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B. Physical Setting

The Senegal River is the second largest river in West Africa. It is over 1,800 kilometers long, drains a watershed of about 290,000 square kilometers, and produces an annual average flow of over 20 billion cubic meters. The river basin occupies over 14 percent of the area of Senegal, almost 13 percent of Mali and Guinea, and about 7 percent of Mauritania. While 825 kilometers or about 45 percent of its length forms the border between Senegal and Mauritania, almost 55 percent, or 155,000 square kilometers, of the drainage area is in Mali and about 50 percent of the streamflow originates in Guinea.

Geographically, the basin is divided into three regions. The lower 200 kilometers from the ocean to Dagana comprise the Delta. It is a completely flat area with seawater intruding up the full length of the river reach at low river flows. The next 600 kilometers from Dagana to Bakel is the Valley. It is an alluvial plain, 10 to 20 kilometers wide, surrounded by semi-desert. The upper 1,010 kilometers constitute the Upper Basin. This area of mountains and hills provides almost all of the flow of the river.

The Senegal River is formed by the junction of the Bafing and Bakoye Rivers, about 1,060 kilometers upstream from the Atlantic Ocean. The principal tributaries, Bafing, Bakoye and Faleme, together with the minor tributaries Kolombine and Karakoro, supply about 830 cubic meters per second of flow to the Senegal River, or practically all the flow in that stream. No significant flows are added to the Senegal below its junction with the Faleme, some 825 kilometers upstream from the ocean. By the time the river reaches Bakel, about 30 kilometers below the Faleme junction, the flow has been reduced by losses to about 780 m³/s. (This apparent loss of 50 m³/s may also be due to measuring and estimating errors.) While the rