must determine whether the Ukraine Government intends to pursue biodiversity issues as a high priority. If no real support is forthcoming, this activity should be dropped.

CH2AN3B3.R45

Annex 3B3-3

**ANNEX 4**

**UKRAINE TASK U4**

**WATER QUALITY PROGRAM ASSESSMENT AND ABATEMENT:  
KANIV RESERVOIR PROJECT**

Annex 3B4-1

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## **Task U4: Water Quality Program Assessment and Abatement Kaniv Reservoir Project**

### **I. OBJECTIVES**

The purposes of this task are to assess the water quality conditions of, and environmental threats to, the Kaniv Reservoir and to introduce improved measures to evaluate pollution abatement and management strategies. The task is a joint undertaking of the US Environmental Protection Agency (USEPA) and USAID, working with the Ukrainian Ministry of Environmental Protection and Nuclear Safety (MEPNS). Subtasks involve compiling existing Kaniv Reservoir data; providing laboratory and sample collection equipment and supplies to MEPNS; training of Ukrainian specialists; conducting a Kaniv Reservoir water quality study in 1995; developing a water quality information database and a Kaniv Reservoir water quality and quantity model; developing and implementing management strategies that use data from the model to make decisions that effect and improve the water quality in the reservoir; and improving wastewater treatment plant inspection techniques.

Principal responsibility for this task resides with USEPA. CH2M Hill's responsibility is to procure and deliver laboratory equipment and to employ and supervise Ukrainian specialists to assist USEPA technical experts. CH2M Hill has the following Tasks:

Subtask U4.1 Local Technical Specialists

Subtask U4.2 Procurement of Laboratory and Sampling Equipment

Subtask U4.3 Rental of Equipment

Subtask U4.4 Development of Water Quality Database

The Kaniv Reservoir is a long narrow reservoir on the Dnieper river, similar to a deep, wide stream. Near its upstream terminus, the City of Kiev discharges its treated sewage into the reservoir. Along the periphery of the reservoir, to the southeast, a variety of industries and communities also discharge into the reservoir. The USEPA has elected to model the reservoir using QUAL-II, a commonly applied stream model developed in the US which utilizes the Streeter Phelps relationships as its primary basis. The model is intended to be used as a planning tool in the allocation of community waste loads to streams.

The idea behind this task in the Ukraine is to produce an example of what can be done in advanced river planning and analysis. The model can be readily adapted for utilization in other river basins in the Ukraine. As basin-wide environmental planning becomes a more significant factor in the Ukraine, modeling can be used as a planning tool. With the completion of this project, a model will be readily available for anyone in the Ukraine who wishes to utilize it in planning water quality in any particular basin.

## **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

By mutual agreement between MEPNS, USAID and USEPA, the modeling and data management activities are being carried out by the Cybernetics Center of the Ukrainian Academy of Sciences, Institute of Mathematical Machines and Systems. The evaluation team viewed the output from the models and met with the MEPNS and Center's consultant. As a part of Subtasks U4.1 and U4.4, CH2M Hill is compensating employees at the Institute. The model is operational. What remains to be done is to collect additional data and verify the validity of the model.

CH2M Hill is in the process of procuring the equipment specified in subtask U4.2. CH2M Hill believes the equipment will be delivered, as planned, by the 29th of March, 1996. CH2M Hill is prepared to rent locally available equipment, on an as-needed basis, to support the USEPA project.

CH2M Hill has performed its part in the program in a timely manner. There do not appear to be any major problems with the staff at the institute. The likelihood of a timely completion is optimal.

## **III. PROJECT IMPACT**

There is a high likelihood that this activity will improve watershed and wastewater management for the Kaniv Reservoir; and provide important insights on how to approach similar problems in other watersheds.

## **IV. RECOMMENDATIONS**

None.

CH2AN3B4.R45

Annex 3B4-3

**ANNEX 5**

**UKRAINE TASK U5**

**UKRAINE - AMERICAN WORK GROUPS**

Annex 3B5-1

## **Task U5: Ukraine-American Work Group Program**

### **I. OBJECTIVES**

The general purpose of the work group program is to support the implementation of the National Environmental Action Plan (NEAP). Technical assistance will be provided to draft legislation, regulations and laws to implement policy decisions. Institution building through training is also encouraged.

There are to be five working groups established. Only three of them are the responsibility of CH2M Hill: Industrial Waste Management (Subtask U5.1), Urban Water (Subtask U5.2), and Agriculture and Agricultural Chemicals (Subtask U5.3). These correspond to the three major Subtasks CH2M Hill is carrying out under DO 9. A draft project plan for these groups was prepared and submitted in April of 1995.

One key function of the work groups is to focus attention on national policy. By having the right members in the group, the thought is that the lessons learned in the demonstration activities in Lviv, Donetsk, and Chisinau, Moldova (see below), would be informative and sufficient to begin to affect national policy.

### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

The work plan was submitted ahead of time, on October 27, 1995. The work plan is the only specific deliverable due at this time. Each Subtask requests a Summary Issues Analysis before the year is over. The contractor will begin to focus on establishing and mobilizing these work groups over the winter months.

### **III. PROJECT IMPACT**

This task has the potential to achieve significant national impact on environmental policies in the Ukraine. It is structured to take advantage of the lessons learned from the other activities and to use this information to influence key individuals or institutions that establish or desire to change national policies.

The work is coordinated to support Ukrainian environmental objectives as they relate to regional programs and commitments. (See the Appendix which presents the October 25, 1995 Ministerial Declaration from the Sofia, Bulgaria UN/ECE conference.)

### **IV. RECOMMENDATIONS**

Great care should be taken to support the working groups at the highest levels in the Embassy and USAID Mission, to ensure that their work is recognized and valued. Important policy changes will probably not come about easily, and therefore this level of support is needed for this effort.

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**APPENDIX**

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MINISTERIAL DECLARATION

by the Ministers of the Environment and ... of the region of the  
United Nations Economic Commission for Europe (ECE)

PREAMBLE

1. We, the Ministers from ... countries in the ECE region, met at Sofia, Bulgaria, from 23 to 25 October 1995, in the third of a series of meetings held as part of the "Environment for Europe" process.
2. We reaffirm our commitment to cooperation in the field of environmental protection in Europe, the principles of which were agreed in Lucerne, Switzerland, on 30 April 1993. We underline the urgent need for the further integration of environmental considerations into all sectoral policies, so that economic growth takes place in accordance with the principles of sustainable development. We recognize that the countries in the region have a common but differentiated responsibility, both in contributing to global environmental problems and in actively taking a lead in resolving them in line with the objectives of Agenda 21.
3. We deeply regret that armed conflicts in parts of the region have led to loss in human lives and to a further degradation of the environment.
4. We acknowledge that, since our meeting in Lucerne, progress has been made in a number of areas, but many serious problems remain, such as those of health and environment and others described in the Dobris Assessment, as well as nuclear safety. Our conclusions as to how we should address them together are as follows:

IMPLEMENTATION OF THE ENVIRONMENTAL ACTION PROGRAMME FOR CENTRAL AND EASTERN EUROPE (EAP)

5. We welcome the positive results achieved by the central and eastern European (CEE) countries and their partners in implementing the EAP and we continue to endorse its broad strategy. There are clear signs that policy reforms, institutional strengthening and environmental investments have been producing improvements in environmental conditions in CEE countries.
6. We recognize that the EAP Task Force has provided an effective mechanism for disseminating and promoting the implementation of the EAP. We endorse the continuation of the Task Force and we encourage the CEE countries to assume greater ownership of the EAP implementation process. We invite the EAP Task Force to develop a workplan within the EAP which will support the integration of environmental interests into the areas of economic and social reforms in the CEE countries. Countries participating in the "Environment for Europe" process for the first time are urged to endorse the EAP and to participate in the work of the Task Force.
7. We welcome the progress achieved by the CEE countries in developing and implementing the National Environmental Action Programmes (NEAPs) and we strongly urge that they should be further developed and implemented. Coordination should be ensured with the objectives and implementation of the

National Environmental Health Action Plans. The EAP Task Force should evaluate progress made, by the end of 1997, using the Framework Document for Developing NEAPs. Various partnerships associated with these efforts including informal sectors should be strengthened taking into account the best practice guides developed within the framework of the Task Force.

8. We endorse the achievements of the Project Preparation Committee (PPC) and we are committed to supporting the continuation of its activities so as to facilitate and strengthen environmental investments in CEE countries. The PPC should strengthen its cooperation with CEE countries and, in conjunction with NEAPs, identify, prepare and develop economically viable environmental investment projects. The PPC should also continue to work closely with the EAP Task Force to enable it to integrate policy reform, institutional strengthening and investment efforts.

9. We welcome the "Sofia Initiatives" developed by CEE countries in cooperation with the EAP Task Force and international financing institutions (IFIs). These initiatives build on achievements in CEE countries in reducing pollution through policy, regulation and investment. They will provide concrete steps to further implement the EAP after the Sofia Conference, in cooperation with western partners, and to exchange experience.

10. At the same time, we recognize that more account needs to be taken of developments such as the association agreements, which some of the countries concerned have signed with the European Union, and the special needs of the newly independent States. In particular, we urge that due account is given to environmental cooperation and welcome the intention of the parties concerned to set up subcommittees on the environment within existing and new association agreements of central and east European Governments with the European Union.

#### **ENVIRONMENTAL FINANCING IN CEE COUNTRIES**

11. We recognize that, in general, the financing of environmental expenditures should be based on the "polluter pays principle". Domestic financing by CEE countries is decisive. During the transition period it is insufficient, however, to tackle all of the serious environmental problems of the region and external financial resources will continue to be important as a catalyst. We welcome, therefore, the approaches outlined in the "Integrated Report on Environmental Financing" to overcome the barriers to environmental investment, both domestic and external.

12. All countries should pay particular attention to removing macro-economic imbalances, establishing effective environmental standards and regulations, strengthening compliance and enforcement, addressing liability issues, reforming prices for energy and natural resources, reducing subsidies harmful to the environment, and introducing cost-recovery mechanisms. Donors and IFIs should continue to support the efforts of CEE countries to establish these and other necessary preconditions for environmental investment.

13. While recognizing and welcoming the increase of financial assistance for the environment, we stress the importance of external financial assistance, as a catalyst, for the environmental investment projects in CEECs. In the

same context we call on individual donors and IFIs to further improve the efficiency of their assistance, to make the environment a high priority area in their assistance programmes, to consider devoting an increased proportion of the total assistance to the environment and to promote environmental investment in CEECs including through innovative financial mechanisms. We underline that IFIs, the external private sector and bilateral donors will continue to play an essential role, especially during the transition period. We will focus our cooperation efforts on the priority needs established by the CEECs including priorities which have been set in subregional cooperation and to promote the involvement of local consultants and procurement, promote and financially support twinning arrangements, and consider other steps and mechanisms to improve our assistance. We also encourage the further commitment of donors to co-finance with IFIs under the PPC or other framework environmental projects in the CEECs.

14. We encourage CEE countries to enhance domestic financing for environmental investments. In particular, noting with appreciation the results already achieved, we support the establishment and strengthening of environmental funds by CEE countries following the recently prepared guidelines. We call upon external donors and IFIs to support and work together with environmental funds to achieve these goals.

15. We acknowledge the results achieved and support the further development and wider application of environmental or "green" equity schemes, as well as guarantee schemes adapted to environmental projects, taking into account the diversity of situations. We call on public and private investors, IFIs and countries to develop concrete programmes for implementing such schemes on a pilot basis, based on sound banking principles. We welcome specific commitments of interested parties to such initiatives.

16. We call on bilateral donors to consider, in keeping with their domestic legislation, mutually untying traditionally tied financing, including grant assistance and soft financing, with appropriate modifications to procurement and bidding procedures. We welcome the continuation of ongoing multilateral discussions regarding the increased use of untied financing by donors within the OECD.

17. We note the recent initiatives to establish pilot projects for activities implemented jointly as a cost-effective means for private investments to reduce greenhouse gas emissions on a bilateral basis. We call for the further development of the pilot projects and reporting on national experiences within the United Nations Framework Convention on Climate Change. We encourage, inter alia, the PPC to play a role in identifying such potential pilot projects, and note the efforts by UNEP to facilitate the exchange of information on the subject.

18. Recognizing the importance of supporting environmental projects and of including environmental considerations in others, we call upon the IFIs to provide their most favourable terms and conditions for qualified environmental investments in both public and private sectors. Such terms might include provision of longer maturities, longer grace periods, increasing the IFI financing share of loan projects and lower limits on minimum IFI loan sizes. We also call upon the IFIs to direct more internal resources to preparing and managing environmental projects and to make better

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use of their ability to mitigate political risk and to continue and improve their practice of blending loans and donor grants in well-designed financial packages.

19. We recognize that for some countries debt-for-environment swaps are a useful and valuable option offering benefits to the creditor and debtor countries and the environment. We note with appreciation initiatives in this area.

#### **BUSINESS, INDUSTRY AND ENVIRONMENT**

20. We affirm the crucial importance of the business and industrial sectors in securing environmentally sustainable economic development in Europe and in reducing current levels of pollution and the risk of environmental degradation.

21. We acknowledge the significant progress made in a number of countries as a result both of policy and price reform and of energy saving, waste minimization and cleaner production measures applied in individual plants; but we note that some beneficial effects result from lower levels of production, particularly in central and eastern Europe, rather than from environmentally friendly investment.

22. We commit ourselves to a close and continuous consultation with the business sector, including small and medium-sized enterprises, and other stakeholders in the process of:

- (i) Developing, phasing in compliance with, and equitably enforcing environmental regulations with a view to ensuring a sound and healthy environment, least-cost and equitable solutions for environmental problems and resolution of liability issues; and
- (ii) Encouraging the private sector to take stronger responsibility for protecting the environment and human health through sound environmental management and other voluntary mechanisms taking into account, where possible, the positive economic effects of such mechanisms.

23. We welcome and endorse collaborative business and industry programmes, particularly to develop capacity building for environmental management in CEE countries. We call for the implementation of product stewardship from cradle to grave and the introduction of a corresponding responsibility on the part of industry and business. We support new programmes and investments to improve the environmental performance of large polluting plants in central and eastern Europe which are likely to remain in the public sector for some considerable time. We invite the EAP Task Force to draw up a work programme to promote the implementation of cleaner production programmes in all CEE countries by 1998 and to foster cooperation and networking among all the stakeholders involved in cleaner production.

24. We call upon the industry and business sectors to strengthen their environmental commitment and performance. Business should fully recognize the increasing potential of the environmental goods and services industry,

the access to markets to be obtained through high environmental standards and the importance of environmental management and audit. We believe that high environmental achievement is good for business as well as for the wider community.

25. Taking into account the United Nations Commission on Sustainable Development's decisions on sustainable consumption and production patterns, we invite interested Governments, industry, environment and consumer organizations, in cooperation with relevant international organizations, to establish a trial programme for more environmentally benign procurement.

#### BIOLOGICAL AND LANDSCAPE DIVERSITY

26. Recognizing the uniqueness of landscapes, ecosystems and species, which include, *inter alia*, economic, cultural and inherent values, we call for a pan-European approach to the conservation and sustainable use of shared natural resources. We endorse the Pan-European Biological and Landscape Diversity Strategy, as transmitted by the Committee of Ministers of the Council of Europe for adoption at this Conference, as a framework for the conservation of biological and landscape diversity. We welcome the readiness of the Council of Europe and UNEP, in cooperation with OECD and IUCN, to establish a Task Force or other appropriate mechanism in order to guide and coordinate the implementation and the further development of the Strategy. In this respect we request the widest possible consultation and collaboration in order to achieve its objectives with a view to reporting on progress at the next Conference.

27. We welcome the IUCN report "Biological and Landscape Diversity in Central and Eastern Europe: Best Practices for Conservation Planning in Rural Areas", carried out under the auspices of the EAP Task Force, and encourage its application especially in mountain areas.

28. We urge that all Parties effectively implement the Convention on Biological Diversity and other relevant conventions in the region. We urge all Parties to elaborate, and other countries to consider the elaboration of, national strategies, plans and programmes, on biological diversity by 1998, and call upon all countries to cooperate in taking concrete measures.

29. We call for the promotion of nature protection, both inside and outside protected areas, by implementing the European Ecological Network, a physical network of core areas linked by corridors and supported by buffer zones, thus facilitating the dispersal and migration of species.

30. We call for an adequate contribution from national, bilateral and multilateral funds and for increased contributions from the private sector for actively promoting conservation of biological and landscape diversity, and for the development and application of innovative financing mechanisms for this purpose. Relevant efforts should involve local communities, informal sectors and government authorities at all levels.

31. We call for the effect of agriculture on the environment to be recognized, and for agricultural practices to be conducive to the conservation and enhancement of biological and landscape diversity.

**ENVIRONMENTAL AND NUCLEAR ISSUES**

32. In view of the continuing grave concern about unsafe nuclear installation, almost ten years after the Chernobyl accident, we reaffirm our commitment to phase out, as soon as possible, unsafe nuclear installations, in particular unsafe nuclear reactors. Such action should be accomplished through international co-operation. In this context we welcome the adoption of the International Convention on Nuclear Safety and we invite all countries with nuclear installations to become a party to the Convention as appropriate. In implementing these policies, particular emphasis will be placed on the development of new and renewable sources of energy and enhancement of energy efficiency, taking into account the socio-economic and environmental conditions in the countries concerned. Moreover, we are committed to solve the problems connected to the management of nuclear wastes and enhance prompt and effective response to environmental emergencies.

33. We recognize the need for improving existing regimes on international liability for nuclear damage and establishing such effective regimes in all countries in order to ensure the channelling of liability to operators of nuclear installations to ensure adequate compensation to reimburse victims for damage to health and property. Damage to the environment should be considered for inclusion in such liability.

34. We note the concerns expressed by many States about the risks of environmental and health damage involved in nuclear arms testing and recall the precautionary principle enshrined in principle 15 of the UN declaration on environment and development of June 1992 (the Rio Declaration).

35. We share the expectation expressed by the 39th General Conference of the International Atomic Energy Agency that the negotiations for a Comprehensive Test Ban Treaty will be completed and a Treaty signed in 1996 and urge all participants in the negotiations to further intensify their efforts to this end.

36. We invite the ECE to assess and report on progress in the implementation of the Programme to our next Conference.

**ENVIRONMENTAL PROGRAMME FOR EUROPE**

37. We are concerned by the findings of the "Europe's Environment: The Dobris Assessment" report, which was called for at Dobris and which assesses for the first time Europe's environment as a whole, since it demonstrates the need for far-reaching action in a number of environmental sectors, being addressed in the Environmental Programme for Europe. We suggest that the European Environment Agency should build on the assessment, using the pan-European network for data collection, processing and dissemination, by reporting progress in respect of the main issues covered by the assessment, provided that the necessary resources are made available.

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\* Austria, Iceland, Ireland, Luxembourg and Sweden reaffirm their position that the use of nuclear energy in general should be phased out in the long term. This position is shared by Denmark,...

38. We call on all European countries to take steps with a view to participating in the work of the European Environment Agency in order to make comparable, harmonize and coordinate existing data collection systems, and call for assistance to be provided for that purpose, where appropriate.

39. We endorse the Environmental Programme for Europe (EPE), which addresses some of the findings of the Dobris Assessment and highlights a number of long-term environmental priorities at a pan-European level.

40. The Environment Ministers of Europe endorse, in particular, the key recommendations for action in Europe in the EPE as annexed to this Declaration, and call for their implementation while recognizing the need for a differentiated approach.

41. We invite ECE to monitor progress in the implementation of the Programme and report to us at our next Conference.

#### **PUBLIC PARTICIPATION**

42. We believe it is essential that, in accordance with Principle 10 of the Rio Declaration, States should give the public the opportunity to participate at all levels in decision-making processes relating to the environment, and we recognize that much remains to be done in this respect. We call upon all countries in the region to ensure that they have a legal framework and effective and appropriate mechanisms to secure public access to environmental information, to facilitate and encourage public participation, inter alia, through environmental impact assessment procedures, and to provide effective public access to judicial and administrative remedies for environmental harm. We invite countries to ensure that in relevant legislation effective public participation as a foundation for successful environmental policies, is being introduced.

43. We endorse the ECE Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-making and invite ECE to review their implementation in 1997 and to report to the next Conference.

44. We will ensure that the results of this Conference will be broadly disseminated. We request international organizations in the Environment for Europe process to do the same.

#### **REGIONAL ENVIRONMENTAL CENTERS**

45. We reconfirm the Lucerne call for training and education schemes in environment management for NGOs and the media, we commend the efforts of the Regional Environmental Center in this area and call for greater support for this Center. We welcome the initiatives to establish additional regional environmental centres for NIS and encourage interested donors as well as governments of beneficiary countries to assist in creating a network of such independent centers.

### ENVIRONMENTAL CONVENTIONS

46. We call on all countries in the region and the European Community to ratify, or accede to, as appropriate, environmental conventions of relevance to the ECE region, in particular the recent ECE environmental conventions and protocols, and consider it essential that all necessary steps should be taken to ensure implementation and compliance with these instruments, and support the proposed development of new protocols on further reductions in the emissions of nitrogen compounds as well as of persistent organic pollutants and heavy metals under the Convention on Long-range Transboundary Air Pollution.

### THE FUTURE

47. We will contribute through the European Environment and Health Committee to the preparations for the third European Environment and Health Conference to be held in London in 1999.

48. We believe that the "Environment for Europe" process remains essential as a political framework for cooperation in the field of environmental protection for Europe. Its structure must enable all countries of the European region to play a full and equal part in the further development of that cooperation and take account of related activities at the pan-European level, notably on environment and health, environment and transport, and sustainable management of forests, in order to create synergies and avoid duplication of efforts. The structure of the process must also be efficient and cost-effective. The emphasis should be on concrete actions.

In this context:

- The ECE/CEP should screen the EPE in order to make proposals for concrete priority actions. The development of a regional Convention on Public Participation should be considered with appropriate involvement of NGOs.
- The Task Force of the EAP and the PPC should continue their work. The financial aspects regarding this work should be further developed in these frameworks. The present secretariat arrangements should be continued.  
The PPC should keep the Task Force informed of the activities.
- The follow-up of the Pan-European Biological and Landscape Diversity Strategy, as referred to in point 26 above, should be pursued within the agreed mechanisms, open to all countries of the region.  
The Task Force of this Strategy should keep ECE/CEP informed of its activities.
- The European Environment Agency, referred to in point 32, should carry out further work on the pan-European state of the environment by reporting progress in respect of main issues covered by its assessment, in due course, before the next conference.
- We call upon the NGO community to continue their involvement in the "Environment for Europe" process.

49. We acknowledge the large extent of work done to date in the framework of this process and the important role of the ECE in overseeing the process in close cooperation with relevant agencies. We consider that this complex process now needs to be simplified and streamlined.

As a first step, we agree on the following regarding the next Ministerial Conference:

- at the next meeting of ECE/CEP, a preparatory Ad Hoc Working Group of senior officials should be established, ensuring the full and equal participation of all UN/ECE member countries as well as the participation of the European Commission, relevant international organizations and bodies and NGOs. It should be chaired by the host country of the next conference;
- this Ad Hoc Working Group should not convene until 12 months before the next conference;
- the work of the above Group should be prepared by an executive committee composed of three senior officials from the CEECs and three senior officials from the western European countries. It should be chaired by the host country, the Vice-Chairman being a senior official from the CEECs. The Executive Committee should be established at the next meeting of the ECE/CEP;
- the practical preparations for the next conference will be responsibility of the host country.

50. We gratefully acknowledge the offer of the Government of Denmark to host the next Ministerial Conference in May 1998.

51. We express our deep gratitude to the Government of the Republic of Bulgaria for having hosted the Conference and we wish to thank it and its people for the hospitality received.

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ANNEX

KEY RECOMMENDATIONS OF THE ENVIRONMENTAL PROGRAMME FOR EUROPE

**PROMOTE** the participation of all European countries in the work of the European Environment Agency in order to make comparable, harmonize and coordinate existing data collection systems and to provide the necessary information for the next pan-European state-of-the-environment reports.

**APPLY** the ECE Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-making, respecting any limitations to their application which may arise if subnational approval is required in federal States, and invite ECE to review the implementation of these Guidelines in 1997.

**ENSURE** the integration of environmental considerations into decision-making, including the consideration of environmental costs and benefits and the assessment of risks involved and the application of the precautionary and polluter-pays principles in all key sectors, and take further steps to promote partnerships between ministries, parliaments, business and industry, non-governmental organizations (NGOs) and other major groups.

**RECOGNIZE** the United Nations Environment Programme (UNEP) Meeting on Military Activities and the Environment convened in Linköping (Sweden) in cooperation with the ECE in 1995 as an important contribution to the dialogue between the military and environmental sectors, recognize and encourage the efforts made by the military sector in many countries in addressing environmental problems as well as those conducted or planned under the auspices of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society in which all countries are invited to participate, and invite other appropriate international organizations to consider promoting, at an appropriate time, a dialogue between the military sector and environmental ministries and organizations on the development of national environmental policies for the military sector.

**ENCOURAGE** the ratification of, and ensure compliance with, international legal instruments in the field of the environment of relevance to the ECE region, in particular the recent ECE environmental conventions and protocols.

**TAKE** measures which will ensure that all European countries have reached a high level in energy efficiency by the year 2010.

**FULLY IMPLEMENT** existing national commitments under the Framework Convention on Climate Change and pursue the process of strengthening those commitments as agreed in the Decisions of the 1995 Berlin Conference of the Parties, using all appropriate means for that purpose such as:

- (a) Economic instruments, including fiscal measures such as CO<sub>2</sub>/energy taxation and the elimination of disincentives to the efficient use of energy;
- (b) The provision of more efficient thermal insulation for buildings;
- (c) The promotion of the use of new and renewable sources of energy;
- (d) The reduction in CO<sub>2</sub> emissions from energy-intensive industrial sectors;
- (e) The reduction in greenhouse gas emissions from the transport sector.
- (f) The enhancement of carbon sinks in agriculture and forestry sectors;
- (g) The reduction of methane emission through, for example, improved management of municipal landfills.

**INVITE** interested Governments, in cooperation with ECE and other relevant intergovernmental organizations/institutions, business and industry, environmental and consumer organizations, to identify ways and means of carrying out life-cycle assessments and environmentally benign procurement and of facilitating market access for environmental goods and services in the ECE region.

**ENCOURAGE** the implementation of product stewardship from cradle to grave, the introduction of a corresponding producer's responsibility and the internalization of external costs.

**TAKE FORWARD** existing efforts to improve the resource efficiency and reduce the environmental and health impacts of all forms of transportation by introducing policies that take into account the mode of transport and the possibilities for reducing the volume of transport; to these ends, promote a variety of actions, including better land-use planning, strengthening water, rail and public transport systems, tightening technical standards and applying environmental impact assessment and economic instruments, such as measures to encourage the further use of unleaded petrol, to reduce the lead content of petrol with the aim of phasing out lead in petrol, to reduce vehicle fuel consumption and the introduction of air-fuel taxation at an international level.

**DEVELOP AND IMPLEMENT** codes of good agricultural practice on local, national and pan-European scales, to protect waters, soils and the environment in general, and invite ECE, in that regard, to develop appropriate best practice guidance.

**STRENGTHEN** measures to protect soil and draw up appropriate remediation strategies to control water shortages and desertification, in particular in eastern and southern Europe.

**MINIMIZE** to a harmless level discharges into transboundary waters from point and non-point sources likely to cause adverse transboundary impacts, and implement, in a transboundary context and by way of agreements between riparian parties, sustainable water management schemes established by joint bodies in consultation with water users within the framework of the agreements mentioned above.

**SUPPORT** the efforts made for the integration of the conservation of biological and landscape diversity in all sectoral policies in the region.

**PROMOTE** the sustainable management and conservation of all kinds of forests, especially by supporting the ongoing international processes, such as the work of the Intergovernmental Panel on Forests established by the United Nations Commission on Sustainable Development.

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**ANNEX 6**

**UKRAINE TASK U6**

**TATAR ENVIRONMENTAL HEALTH PROJECT**

Annex 3B6-1

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## **Task U6: Tatar Environmental Health Project**

### **I. OBJECTIVES**

This task was originally identified and developed by the staff of USAID/Kiev. USAID developed a project design for a Tatar Water and Sanitation Assistance Project in Bachcisaraj, Crimea (with input under Deliver Order 5), which became the basis for this activity. The purpose of the task is to improve the environmental health conditions of the returning Tatar populations of the Crimea. The American ambassador asked USAID to determine some activity that would establish an American presence in the Crimea. This was at a time when the Russian population in the Crimea was threatening to secede from the Ukraine and rejoin Russia.

The primary activity identified in the task was to procure 9 km of pipe for the Bachcisaraj Vodokanal to use in completing a section of a water line from a nearby well field to the city. In addition, CH2M Hill was to procure some laboratory equipment for water quality testing. Pamphlets were to be developed and distributed on household-level sanitation. Cost recovery issues were to be studied and suggestions provided to improve the financial viability of the Vodokanal.

### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

The pipe has been procured and delivered. However, USAID and the contractor encountered delays in the procurement. USAID required an environmental impact assessment of the activity which had to be performed by a third party. This took time to arrange and delayed the procurement of the pipe.

These delays caused Vodokanal to doubt the sincerity of the US offer and to delay construction. This had the potential for causing political problems for the US presence in the area. Vodokanal staff were beginning to become distrustful of the team and USAID help. Finally, it was agreed that the US-financed pipe could be used when it arrived to restock supplies that Vodokanal would use immediately to complete construction. With this solution and the subsequent arrival of the USAID-financed pipe, relations with the Bachcisaraj Vodokanal are now quite good. The Ambassador traveled to the site when the water was turned on.

The laboratory equipment has been ordered and will be delivered shortly. The pamphlets have also been prepared. The last specified deliverable in CH2M Hill's Work Plan is a project completion report, due April 30th, 1996. However, the narrative part of the work plan states that a financial analysis will be done of the Vodokanal, even though there is no specific deliverable in the back of the plan.

When the evaluation team talked to the CH2M Hill Country Director about this issue, he said that they would use the results of the Lviv analysis to inform the Bachcisaraj Vodokanal of issues that may concern its operations and sustainability. But the Lviv report is not due before a closeout

report is promised for this activity. The timing and relationship of the Lviv work to Bachcisaraj should be clarified in a further modification to the Delivery Order.

### **III. PROJECT IMPACT**

There has been an immediate health benefit to the Tatar population by obtaining safe drinking water. The sustainability of the overall activity will depend on the results of the financial analysis done in Lviv, its relevance to Bachcisaraj and whether or not the information is used. The United States has gained credibility in the area by being associated with a successful project to help the Tatar population.

### **IV. RECOMMENDATIONS**

Modify the delivery order to show what the current understanding is regarding studying Bachcisaraj Vodokanal cost recovery issues. Be sure to define a deliverable and a due date.

When undertaking a high profile politically driven assistance activity, USAID should be prepared to look for the most expeditious procurement process consistent with existing legislation. USAID has sufficient authority to waive certain requirements such that commodities can be quickly procured and delivered. USAID could have avoided a potentially difficult political situation by exercising this authority. USAID should provide sufficient human and financial resources in a timely fashion to ensure that the United States does not risk an embarrassing performance in circumstances where US prestige is on the line.

CH2AN3B6.R45

Annex 3B6-3

**ANNEX 7**

**UKRAINE TASK U7  
PROGRAM MANAGEMENT**

Annex 3B7-1

## **Task U7: Program Management**

### **I. OBJECTIVES**

This task was designed to identify staffing needs and to provide a mechanism through which CH2M Hill could meet those needs. It covers the staffing of all Ukraine contractor facilities. Two position descriptions were deliverable by October 6, 1995 and an organization and staffing pattern were due on October 31, 1995.

### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

The evaluation team reviewed the staffing needs at all Ukraine sites. The Regional Director knew the management issues he faced and was actively engaged in solving these issues. All currently approved positions have been filled with capable people. The deliverables have all been submitted to USAID on time.

### **III. PROJECT IMPACT**

Obviously, the timely provision of appropriate staff is critical to achieving project objectives. CH2M Hill appears to be carrying out its responsibilities in this regard.

### **IV. RECOMMENDATIONS**

None.

CH23B7.R45

Annex 3B7-2

**ANNEX 8**

**MOLDOVA TASK M1**

**ENVIRONMENTAL RISK:  
PRIORITY SETTING AND TRAINING**

Annex 3B8-1

## **MOLDOVA**

### **Task M1. Environmental Risk: Priority Setting and Training**

#### **I. OBJECTIVES**

The objective of the task is to assist environmental, health, and agricultural agencies in Moldova in assessing and managing environmental risk, and to use the information obtained in the decision-making processes as a means of prioritizing and targeting investments for environmental improvements.

#### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

##### **Subtask M1.1 Identification of Potential Trainees.**

This subtask has been completed. Host-country participants were identified, mostly through DO 5.

##### **Subtask M1.2 Environmental Risk Decision Making Process (ERDMP) Training Program**

A Workshop was designed to bring together the three important sectors in Moldova — agriculture, public health, and environment — and to provide essential information to help these three sectors better analyze environmental conditions in Moldova and initiate remedial processes.

The Environmental Risk Decision Making Process (ERDMP) Workshop took place on July 26-28, 1995 in Chisinau. Approximately 100 Moldovan specialists, government officials and educators participated in the opening session of the workshop. Subsequent sessions were attended by approximately 40 individuals per session representing agriculture, health, and environmental protection. Workshop manuals, with over 200 pages of translated ERDMP materials, were provided to all active participants. The workshop was divided into 11 lecture sessions and a final discussion and evaluation. Computer software applications in biostatistics, comparative risk assessment, and approximately 30 other software programs were presented and made available.

During the Workshop, papers were delivered on epidemiology (Dr. Hale Vandermer), toxicology (Dr. Zoltan Annau), Quality Assurance/Quality Control (Dr. Lance Stokes) and Risk Assessment (Dr. Hale Vandermer, Dr. Zoltan Annau). Moldovan specialists Vitaly Botezatu and Angela Bularga, who had just returned from a USA study tour, delivered presentations on biostatistics.

The evaluation team met with Dr. Panel Gusac from the Moldovan Medical State University, who participated in the workshop. He expressed satisfaction with the workshop and reiterated the desire for more advanced training in environmental risk assessment through follow-up workshops in Moldova. Dr. Gusac's opinion was that the workshop achieved its most important goal of introducing the concept of risk assessment to improve environmental decision making in the

country. This was the result of a partnership formed between science, government and the public.

The EPT Country Director for CH2M Hill (CH), Dr. James Holderbaum, presented the evaluation team with drafts of the ERDMP Workshop Design Report and the Workshop Summary Report.

### **Subtask M1.3 Study Tour**

The evaluation team met with a number of participants of the study tour, which took place in July, 1995. They were all impressed with the tour and found the topics covered very useful. All targets were achieved on this task. The Department of Environmental Protection (DEP) created an ERDMP Steering Committee in August, 1995. Guidelines on water sampling were requested and prepared in the same month.

The DEP established the Office for Public Information. The director of this Office is Mr. Corneliu Busuioc. The team interviewed Mr. Busuioc and Ms. Petrusevshci of International Relations. These two individuals, who worked as the primary coordinators of most activities, were, in general, very supportive of the EPT project and of CH2M Hill. However, they both mentioned that the early discussions held with visiting USAID officials — both from Washington and the field offices — had led them to expect to play a much more significant role than was currently the case. They complained that the bulk of the resources seemed to be flowing to health and agriculture interests, and their budget was too small for public relations and enforcement.

It appears to the team, however, that the project's effort was directed first to determining the nature of the environmental problems before focusing on public information and enforcement. This emphasis does not appear to be misplaced. Rather, the problem these two project collaborators identified is one of the "moral hazard" any USAID Officer faces in creating greater expectations than are actually realized as one goes about fact-finding to determine the development problem and designing an appropriate response.

The Republican Hospital Library established access to U.S. National Medical Library databases via e-mail. This effort at sharing data seemed to have a stimulating effect on the participants who arranged it. They were now able to access world wide data on diseases and compare their findings with research elsewhere.

### **III. PROJECT IMPACT**

The U.S. methodology for Environmental Risk Assessment has been adopted as a primary method of analyzing cause and effect linkages between farm practices and health. The introduction of this methodology has provided the Moldovans a more unified and systematic method for understanding the related issues on a given topic and share data among institutions (which was previously not occurring).

The Director of the Department of Environmental Protection has established a new position of Public Relations Director after the study tour to the United States.

Establishment of access to the U.S. National Medical Library databases seemed to have a spill-over effect within the country as organizations, that had heretofore kept their data closely guarded, were now more willing to share it with the public. This result could also be attributed to the workshop on environmental risk analysis, because the need to share data was demonstrated to be essential if this new methodology was to work.

#### IV. RECOMMENDATIONS

To achieve faster results in introducing the environmental risk assessment methodology, it would be useful to design a short three- to four-week program on ERDMP for continuing education of those professionals, who already work in this field. As we currently understand the course development, it will be a series of lectures for university students, who will not be practitioners in the field for several years.

The Moldovan DEP initially expected to have a much more significant role in the project because they thought that enforcement was going to be supported. However, as USAID gathered more facts it became clear that other problems needed addressing first. Therefore, emphasis shifted from enforcement to agricultural and health related issues. The DEP expressed disappointment at this change in focus. In our view, this focus change was a natural and a correct development in the project. However, this situation will require the continued attention of the site manager in order to elevate the role of the DEP, as better information on the environmental problems and potential solutions is developed.

CH23B8.R45

Annex 3B8-4

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**ANNEX 9**

**MOLDOVA TASK M2**

**FARM ENVIRONMENTAL MANAGEMENT DEMONSTRATION  
PROJECT**

Annex 3B9-1

## **Task M2: Farm Environmental Management Demonstration Project**

### **I. OBJECTIVES**

The main objective is to demonstrate better agricultural management and production techniques through cost-savings and technology improvements, in order to improve environmental protection. These techniques can reduce soil erosion, fertilizer use and energy consumption through reduced tillage.

### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

#### **Subtask M2.1 Capabilities Assessment**

Under this subtask, a draft report assessing Moldova's analytical capabilities was prepared by Sven Pavlovics, R.E.M., and Lance Stokes, Ph.D. The purpose of the assessment was to define analytical capabilities needed to support data collection and analysis for the agricultural demonstration projects. The draft report contains a review of data collected from the original scope of work; an assessment of the capabilities and capacity of laboratories in Moldova to conduct environmental monitoring and impact assessments in the agriculture sector; a discussion of findings and conclusions; and recommendations.

Based on the findings in the report, the following recommendations were presented:

The capability for sophisticated analyses that would be required to generate pesticide, herbicide and associated degradation products data does not currently exist.

Although existing wet chemistry capabilities are limited, the Moldovan laboratories could generate data of known quality with appropriate standards, reagents and training. The limited instrumentation, reagents and standards could be utilized to generate relatively low level, but definable, quality data sets.

Monitoring and analytical needs for demonstrations would offer an excellent opportunity to provide Quality Assurance/Quality Control (QA/QC) training, access to and utilization of QA/QC manuals, laboratory management guidelines, QA plan development, sampling plan development and data quality objectives. Process implementation is required prior to any resource allocation.

The contractor is also to prepare an assessment of the technical capabilities of agricultural production techniques and practices in Moldova, which is due by January 15, 1996.

Using the information from these assessments, the contractor identified three sites which were recommended to host various activities under the USAID-sponsored Moldova EPT program. They include:

- 1) a joint-stock company (cooperative farm) "Moldova" in the Orhei Region;
- 2) the experimental farm of the Institute of Field Crops "SELECTIA" in Beltsy; and,
- 3) the joint-stock company (cooperative farm) "Prietenia" in the Cahul Region.

The process of site selection, including selection criteria, was developed and implemented based on input from cooperating country counterparts, USAID/Kiev, and EPT/Moldova. Comments and input were also solicited from the academic and scientific communities, the Ministry of Health, the Ministry of Agriculture, the Department of Environmental Protection, the Moldova Academy of Sciences, and the people who live and work in the various locations considered.

With technical assistance and cooperation from the U.S., these sites provide a visible demonstration of how changes in agricultural practices and implementation of improved alternative technologies can reduce chemical contamination of soil and water, reduce soil erosion, improve decision-making, and relate economic costs to environmental health risks. (See the Chronology of Key Events in the Site Selection Process in the Appendix A.)

All this information will be incorporated in the Preliminary Demonstration Design Report due by December 15, 1995.

The evaluation team visited one of the sites to observe progress made on this task. The team picked the joint-stock company "Moldova" in Orhei region. There we met with Mr. Ion Haju, the Chief Agronomist of "Moldova." Mr. Haju participated in the Study Tour and is one of the leading advocates for improving the environmental impact of agricultural production. The team was also accompanied to the site by Dr. Vassal Venom, Dr. Vassal Captain, and Dr. Valentin Ciubotaru. They were all supportive and had a good understanding of EPT objectives. They were all cooperating with the activity in order to learn as much as possible about the environmental benefits of improved farming techniques.

The team met briefly with Victor Negrutsa, Director of the farm, and visited the fields to observe first hand what was planned for the spring planting after the demonstration equipment arrived. It was clear from the description of existing methods that significant cost savings would be achieved. Land was not being tilled in a manner to reduce soil erosion. Old plowing and furrowing methods required seven or eight passes a season, whereas the new equipment would require only two passes, resulting in substantial fuel savings. Fertilizer applications could be reduced due to better water and nutrient retention (less wind and water evaporation) and more focused application.

### **Subtask M2.2: Agricultural Demonstration Results**

This subtask was delayed due to communication problems between CH2M Hill's headquarters, its field office, and AID/Washington. A report was required by USAID/Washington to justify the selection of demonstration sites, but the field office did not understand that it was a necessary

precursor to the initiation of procurement. By the time this was corrected, the procurement was too far behind the schedule needed to have the equipment arrive before the fall planting season. The Country Director for CH2M Hill offered a creative, cost saving solution to hasten the delivery of some large pieces of the equipment when he discovered the equipment was available from a US manufacturer with an overstock in Romania. However, the CH2M Hill home office decided against this course of action as it felt there was no compelling reason to request that USAID waive full and open competition, and as the equipment was not sufficient to complete the demonstration activities. Instead, CH2M Hill proceeded with the procurement under normal USAID regulations.

USAID issued a no-cost extension to the contractor for this part of the project, since its results were critical to the project's objectives. This no-cost extension will allow the demonstration to take place. However, the CH2M Hill Country Director is funded only through January 1996, which means that he will have to leave Moldova before the crucial field testing and demonstrations occur. This does not seem to be a reasonable solution given the importance of CH2M Hill involvement at this time.

In discussing this situation with Dr. Holderbaum and CH2M Hill's Regional Director, Ties van Kempen, the team learned that Dr. Holderbaum was slated to take up a position in the Ukraine to backstop Moldovan activities. While this was necessitated by the nature of USAID's decision, it would be better to fund Dr. Holderbaum's position in Moldova through the entire demonstration and report writing period.

### **Subtask M2.3: Demonstration Report**

The final report is now due by 30 November 1996, due to the no-cost extension.

### **Subtask M2.4: Technical Workshops**

The Agricultural Technical Workshop took place from August 2 to August 4, 1995. The purpose of this three-day workshop was to discuss U.S. experience in technical and management improvements for agricultural production that promote environmental protection. Approximately 40 people participated in the workshop, representing the agricultural, health and environmental protection communities.

The outline, agenda and list of workshop participants is provided in Appendix B. Marshall Fisher (AID/ENI/EEUD) and Natalya Gordienko (USAID/Kiev) participated in the closing session of the workshop. Media representatives were present at the closing session.

The second technical workshop is planned for May 1996.

We met with Gheorghe Duca, Valentin Ciubotaru, Vasile Voineac, Vasile Catana, Ion Hajiu, who participated in the Workshop and were enthusiastic about what they learned and expected to learn from the actual demonstration.

Annex 3B9-4

## **Subtask 2.5: Practical Training Workshops**

In conjunction with the Agricultural Training Workshop I, an intensive Revised Universal Soil Loss Equation (RUSLE) Training Workshop was held August 14-17, 1995. Representatives from the various institutes, departments, and universities sent participants who had attended the general Workshop, but wanted hands-on experience on the use of the RUSLE model.

The goal of the workshop sessions was to instruct Moldovans in the use of RUSLE so that they would know the capabilities of the model. Institutional representatives were asked to select participants from their ranks that would most benefit from the workshop training and who could serve as a resource person from their organization.

In order to increase the effectiveness of the training, participation was limited to this group of individuals. The Moldovan participants were given hands-on instruction and exercises in city, crop and operations database entries, in order to create site-specific information on climate, soils, crops, and machinery operations. Participants were taught to work with different soils, cropping systems, cropping rotations, and management practices. The historical background meteorological data, and regression methodologies to formulate iso-erodent values for specific locations within Moldova were presented. The general procedures to be used in the creation of an iso-erodent map of Moldova were discussed.

## **Subtask M2.6: Monitoring Equipment and Supplies**

Implementation of this subtask was behind schedule. Computers and software were delivered in August, but the critical demonstration equipment would not arrive until late November. (See the above explanation for this state of affairs, under subtask M2.2.)

## **III. PROJECT IMPACT**

There has been substantial overuse of fertilizers and pesticides in Moldova, coupled with excessive and inappropriate plowing. This has increased the cost of production and caused extensive soil erosion and ground water pollution. The demonstration will show plowing techniques that reduce soil erosion, cut fuel consumption by 75%, and reduce significantly the need for fertilizer.

Technical Workshops and Practical Training Workshops will introduce the U.S. experience in technical and management improvements for agricultural production that promote environmental protection.

Procurement of U.S.-made equipment will open potential opportunities for American companies to export their equipment to Moldova.

#### IV. RECOMMENDATIONS

CH2M Hill was able to arrange data sharing among participating entities to an extent that has never occurred in Moldova. This increases the expectation that the participants will be able to achieve project objectives. However the one year remaining for project activities, particularly the farm demonstration work, may not be enough time to experience different farming conditions and develop comparative data. This limits the potential spread effect of the value of these technologies and farm land use demonstrations. All participants interviewed thought that a three- or four-year period was more appropriate for the activities to achieve the maximum results.

The delays in procuring the demonstration farm equipment in Moldova caused the project to miss the originally intended summer/fall planting season and to have to request an extension to the spring for completion of the Task M2-Farm Environment Management demonstration Project (despite the fact that the resident advisor is due to leave in January and that the support will have to be provided from the Ukraine on a short-term basis).

Several counterparts expressed concern about the veracity of USAID's promise to deliver equipment, despite repeated assurance from the resident CH project director. USAID and the US Government will lose credibility in the eyes of the collaborating country officials and citizens if delays occur for reasons they cannot understand. USAID should consider waiving procurement regulations to allow sole source procurement when quick delivery or exceptional quality are important factors in maintaining U.S. prestige.

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Annex 3B9-6

**APPENDIX A**

Annex 3B9-7

### Chronology of Key Events in the Site Selection Process, (JAN - MAY, 1995)

DATE	ACTIVITY/EVENT
January 25	J. Holderbaum met with M. Petrushevski, Department for Environmental Protection. They discussed the EPT Project in Moldova and she suggested several institutions, which could be involved in EPT activities, such as the Institute of Pedology, the Medical University of the Republic of Moldova, and the Moldova Sanitary Epidemiology Station. It was suggested that creating a committee represented by various Moldovan institutions would facilitate an efficient and successful planning process and implementation of the project.
January 27	J. Holderbaum met with A. Andriesh, the Director of the Institute of Pedology, P. Gusac, Moldova State Medical University, and D. Siretseanu, Sanitary Epidemiology Station of Moldova to discuss the general scope of the EPT Project and solicited input. A Technical Advisory Committee was established.
February 3	The first meeting of the Technical Advisory Committee took place. The Technical Advisory Committee was established as the result of J. Holderbaum's meetings and discussions with representatives of different Moldovan institutions (initially referred to in a December, 1995 EPT Trip Report). The members of the Committee included: M. Petrushevski, the Department for Environmental Protection, P. Gusac, Medical University, V. Cibotaru, the Institute of Pedology, D. Siretseanu, Sanitary Epidemiology Center, B. Boinceanu, Belts "Selectia" Research Institute for Field Crops, G. Duca, Professor, Moldova State University, D. Drumea, Institute of Ecology and N. Opopol, Medical University. An overview of the EPT project for Moldova was presented and suggestions were offered on how to establish Demonstration Sites in different regions of Moldova. Sub-committees were established for agriculture, health, and water quality.
February 9	The Agricultural Working group met to discuss agricultural interventions and several locations were proposed as possible demonstration sites: Tsaul (Northern region of Moldova), Girovo (central part), Lebedenco (near the city of Cahul in the South), and Stefan-Voda.
March 15	Country-side trip with Boris Boinceanu, the Vice-Director of Belts "Selectia" Institute and V. Voineac, the Institute of Biological Protection of Plants for preliminary visit to several proposed sites. Based on discussions from the 2/9/95 Agricultural Working Group meeting, Dr. Boinceanu presented criteria for site selection process, proposing to choose 3 sites (in the North, Center and South of the Republic), which represent different climate and soil conditions. The following sites were proposed: <ul style="list-style-type: none"> <li>- Belts "Selectia" Crops Institute and Experimental Farm;</li> <li>- Orhei "Moldova" Joint-Stock Company;</li> <li>- Cahul, Lebedenco "Prietenia" Joint-Stock Company.</li> </ul>
March 20	Meeting with J. Osborn (USAID/Kiev) and N. Gordienko (USAID/Kiev). Persons which participated: M. Petrushevski, the Department for Environmental Protection, V. Voineac, the Institute of Water Problems, G. Duca, Moldova State University, D. Siretseanu, Sanitary Epidemiology Center, N. Opopol, Moldova State Medical University, B. Boinceanu, Belts "Selectia" Institute, V. Chibotari, P. Gusac and EPT Program Specialists: J. Berzan, O. Totrova, A. Totrov. At the meeting the basic site selection criteria and candidate locations were outlined and received verbal approval by AID/Kiev representatives.
March 21	J. Holderbaum, J. Osborn, N. Gordienko visited Beltsy "Selectia" Institute and met with B. Boinceanu and the Director of the Institute. The possibility of selecting the Institute as a site for demonstrations was discussed.
March 21	J. Holderbaum writes a memorandum to EPT/Kiev and sends copies to EPT/WDC outlining the 2 days of discussions with USAID/Kiev
March 31	Technical Advisory Committee meeting to discuss the site selection issues.
April 3	J. Holderbaum met with M. Lupascu, a leading agronomist who is a Member of the Parliament of the Republic of Moldova, and Vice-President of the Moldova Academy of Sciences. They discussed EPT/Moldova activities, site selection process. Mr. Lupascu provided some helpful suggestions regarding the criteria of selection and political issues surrounding site selection.

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### Chronology of Key Events in the Site Selection Process. (JAN - MAY, 1995)

DATE	ACTIVITY/EVENT
April 5	Meeting of J.Holderbaum with Advisory Group: G.Duca, S.Andriesh, S.Fandofan, D.Siretseanu, N.Opopol, A.Capelea. The meeting was also attended by John Jackson, Jane Berzan, Olga Totrova, Anatoly Totrov. Topic: Site Selection Criteria. It was planned to visit 5 sites proposed during the March meetings with AID/Kiev representatives (J.Osborn and N.Gordienko). The first site selection visit was scheduled for April 7 to Cahul.
April 7	Trip to Cahul (A.Totrov, O.Totrova, Opopol, Siristeanu, Voineac, Andriesh, Yalovitsky). Purpose: collecting information about the joint-stock company "Prietenia". Meetings with Mrs. Tamara Munteanu, farm manager and agronomist and other representatives of the farm.
April 14	Memo to the Members of Advisory Committee, Subject: Site Selection for EPT/Moldova Project and schedule of visits.
April 19	Trip to Beltsy: J.Holderbaum, A.Totrov, O.Totrova, N.Opopol, D.Siretseanu, C.Ialovitsky, I.Bucinschi (Department for Environmental Protection). Meetings with Mr. Vronskii, Director of "Selectia" Research Institute and B.Boinceanu.
April 19	Trip to Orhei: J.Holderbaum, A.Totrov, O.Totrova, N.Opopol, D.Siretseanu, C.Ialovitsky, I.Bucinschi. Meetings with Ion Hajiu - Chief-Agronomist, the Farm Manager and other representatives of the joint-stock company "Moldova".
April 21	Trip to Chetrosu: J.Holderbaum, A.Totrov, J.Berzan, I.Ungureanu, N.Stratan, Agricultural University, N.Opopol Meetings with V.Pantelev, the Director of the Experimental Farm of the Agricultural University and other local representatives. The Karagasan site was dropped from consideration at the request of the Advisory Committee.
April 22	U.S. Specialists arrive in Chisinau. They are briefed on the overall project and the sites that have been preliminarily identified. Discussions are held with the specialists regarding the merits of each site with respect to both agricultural and environmental risk issues. It is agreed that the specialists will focus efforts at the sites to be selected.
April 24	The members of Advisory Group presented site descriptions, following the abovementioned criteria. Dr.Opopol presented 4 sites descriptions Dr.Boinceanu presented 4 site descriptions Dr.Andriesh presented 4 site descriptions Dr.Gavrilița - 1 site description The consensus of the Advisory Group was that each of the four sites would be suitable for hosting project activities.
April 26	J.Holderbaum writes a memo to the Technical Advisory Committee members, announcing the final meeting of site selection for April 27. (At this point, EPT/Moldova with the support of the U.S. specialists plan to propose Cahul, Orhei, and Beltsy as the preferred sites at the April 27 meeting.
27 April	Advisory Group Meeting: Final Site Selection. 3 sites were agreed upon: Cahul, "Prietenia" Joint-Stock Company, Orhei, "Moldova" Joint-stock Company Beltsy, "Selectia" Research Institute for field Crops.  Plans were made to visit the three locations during the following week. U.S. specialists specified the types of information that would be collected.

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**Chronology of Key Events in the Site Selection Process, (JAN - MAY, 1995)**

DATE	ACTIVITY/EVENT
May 2	<p>Trip to Beltsy with US Consultants and Moldovan Counterparts: J.Holderbaum, O.Totrova, J.Berzan, I.Dumbrava, Z.Rumleascaia, Z.Annau, H.Vandermer, Stokes, M.Decker, N.Opopol-SMU, V.Pynzari - PBPI.</p> <p>Meetings with: <u>Selectia" Institute:</u>                      Director- Vronskii M. and Dr.Boinchanu.</p> <p><u>SanEpidStation:</u>                      Director - Tsurcan Vasily, the Head of Lab - R.Archa;  <u>Central Veterinary Hospital</u>                      Chief Veterinarian - V.Socolenco, Associate Veterinarian - I.Chiriac;</p> <p><u>Hospitals:</u>                      Associate Director of Children's Polyclinic - P.Tricolici                      Associate Chief of Treatment Department - A. Cozub</p>
May 3	<p>Trip to Orhei with US Consultants and Moldovan Counterparts.</p> <p>Meetings with: <u>AG JSC "Moldiova"</u>                      Director- V.Negrutsa,                      Chief Agronomist I.Chadjiou                      Chief Engineer - T.Tricolici</p> <p><u>Veterinary Station:</u>                      Veterinarian - A. Doros</p> <p><u>Hospital</u>                      Chief Physician A.Teaci</p> <p><u>SanEpidStation</u>                      Head - C.Tighineanu</p>
May 4	<p>Trip to Cahul with US Consultants and Moldovan Counterparts</p> <p>Meetings with:  <u>AG JSC "Prietenia"</u>                      Director - T.Munteanu, Agronomist - I.Vasilii,                      Head of Department of Services and Construction - G.Chitanuic</p> <p><u>SanEpid Station</u>                      Head - M. Crihan</p> <p>Head of Purification Water Analytical Lab - V.Timofeieva                      Technologist/Engineer - M.Volf, Chemical Engineer - T.Bezman</p> <p><u>Veterinary Station:</u>                      Chief-Veterinarian - P.Scutelnic</p> <p><u>Hospital</u>                      Physician - M.Neamtsu</p> <p><u>Cahul Regional Hospital Administrative Center</u>                      Administrator - N.Oglinda</p>
May 12, 1995	<p>U.S. consultants provide draft materials on planning/design for the ERDMP, and Field Demonstration components based on information obtained from the selected sites. Preliminary equipment recommendations were prepared for both agricultural interventions and upgrading analytical/monitoring capabilities in water quality.</p>

**APPENDIX B**

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## The Agricultural Technical Workshop I Agenda

### Wednesday August 2, 1995

- 8:00 am - 8:45 am Registration
- 9:00 am - 12:30 pm Introduction  
Session 1  
Session 2
- 2:00 pm - 6:00 pm Continuation of Session 2  
Session 3

### Thursday August 3, 1995

- 9:00 am - 1:00 pm Session 4
- 2:30 pm - 6:00 pm Session 5

### Friday August 4, 1995

- 9:00 am - 12:30 pm Session 6
- 2:00 pm - 6:00 pm Session 7

### August 14 - August 17, 1995

Soil Erosion Modeling Training Workshop

## **Agriculture Technical Workshop I Outline**

### **Session 1: Agricultural Production and the ERDMP**

- Overview of ERDMP
- Agriculture's Needs versus Environmental Protection
- On-Farm Decision Making and Risk Management
- The U.S. experience

### **Session 2: Soil Conservation**

- U.S. experience overview
- monitoring and assessment
- conservation tillage for environmental improvement
- host-country comments/discussion

### **Session 3: Soil Fertility**

- U.S. experience overview
- cropping/livestock systems, crop rotations for environmental improvement
- cover crop management
- host-country comments/discussion

### **Session 4: Pest Management**

- U.S. experience overview
- biocontrol
- chemical control
- integrated pest management for environmental improvement
- host-country comments/discussion

### **Session 5: Agriculture, Environment, and Health**

- monitoring for environmental improvements in agriculture
- managing risk in agricultural production: overview
- implications of soil erosion and soil depletion
- reducing point and non-point water pollution
- product registration as a risk management tool
- agriculture's role in ERDMP
- host country comments/discussion

**Session 6: Accessing Information and Computer Applications**

- sources of information
- interactive software for education, training and information access
- host country comments/discussion.

**Session 7: Wrap-up/Follow-on Activities**

**(On-going): Computer Application Sessions:**

A computer workshop will provide an array of educational, data management/analysis, and interactive training software applications. Most of the software is public domain and can be copied and shared with any institution and/or organization in Moldova. Efforts to have selected programs translated into Romanian and Russian will be examined.

**Software Programs Available:**

- Universal Soil Loss Equation
- Agricultural Pollution Prevention
- Comparative Risk Assessment
- Environmental Assessment Resource Guide
- Best Management Practices for Soil Erosion
- Fertilizer Storage and Handling Practices
- On-Farm Fuel Storage Practices
- Soil and Geologic Site Evaluation
- Groundwater Education System
- Milking Center Wastewater Treatment
- Worker Protection Standards
- Surface Water Education System
- Livestock Waste Storage
- Residential Water Conservation Techniques
- Livestock Yards Management

1. MDEP	Sergiu Fandofan Pintilii Vladimir Ion Bucinschi	General Director Head, Dep. of Cadastr
2. State University	Gheorghe Duca	Dep. Ecological and Industrial Chemistry
3. Medical University	Nicolae Opopol	Dept. Of Sanitation
4. Institute of Pedology	Valentin Cibotaru Alexeev Vasile Leah Tamara Bordeian Mihail	Pedologist "Monitoring" Group Leader Dr. Agricultural Sciences Engineer, Programmist
5. Inst. of Water Problems	Andrei Gavrilita Ion Brinza Sergiu Ionel	Director Lab. "Water Resources"
6. Inst. of Plant Bioprotection	Vasile Voineac Vasile Catana	Deputy Director Scientific Secretary
7. AG University	Valentin Ungurean Nicolae Pamujac	Head, Dept. of Soil Science Associate Professor, Dep. Phytopathology
8. Republican Station, Crops Protection	Larisa Sarschi	Deputy-Chief
9. State Ecological Inspection	Victor Egorov I. Stoleru V. Munteanu P. Prodan	Chief, Soil Protection Dep. Deputy Director Main Specialist, Soil Protection Dep. Main Specialist, Soil Protection Dep.
10. Inst. Chemical Services	Victor Dubin Plesco Lucheria	Dr. Pedologist Agronomist, Plant Protection Dep.
11. IPC Medicine	Andrei Vasilos	Deputy Director
12. CHE	D. Siretanu	Division of Environmental Hygiene
13. Station for Plant Protection, Cahul	Victor Povetkin	Chief

14. Station for Plant Protection, Orhei	Gheorghe Cirlig	Chief
15. Station for Plant Protection, Briceni	Elena Tibrova	Chief
16. Regional Ecological Agency, Orhei	I.Sava	Director
17. Regional Ecological Agency, Cahul	G.Lisnic	Chief of Department
18. Regional Ecological Agency, Balts	V.Patrascu	Chief of Department
19. "Hidrometeo" Service	Anna Cumanova	Chief of Lab.
20. "Selectia" Inst.	M.Vronschih B.Boinceanu	Director Deputy-Director
21. Inst. Agrochemical Services	Burlacu Ion	Director
22. JSC "Prietenia"	Tamara Muntean Ivan Coiev Vasile Peiev	Farm Manager Agronomist Agronomist
23. JSC "Moldova"	Victor Negruta Ion Hagiu	Farm Manager Chief Agronomist
24. NGO "Secolul 21"	Iorgu Apostol	President
25. NGO "Terra Nostra"	Olga Covaleova	Technical Manager
26. INQUA - Moldova	Constantin Mihailescu	President
27. NGO Young Ecologists	V. Lungu	President

**ANNEX 10**

**MOLDOVA TASK M3**

**EDUCATIONAL OUTREACH CAMPAIGN FOR ENVIRONMENTAL  
AWARENESS AND CONSENSUS BUILDING**

Annex 3B10-1

## **Task M3: Environmental Education Outreach Campaign for Environmental Awareness and Consensus Building**

### **I. OBJECTIVES**

This task was designed to develop and implement a public information and education program to enhance the Sustainability of Tasks M1 and M2.

### **II. PROGRESS TOWARDS ACHIEVEMENT OF OBJECTIVES**

#### **Subtask M3.1 Planning workshop**

Six one-day planning workshops have been conducted. Technical specialists, training program participants, environmental NGO representatives, other USG program representatives, and Moldovan educators participated in each of the various workshops. A report has been prepared on these workshops.

#### **Subtask M3.2 Field Tours**

Educational field tours will be delivered in the Spring and Summer of 1996. The purpose of the field trips is to involve the local community in the demonstration activities, and introduce the public's role in ERDMP.

#### **Subtask M3.3 American-Moldovan Total Emersion in English**

CH2M Hill has provided limited logistical support for an American-Moldovan Summer Camp (opened on July 4) sponsored, in part, by the U.S. Peace Corps. The contractor also provided supplies, such as soil and water testing kits, paper, pens, and magnifying glasses.

#### **Subtask M3.4 Ecological Chemistry Conference**

The first International Symposium on Ecological Chemistry was held in Chisinau, Moldova on October 1- 4, 1995. More than 150 participants from 15 countries attended.

The field of ecological (environmental) chemistry is one of the newer branches of environmental sciences and is of particular importance in establishing the molecular and chemical bases of environmental degradation. Knowledge obtained from this discipline allows regulatory agencies to adjust industrial and agricultural practices in order to reduce the emission or dispersion of toxic chemicals.

Many sessions during the symposium covered topics that were relevant to activities under the EPT program in Moldova (See Appendix).

### **Subtask M3.5 Publications**

According to the work plan, pre-publication mockups of public awareness brochures are due by February 1996.

### **Subtask M3.6 University Course Outline and Materials**

ERDMP terminology was drafted for Ministry of Education approval in October, 1995. A manual on Environmental Risk Assessment was translated into Romanian and submitted to DEP, the Ministry of Health, and the Ministry of Education for review.

A course curriculum on ERDMP, intended to teach this methodology, is being prepared for several University faculties. Course development has already been approved. We learned from Dr. Gusac that the University course outlines have been already drafted. The course should become a significant investment in environmental improvements.

## **III. PROJECT IMPACT**

By supporting the international conference in ecological chemistry, EPT has provided an opportunity for Moldovan scientists to meet with their colleagues from other countries in the NIS, Western Europe, and the U.S. The scientists were able to exchange information on topics of importance to Moldova and to the region. The conference also provided an opportunity for the EPT project to link its field demonstration projects with its educational outreach projects not only in Moldova, but also the region.

Activities and accomplishments of the EPT program in Moldova were showcased during the conference, including an announcement that a translated manual on risk assessment will provide the basis for introducing environmental risk decision making into the curricula of institutions of higher education in Moldova.

Coordination of NGO activities, participation in the American-Moldovan Summer Camp Program, and organizing Educational Field Tours are increasing awareness of environmental issues and solutions.

Establishing a course at the university level teaching ERDMP should instill this methodology in many practitioners and lead to its continued use. A common methodology will improve the communications and cooperation among disciplines and improve research on problems.

## **IV. RECOMMENDATIONS**

The ERDMP courses, once initiated should be given also to practitioners who can immediately apply it in their work.

CH2A3B10.R45

Annex 3B10-3

**APPENDIX**

**International Symposium on Ecological Chemistry**  
**October 1-4, 1995**  
**Chisinau, Moldova**

**EPT/Moldova: Opening Remarks**  
James Holderbaum, Country Program Manager

Dr. Bertini and members of the Scientific Committee, Dr. Duca and members of the Organizing Committee, distinguished guests, and conference participants...

As part of the United States Government's program of assistance and cooperation with the Republic of Moldova, the Agency for International Development (USAID) is sponsoring a program of technical assistance, training, and the provision of equipment for environmental improvements. This program, the Environmental Policy and Technology Project, or EPT, is fostering linkages between the agriculture, public health, and environmental protection communities through demonstration and cooperation. And I have the privilege of being the country manager for this United States Government-sponsored program.

The EPT program is designed to:

- Introduce common environmental decision making concepts to the public health, agricultural and ecological (environmental protection) communities and improve laboratory skills and techniques for analysis of water;
- Establish field sites for alternative agricultural practices combined with valid laboratory analyses to demonstrate reduction in public health risk;
- Initiate a public education program that highlights relationships between public health, environmental contamination and agricultural production.

The EPT program is being carried out in cooperation with over 25 Moldovan institutions and organizations, many of whom are represented here today.

The United States government's sponsorship of this symposium through the EPT project is one of the many activities underway to foster the introduction of innovative techniques, ideas and information

that can be applied to environmental improvements here in Moldova.

Since the commencement of the EPT program last January, we have conducted workshops in environmental risk decision making and environmental issues facing agricultural production that were attended by over 150 Moldovan scientists, educators, and decision makers representing the health, environmental protection and agricultural communities. We have established a direct link between the Republican Hospital Library and the U.S. National Medical Library so that data can be accessed electronically. We have begun to provide 25 computers to various organizations and institutions engaged in environmental management, education, and monitoring that will help these organizations to access and retrieve information and data from the wide array of databases throughout the world and communicate with the international community.

As part of the EPT program in Moldova, principles and methodologies in environmental risk decision making processes are being introduced. The necessity for valid data and understanding of the underlying causes of environmental degradation and its impact on public health is paramount to moving forward in the area of risk decision making. Through dialogue and discussion during the conference, Moldovan specialists, many of whom are collaborating in EPT program activities, will have the opportunity to take advantage of this international gathering of scientists to familiarize themselves of methodologies, principles and information that will strengthen their capacity in environmental investigations. We believe that this symposium will provide a great opportunity for Moldovan scientists, educators and decision-makers to expand dialogue with the international scientific community and build stronger linkages for the exchange of information and ideas.

Many of the session topics that will be discussed during this symposium are relevant to activities under the EPT program here in Moldova.

- Tomorrow's session on transport and fate of pollutants underscores the importance of understanding how pollutants behave in the environment. This information is directly applicable to determining the mode of human exposure which is critical in the environmental risk decision-making process.
- On Tuesday, presentations will be made on biological and chemical processes that can be employed to degrade or immobilize pollutants. This topic has direct bearing on the field demonstrations for improved agricultural production practices that we have planned in the Beltsy, Orhei and Cahul regions in which Moldovan scientists will be looking at improved management of nitrogen in cropping systems using principles that will be discussed in this session tomorrow.

- The session on the impact of chemical pollutants and risk assessment has direct implications for our collaborative efforts to introduce concepts and methodologies in environmental risk decision making to Moldova's scientists, decision-makers and the public.
- The session on ecological policy, law, education and training is most relevant to the EPT program activities in educational outreach for environmental awareness and consensus building, including efforts to introduce risk assessment curriculum into Moldova's university system.
- And Wednesday's session on environmental control and monitoring will have direct bearing on our collaborative efforts to promote improved techniques in chemical analysis and environmental monitoring.

It is an honor, as the country program manager of the Agency for International Development's environment program here in Moldova to welcome all of you to this symposium on ecological chemistry. I wish you all success in your discussions and I am sure you will all contribute to what should be a very productive and informative conference. Thank you.

**Final Document**  
**International Symposium on Ecological Chemistry**  
**Chisinau, October 1-4, 1995**

The first International Symposium on Ecological Chemistry was held in Chisinau, Moldova on October 1-4, 1995. More than 150 participants from Austria, Belarus, Germany, Hungary, Italy, Kazakhstan, Moldova, The Netherlands, Romania, Russia, Switzerland, Ukraine, and the United States of America attended.

Ecological Chemistry is a new environmental discipline that focuses on the relationship between chemical events at the molecular level and environmental processes, particularly as related to human activities. Understanding molecular processes associated with the degradation of the environment, one of the problems facing mankind in the 20th century, will help in remediation efforts and prevention of future contamination, thereby safeguarding human health and the environment.

Seven plenary lectures, 47 oral presentations, and 89 posters were presented at the symposium. A special exhibit of environmental equipment "Ecotech-95" was held by firms representing Belarussian, Moldovan, Russian and Ukrainian manufacturers.

Several topics were highlighted at the symposium:

- self-purification of natural waters
- secondary pollution
- biotic and abiotic processes in soils
- methods and means of environmental regulation and management
- education in ecological chemistry
- engineering methods for treatment of potable water, waste water, industrial gases and dust
- long-term impact of chemicals in a changing environment
- risk assessment and risk management

Interesting presentations and lively discussions were heard during the symposium, the dinners, and at the Ecotech-95 exhibition.

The participants of the Symposium have made the following recommendations:

1. To organize a regional ecological chemistry society that meets once a year in one of the countries of its members for one or two days to exchange scientific research results and to discuss risk assessment, risk management, and environmental policies relevant to ecological chemistry.
2. To publish a quarterly newsletter for its members that would keep them informed of important developments and opportunities in this field.

3. To form links to international societies, particularly in Europe, that are relevant to the field of ecological chemistry and with whom contact would further the interests of the regional ecological chemistry society.
4. To foster educational opportunities for students, postgraduate students, and professionals in ecological chemistry and to provide access to research facilities in the members' institutions.
5. To inform members of visits to the region by foreign scientists in order to ensure that the broadest possible audience can establish contacts and take advantage of the opportunities to exchange ideas and to advance education.
6. To encourage their governments to reanalyze financial priorities to promote protection of human health and the environment.

Acknowledgments. The participants gratefully acknowledge the financial and organizational support of:

United States Agency for International Development  
European Environmental Research Organization  
Gesellschaft für Technische Zusammenarbeit  
Agency on Industrial Property Protection  
State University of Moldova  
Ecological Association "Terra Nostra," Moldova  
"Ecoservice" Center for Ecological Research and Projects, Moldova  
Chisinau Municipal Administration  
Trade Union of Chemical Industry Workers, Moldova.

Tentative program

Sunday, October 1.

9 00 - 14 00 Registration in Hotel National  
14 00 - 14 30 Welcome

Plenary meeting.

14 30 - 14 45 J. Holderbaum (USA) "Overall on EPT Moldova project".  
14 45 - 15 05 G. Duca (Moldova), "Ecological chemistry".  
I. Scurlatov (Russia)  
15 10 - 15 55 G. Hekstra "Delayed effects of pollutants in soils and  
(The Netherlands) sediments: understanding and handling of  
chemical time bombs in Europe".  
16 00 Coffee break  
16 30 - 16 50 T. Rakitskaya, A. Ennan, "Ecological catalysis: theoretical and practical  
(Ukraine) aspects"  
16 50 - 17 10 J. Malina (USA) "Environmental engineering and management  
of ecosystems - application of biological,  
chemical and physical processes in waste  
treatment".  
17 10 - 17 30 J. Klausen, "Abiotic reactions of organics in soils and  
P. Schwarzenbach aquifers".  
(Switzerland)  
17 30 - 17 50 P. Lupino (Italy) "Water management resource".  
17 50 - 18 00 Discussion  
18 00 Excursion at the ecological museum  
19 00 Dinner.

Monday, October 2.

Room A. A1. Natural self-purification processes.

Chairmen: A. Sychev, A. Purnal, Iu. Scurlatov

9 00 - 9 15 Iu. Scurlatov, "Modern performances about processes of  
E. Shtanun (Russia) natural waters chemical self-purification".  
9 20 - 9 35 A. Sychev, V. Isac "The role of ferryl complexes in the natural  
(Moldova) oxidation processes".

9.40 - 9.55 G. Frumin, S. Slotina, "Quantitative relationships between biochemical  
Y. Kulicheva (Russia) oxygen demand and chemicals structure".  
10.00 - 10.15 N. Kucherenko "The role of hydrosphere surface microlayer in  
(Ukraine) the processes of heat - mass exchange and self -  
clarification in the hydrosphere - atmosphere  
system".  
10.20 - 10.35 V. Ropot (Moldova) "Aspects of modern state and problems of water  
quality in the Republic of Moldova".  
10.40 - 10.55 Gy. Lakatos, M. Kiss "Inorganic chemical composition of reed and its  
(Hungary) periphyton"  
11.00 Coffee break  
11.30-11.45 A. Purnal (Russia) "Oxidation of S(IV) in the troposphere"  
11.50 - 12.05 I. Siminceanu "Water contamination by pesticides"  
(Romania)  
G. Duca, M. Neamtu  
(Moldova)  
12.10 - 12.25 G. Tlepieva, "Influence of temperature at purification of air  
U. Shindler, from ammonia by modified sulfurous coals".  
A. Samurzina  
(Kazakhstan)  
12.30 - 12.40 Discussion  
12.40-13.30 Poster session

Room B. A2. Transport and fate of pollutants in ecosystems.

Chairmen: G. Hekstra, Gh. Jigau

9.00 - 9.20 V. Shnaidman, "The atmospheric transboundary transfer and  
A. Tarnopolskii turbulent exchange modelling for environment  
(Ukraine) protection problem".  
9.25 - 9.40 N. Myrlian (Moldova) "Transport of heterogeneous pollutants inside forest  
reservation".  
9.45 - 10.00 N. Pavlenko (Russia) "Features of the dynamics of pollution condition  
of the near Danubian lakes".

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10.05 - 10.20	P Linnik, N Chubar (Ukraine)	" The coexisting forms of chromium in the Dniepr reservoirs".
10.25 - 10.40	V Bessonova, T Peresipkina, L Fendjur (Ukraine)	"Heavy metals in the "plants-soil" system".
10.45 - 11.00	J. Westall (USA)	"Use of cationic surfactants to modify soil surfaces to promote sorption and retard migration of Hydrophobic organic compounds"
11.00	Coffee break	
11.30 - 11.45	S Kozlova (Ukraine)	"Mercury in bottom sediments of the Black Sea".
11.50 - 12.05	C Mikhailescu, I Holdus, G Gylca (Moldova)	"Human pressure increasing and natural hazards manifestation in Moldova during last centuries".
12.10 - 12.25	G Jigau (Moldova)	"Self-purification elements of soil-ground waters".
12.25 - 12.40	V Bulakhov, A Mikhayev, A. Pakhomov, A. Reva (Ukraine)	"Mouse-like rodents digging activity effect on cadmium accumulation and migration in the flooded oakeries in the steppe zones of Ukraine".
12.40 - 13.30	Poster session.	
13.30	Lunch.	
15.00	Exhibition opening at the "Moldexpo" V. Babii, "Moldexpo", director V. Ciurmac, vice-minister of Industry	

#### B.1 Environmental engineering

Chairmen: V. Covaleov, G. Malina, M. Macoveanu

16.00 - 16.20	G Bortone (Italy)	"Advanced methods of municipal waste water purification".
16.20 - 16.35	C. Cosma, A. Ballo, M. Nicolau (Romania)	"Catalysis in the wastewater treatment".
16.40 - 16.55	V. Covaleov (Moldova)	"Regulation of phase-dispersive and structural transformations of sediments in the processes of multicomponent waste-water electrochemical purification".
17.00 - 17.15	A. Maichenko (Ukraine)	"Sulfuric acid recuperation technology".

17.20 - 17.35	V. Dieninis, D. Kauspediene, M. Salkauskas, D. Kintene (Lithuania)	"Synthesis of anticorrosive colouring agents from utilized lead-acid cells and solutions containing chromium (VI)".
17.40 - 18.00	I. Cretescu, M. Macoveanu (Romania)	"Electrochemical recuperative purification of waste waters with metallic ions"
18.00 - 18.30	Discussion	
19.00	Concert of folklore music	
20.00	Dinner	

#### Tuesday, October 3

#### Room A. A.3 Remedial measures to degrade or immobilise pollutants chemically or biologically.

Chairmen: V. de Lorenzo, V. Lungu

9.00 - 9.20	V. de Lorenzo, (Spain)	"Designing recombinant Pseudomonas for biodegradation of aromatic pollutants".
9.25 - 9.40	L. Sirenko, P. Klochenko, A. Sakevich, S. Bepalko (Ukraine)	"The participation of algae in the circulation of nitrogen in fresh waters".
9.45 - 10.00	N. Kovalyova, V. Medinets, (Ukraine)	"The role of microorganisms in self-purification from pollution and self-restoration of marine environment natural quality".
10.05 - 10.20	C. Zanoaga (Romania)	"Role of the redox state in the formation of the biological quality of natural waters".
10.25 - 10.40	V. Mazo, J. Gmshinsky, S. Zorin (Russia)	"Oxidative injury of mucosal barrier to macromolecules and possibilities of its dietary correction".
10.45 - 11.00	Discussion	
11.00	Coffee Break	
11.30 - 11.45	V. Petrouchenko (Ukraine)	"The possible pathways of the gaseous pollutants immobilization and degradation with participation of plant biomembranes".

11.50 - 12.05	V.Sidenco, E.Suzonova (Ukraine)	"Studying of processes of degradation of separate chemical contaminants in ecosystems (experimental and natural observations)"
12.10 - 12.25	U.Popova, O.Grigorjan, V.Oleneva, A.Kozlovsky, L.Mazo (Russia)	"Bioactive food additions in the treatment of patients living in unfavourable ecological region".
12.30 - 12.45	V.Belov, A.Ivanenko V.Petrouchenko, (Ukraine)	Thermodynamic character of the biosystem resistance to the chemical pollution stress and the modelling of the pollutants transfer in the environment".
12.50 - 13.10	Discussion	
13.10 - 14.00	Poster session	

Room B. A.4 Impact of chemical pollutants and risk assessment.

Chairmen: Z. Annau, P. Gusac

9.00 - 9.20	Z. Annau (USA)	"Risk assessment: the case of copper sulfate".
9.25 - 9.55	G. Hekstra (The Netherlands)	"Ecological sustainability of the use of chemicals"
10.00 - 10.20	V. Petrosian, E. Milaeva (Russia)	"Ecotoxicology of the organometallic compounds".
10.25 - 10.40	B. Melnic (Moldova)	"The ecological pollutants and reproduction factors".
10.45 - 11.00	G. Bulbuc, G. Tabarna (Moldova)	"Environment and cancer: relations between chemi- zation in agriculture and cancer of the upper aerodigestive tract in men and women".
11.00	Coffee break	
11.30 - 11.45	A. Ranjitsingh, M. Haniffa, C. Padmalatha (India)	"Impact of organophosphorus pollution on the energy budget of the snail <i>Indoplanorbis Exustus</i> ".
11.50 - 12.05	T. Vasilyeva, N. Panchenko, N. Vasilyeva (Ukraine)	"Genotoxic estimation of water and soil quality by biotesting methods".

12.05 - 12.20	S. Yufit (Russia)	"The estimation of chemical danger arising from a puncture of sunk chemical munitions".
12.20 - 12.35	N. Opopol, R. Korobov (Moldova)	"Exposure to the toxic agrochemicals and the health problems of rural population".
12.35 - 12.50	O. Butusov (Russia)	"Dose-effect forest ecosystem investigations around Karabash copper smelter (South Ural)".
12.50 - 13.05	S.K. Ray	"Electronic characterization of toxicant structure and its role in risk assessment model"
13.05 - 13.20	Discussion	
13.20 - 14.00	Poster session.	
14.00	Lunch	

Room A. A.5. 6 Round table on Ecological policy, law, education and training.

Chairmen: G. Rusnac, A. Capchelea, G. Bogdanovscki

15.00 - 15.15	G. Rusnac, N. Cojuhari (Moldova)	"Aspects of the ecological policy in the Republic of Moldova".
15.15 - 15.30	A. Capchelea (Moldova)	"The legislative base for the environmental protection of the Republic of Moldova".
15.30 - 15.45	S. Stepanenco, V. Shnaidman, A. Tamopolsky (Ukraine)	"Training of ecology specialists in Ukraine"
15.45 - 16.00	G. Duca, Gh. Jigau, V. Lungu (Moldova)	"Training of ecology specialists in Moldova".
16.00 - 16.15	N. Volik (Ukraine)	"Formation and development of the national ecological doctrine in Ukraine"
16.15 - 16.30	V. Menshikov, E. Churakova (Russia)	"The ecological education of chemists in Moscow State University".
16.30 - 16.45	Y. Zagrai, N. Brazhenko, E. Zemlyak (Ukraine)	"About ecological training in the Technical University".
16.45 - 17.00	B. Brach (Russia)	"Specialization "Chemistry of environment" in Syktivkar University".

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17 00 - 17.15	A. Purnal (Russia)	"Experience in teaching the ecological chemistry teaching in the Higher Chemical college of Russian Academy of Sciences and Moscow Physico-Technical institute".
17.15 - 17.30	G. Bogdanovskii (Russia)	"Chemical -ecological education as the part "stable development" concept".
17.30 - 17.45	S. Kuznetsov Radvan Ali (Moldova)	"Training personal experienced in ecology".
17.45 - 18.00	U. Heitman (Germany)	"The development of the environmental movement".
18.00 - 18.15	M. Dutsu (Romania)	"Role of law in the protection and conservation of the environment".
18.15-18.30	V. Ungureanu, A. Ciunac (Moldova)	"Ecological education of specialists in agriculture".
19.00	Concert of classical music (Int. M. Munteanu)	
20.00	Reception	

Wednesday, October 4.

Room A. B.1 Environmental engineering.

Chairmen: A. Ennan, M. Macoveanu.

9.00 - 9.20	A. Ennan, T. Rakitskaya, A. Bandurko, E. Vasileva, D. Bolshakov, I. Granatjuk (Ukraine)	"Filter gas- and dust-protected respirator "Snyezhok- GP- ozone E".
9.25 - 9.40	V. Petrenko, I. Saltanovskaya, A. Molin, A. Dikusnir (Moldova)	"Application of electrocoagulation for purification of working media after electrochemical and electroerosion treatment".
9.45 - 10.00	M. Bologna, Y. Pyrganu, T. Stepurina (Moldova)	"Principles of new electrotechnologies in milk industry".

10.05 - 10.20	M. Cojan, A. Simion, E. Hnatiuc (Romania)	"Frequency ferromagnetic tripler used in E.C. glidar supply".
10.25 - 10.40	D. Ungureanu (Moldova)	"Anaerobic fermentation of biodegradable organic pollutants".
10.45 - 11.00	A. Romanov, V. Matveevici, V. Sorokina (Moldova)	"The waste water purification from colours by electrochemical generated sorbents".
11.00 - 11.15	G. Mihaila (Romania)	"On adsorption capacity of clinoptilolite-containing volcanic tuff against sulfur dioxide".
11.15 - 11.30	Discussion	
11.30	Coffee break	

Room B. B.2 Environmental control and monitoring

Chairmen: L. Stokes, P. Chetrus, I. Siminiceanu

9.00 - 9.20	L. Stokes (USA)	"The role of chemical analysis in environmental risk assessment".
9.25 - 9.40	S. Iliescu, E. Pena, I. Lucaciu, N. Curcaneanu, E. Liculescu, A. Panait (Romania)	"Hydrochemical and hydrobiological study of Prut river (Romanian section) during winter- fall time 1995".
9.45 - 10.00	V. Korzh (Russia)	"Environmental biogeochemical standards for the study marine ecosystems".
10.05 - 10.20	F. Chmilenko, L. Baklanova, L. Sidorova, A. Baklanov (Ukraine)	"Control of the content of the toxic and bioactive microelements in sodium chloride deposits and brines".
10.25 - 10.40	V. Ivanenko, V. Belov, V. Petrouchenko M. Isakov (Ukraine)	"Calculation of the oil carbonhydrogens extrusion outside from the production territory by the simulated rain result".

10.45 - 11.00 G. Duca, G. Tabarna, "Analysis of nitrosoamines contents in meat  
M. Gonta, foodstuffs".  
I. Subontin,  
I. Mardari  
(Moldova)  
11.00 - 11.15 K. Babov, "Main directions for ecological and geochemical  
E. Nikipelova estimation of the state of mud deposits".  
(Ukraine)  
11.15 - 11.30 Discussion  
11.30 Coffee break  
12.00 Symposium closing  
13.00 Lunch  
15.00 Departure

**Address of the organizing Committee:**

State University of Moldova  
Mateevici str. 60  
277009, Moldova, Chisinau  
tel. 3732-240043  
fax. 3732-240655 (237386)  
E-mail: root@ept.moldova.su

**Symposium address: "National" Hotel,  
Stefan cel Mare bd. 4, Chisinau.**

**Current account:**

International Naderlander Bank A. G.  
Vienna, Austria  
For Commercial Bank BANCOSIND  
Chisinau, Moldova  
No. 471-2768-01 (USD)  
In favour Duca Gh. No. 11087141

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S.M.B. Bankcoop, Chisinau, Moldova  
MFO 280101744, codul 700161044  
cont 40240013642 "Terra Nostra"

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**ANNEX 11**

**MOLDOVA TASK M4  
PROGRAM MANAGEMENT**

Annex 3B11-1

## **Task M4: Moldova Program Management**

### **I. OBJECTIVES**

The objective of this task is to undertake technical, financial, and administrative aspects of managing DO 9 work in Moldova.

### **II. PROGRESS TOWARD ACHIEVEMENT OF OBJECTIVES**

This task allowed CH2M Hill to hire the expatriate and Moldovan staff needed to implement the activities in the DO. The specific deliverables are a work plan, monthly reports and trip reports. These are all be provided in a timely manner as can be seen in the Appendix, Chronology of Deliverables Completion, as of October 1995. This report and tracking system allows one to easily see the progress being made on each of the tasks.

### **III. PROJECT IMPACT**

The CH2M Hill Country Director for Moldova, Dr. James Holderbaum, has substantial delegated authority from the Regional Director and is able to implement activities with more direct support from his home office. This latitude greatly enhances the responsiveness of CH2M Hill to local conditions and lends itself to greater involvement of local participants, who feel they can directly influence project events without waiting for approval from an unknown source. Our discussion with CH2M Hill's representative indicated that this freedom to operate, with appropriate overall guidance from his superior in Kiev, had helped keep project activities on track and provided him with the most current information on the status of implementation activities.

The contractor has submitted a detailed work plan for each task, which has not yet been approved by USAID. However, the work plan is used to manage and schedule work and to organize information for reporting purposes. The contractor is submitting reports on the basis of the timing in the work plan.

### **IV. RECOMMENDATIONS**

None.

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**APPENDIX**

**ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT  
MOLDOVA ENVIRONMENT PROGRAM  
CHRONOLOGY OF DELIVERABLES COMPLETION (October, 1995)**

	Task M1 Environmental Health Risk	Task M2 Farm Environmental Management Demonstration	Task M3 Educational Outreach Campaign	Task M4 Program Management
	<b>SUB TASKS AND DELIVERABLES (D)</b>			
	M1.1 Identification of Potential Trainees  M1.2 ERDMP Training Program D1 - Workshop Design Report D2 - Workshop Delivery D3 - Workshop Summary Report  M1.3 Study Tour D4 - Study Tour Outline D5 - Study Tour Summary Report	M2.1 Capabilities Assessment D6 - Ag Capabilities Report D7 - Analytical Capabilities Report D8 - Preliminary Demonstration Design Report  M2.2 Agricultural Demonstration Results D9 - Ag Demonstration Design Report  M2.3 Demonstration Report D10 - Demonstration Final Report  M2.4 Technical Workshops D11 - Technical Workshop Report  M2.5 Practical Training Workshops D12 - Practical Workshop Report  M2.6 Monitoring Equipment and Supplies D13 - Monitoring Needs Report	M3.1 Planning Workshops D14 - Planning Workshop Report  M3.2 Field Tours D15 - Field Tour Report  M3.3 American-Moldovan English Summer Camp: Ecology Program D16 - English Summer Camp Report  M3.4 Ecological Chemistry Conference D17 - Conference Report  M3.5 Publications D18 - Publications/brochures  M3.6 University Course Outline and Materials D19 - University Course outlines D20 - University Course description/materials	M4.1 Moldova Project (Country) Manager  M4.2 Regional Finance Director  D21 - Work Plan D22 - Monthly Reports D23 - Trip Reports
<b>January</b>				EPT/Moldova Field Office established Monthly Report (D22.1)
<b>February</b>	EPT/Moldova Technical Advisory Committee and Working Groups established			Draft Work Plan submitted to USAID/Kyiv Monthly Report (D22.2)
<b>March</b>				Work Plan approved by USAID/Kyiv Monthly Report (D22.3)
<b>April</b>				Monthly Report (D22.4)

(D"#") denotes a deliverable; (I) denotes an measurable indicator of activity impact

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	Task M1 Environmental Health Risk	Task M2 Farm Environmental Management Demonstration	Task M3 Educational Outreach Campaign	Task M4 Program Management
<b>May</b>	ERDMP workshop design trip completed (D1) Trip Report (D23.1)	Field Demonstration design trip completed (D8) Ag Capabilities Report / recommendations (D6) Analytic Capabilities Report/recommendations (D7) Trip Report (D23.2) Demonstration Sites Selected Equipment Recommendations approved by USAID/Kyiv	Educational Outreach Planning Workshops delivered and report initiated (D14)	Work Plan approved by AID/Washington (D21) Monthly Report (D22.5)
<b>June</b>		Revisions to equipment recommendations approved by USAID/Kyiv Site Selection approved by AID (D8 supplement) Preliminary Design Report (D8) Trip Report (D23.3)		Revisions to Delivery Order 09 scope of work begins Monthly Report (D22.6)
<b>July</b>	Study Tour Outline (D4) Study Tour /Summary Report prepared (D5) ERDMP Workshop delivered (D2) Trip Report (D23.4) ERDMP Workshop Summary Report (D3)	Equipment Recommendations approved by AID/WDC	English Summer Program delivered and report prepared (D16) Trip Report (D23.5)	Program extension recommended Trip Report (D23.6) Monthly Report (D22.7)
(I) Television, radio and newspaper coverage				

(D"#") denotes a deliverable; (I) denotes an measurable indicator of activity impact

	Task M1 Environmental Health Risk	Task M2 Farm Environmental Management Demonstration	Task M3 Educational Outreach Campaign	Task M4 Program Management
<b>August</b>	(I) Computer workshop delivered and delivered (I) DEP creates ERDMP Steering Committee (I) Guidelines on water sampling requested and prepared (I) DEP establishes Office for Public Information	Agricultural Technical Workshop delivered (D11) Trip Report (D23.7) First of computers and software delivered (I) Computer workshop requested and delivered (I) National Research Council Twinning Program proposal prepared	(I) \$70,000 Soros grant to environmental NGO to purchase summer camp facilities that formalizes a environmental summer camp for Moldova youth	Revised Delivery Order 09 approved  Work Plan revisions begin Monthly Report (D22.8)
	(I) Television, Radio, Newspaper coverage			
<b>September</b>	(I) Republican Hospital Library establishes access to U.S. National Medical Library databases via e-mail	Field demonstrations initiated		Monthly Report (D22.9) Trip Report (D23.8)
	(I) Television and Newspaper coverage			
<b>October</b>	(I) ERDMP terminology drafted for Ministry of Education approval (I) Manual on Risk Assessment translated and submitted to DEP, Ministry of Health, and Ministry of Education for review	Ag Demonstration Design Report (D9)	Ecological Chemistry Conference delivered and Conference Report prepared (D17) Trip Report (D23.9) University course outlines drafted (D19)	Monthly Report D22.10
	(I) Television, newspaper, radio coverage			

(D"#") denotes a deliverable; (I) denotes an measurable indicator of activity impact

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**ANNEX 12**

**MANAGEMENT**

**CH2M HILL'S WEST NIS REGIONAL OFFICES**

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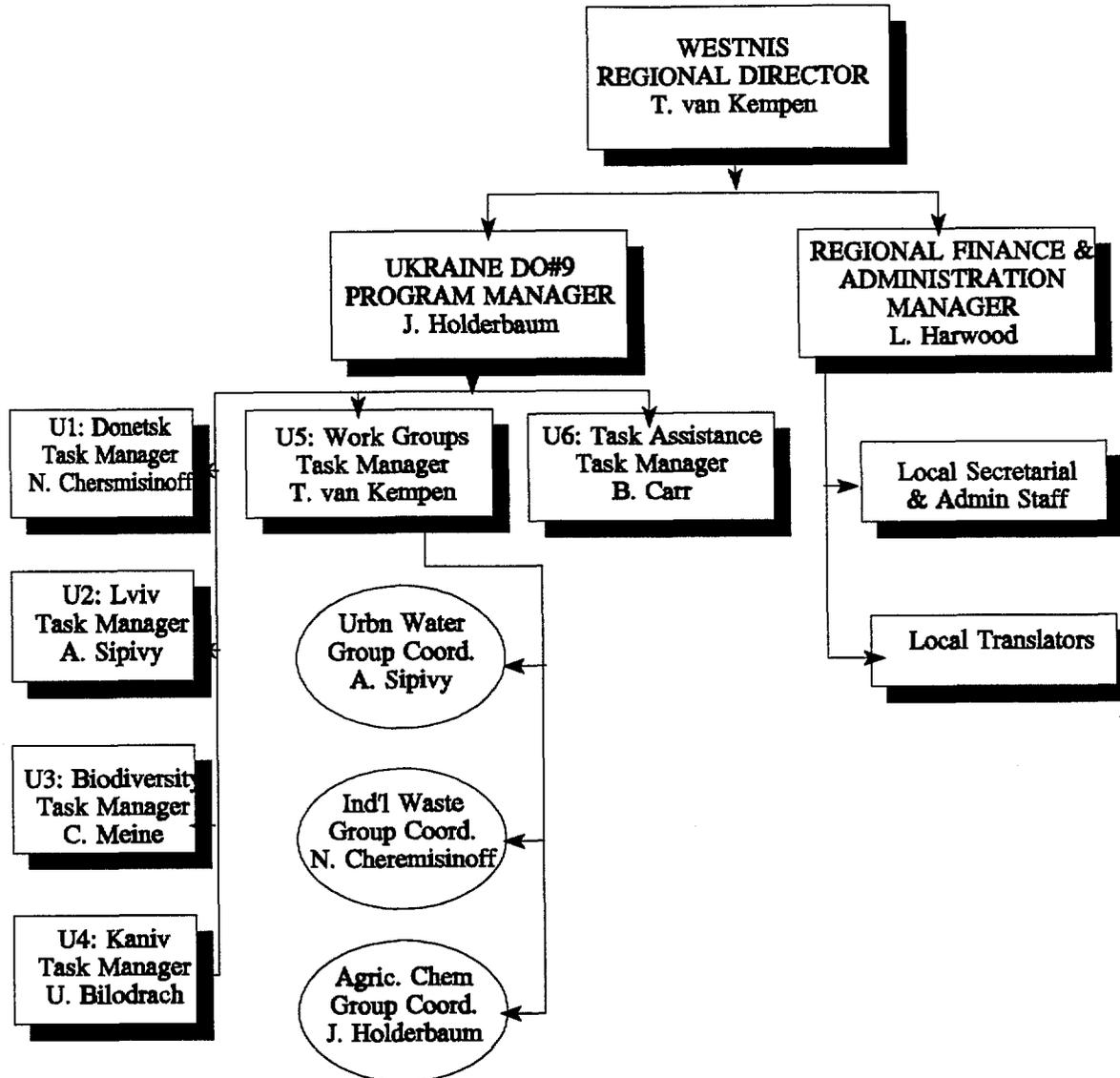
# MANAGEMENT

Management charts appear on the following pages.

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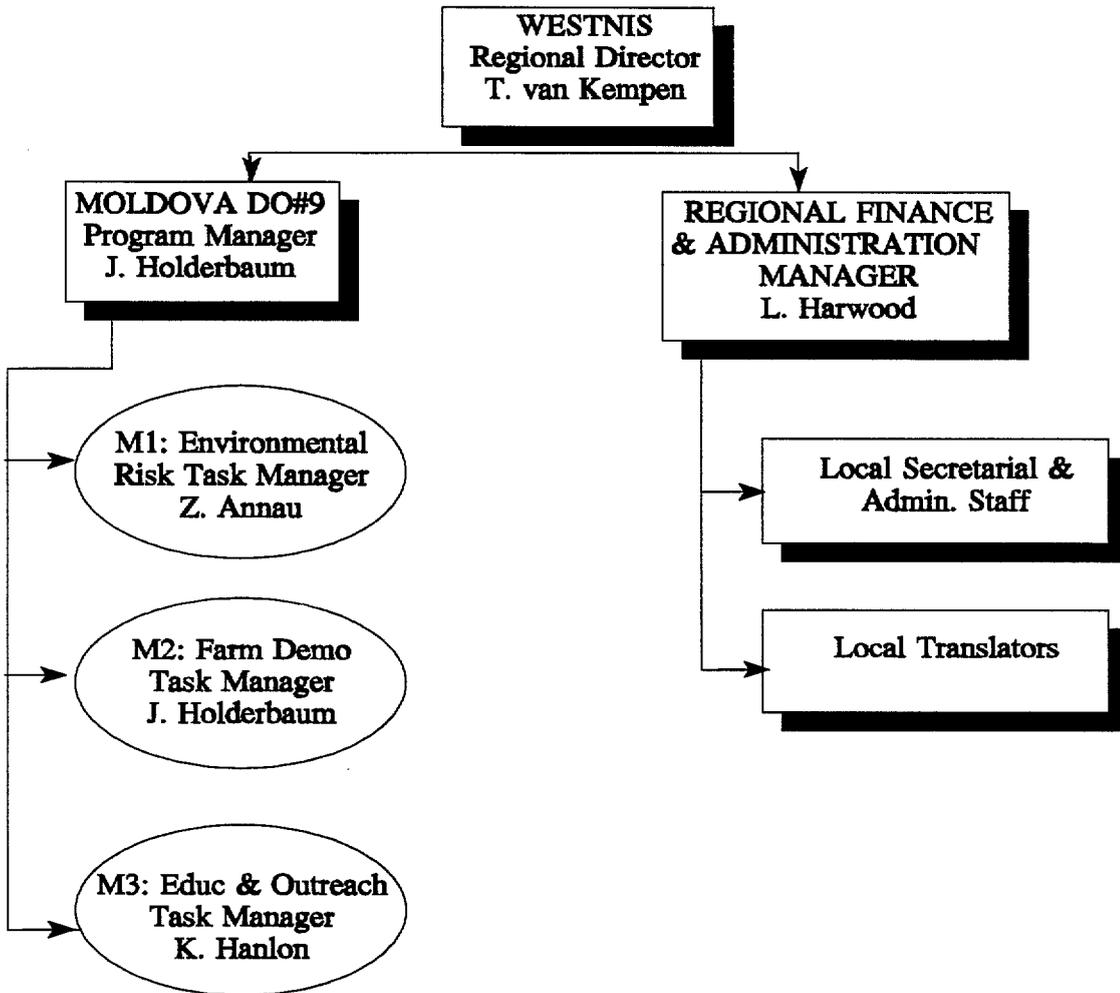
**DO #9 Ukraine  
Management Organization Chart**



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**DO#9 Moldova  
Management Organization Chart**



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**ANNEX 13**

**CONTACTS**

**PEOPLE INTERVIEWED BY WEST NIS EVALUATION TEAM**

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# CONTACTS

List of people interviewed by the WEST NIS evaluation team appear on the following pages.

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**Contacts — LVIV**

<b>Organization</b>	<b>Person interviewed</b>	<b>Topic discussed</b>
Independent consultant	Ms. Jannelle Daane, Former AAAS USAID-Kiev employee	The project history
CH2MHill	Mr. Ties Van Kempen, Regional Director Mr. Kris Buros, Vice President Mr. Alex Sipivy, Task Manager	The project implementation
Lviv Vodokanal	Mr. Mikola Odukha, Director	His understanding and involvement in the project
City Vodo Inspectors	Mr. Kenisavich, Manager	His understanding and involvement in the project
PADCO	Mr. Michael Sinclair, Program Manager Mr. Konstantyn Trachencko, Communal Services Reform Program Specialist Mr. Anatoliy Kopets, Sr. Program Specialist	USAID projects coordination and interaction
RTI	Mr. David Bauer, Resident Technical Advisor to Lviv city Administration	His vision of the EPT project
USAID-Kiev	Ms. Lea Swanson, Director Environmental Development Ms. Dona Mularkey, AAASF	Project management Project impact USAID- mission role in the project

**Contacts — KIEV**

<b>Organization</b>	<b>Person interviewed</b>	<b>Topic discussed</b>
CH2MHill	Mr. Ties Van Kempen, Regional Director, Dr. Andrey Demydenko, Deputy Regional Director Mr. Ulian Bilotkach, Task Leader, Staff	Project update Project management Project impact Project implementation and impact
Ministry of Environmental Protection and Nuclear Safety	Dr. Kovba, Head of Laboratory of Water Control Ms. Natalya Movchan, Deputy Head of the Dnipro- river Department Mr. Alexandr Mazurkevich Dnipro Problems Department Head Ms. Valeriy Serenko, Main Ecological Inspection Deputy Head	Their understanding of the project, Kaniv Reservoir problems
Consultant	Ms. Natalya Gordienko, Former USAID employee	Her perception of the project
Cybernetic center, Ukrainian Academy of Science	Dr. Mark Geleznyack, Head of the Department of Mathematic Modeling of Water	His role in the project
USAID-Kiev Mission	Ms. Lea Swanson, Director, Environmental Development Ms. Dona Mularkey, AAASF Mr. Darian Diachok, Energy Advisor Mr. David Sprague, Deputy Director	Progress toward achievement of objectives of the project

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**Contacts — DONETSK**

<b>Organization</b>	<b>Person interviewed</b>	<b>Topic discussed</b>
Donetsk Oblast Office of the Ministry of Environmental Protection	Mr. Kurilenko, head of the Office	Project understanding, expectations
Donetsk Regional Council	Mr. Andrey Kluev, Deputy Chairman	Project understanding, expectations
Enakievo Metallurgical plant, Joint Stock Company	Mr. Yuri Orobtssev, First deputy Chairman of Board	Project understanding, expectations

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**Contacts — CHISINAU**

<b>Organization</b>	<b>Person interviewed</b>	<b>Topic discussed</b>
Department of Environmental Protection	Ms. Margareta Petrushevshi, Head of the International Relations Division Mr. Corneliu Busuioc, Director of the Office of Public Relations	DEP's vision of the project and their expectations from the project
CH2MHill	Dr. James Holderbaum, Field Manager and his staff	Project implementation
Research Institute of Field Crops "Selectia"	Dr. Boris Boinchan, Research Director	Agricultural problems and related health issues, project implementation, expectations
State Medical University	Dr. Pavel Gusac, Associate Professor Dr. Nicolae Opopol, Professor	ERDMP Workshop, University course outline, project implementation in general
Joint-stock company "Moldova"	Mr. Victor Negutsa, Director Mr. Ion Hagi, Chief Agronomist	Agricultural problems and related health issues, project implementation, expectations
Laboratory of Prognosis and Math Modeling	Dr. Vasile Catana, Head of the Lab	Agricultural problems and related health issues, project implementation, expectations
Institute Pedology Agrochemistry and Soil Improvement	Dr. Valentin Ciubotaru, Vice Director	Agricultural problems and related health issues, project implementation, expectations
Institute of Biological Methods and Plant Protection	Dr. Vasile Voineac, Deputy Director	Agricultural problems and related health issues, project implementation, expectations
Moldova State University, NGO "Terra Nostra"	Dr. Gheorghe Duca, Head of the department of Ecological and Industrial Chemistry Ms. Olga Kovalevskaya, NGO's Manager	Project implementation, project impact, International Chemistry conference

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**Contacts — WASHINGTON**

<b>Organization</b>	<b>Person interviewed</b>	<b>Topic discussed</b>
USAID	Melody Bacha, Acting Chief, ENI/EEUD/ENR Carl Mitchell EPT/COTR Marshall Fisher EPT/WNIS Coordinator	Briefing on EPT/WNIS activities and USAID involvement. Debriefing on team findings and recommendations.
CH2M Hill	Ms. Jean Shaikh, Deputy Project Director	Comments on the draft report

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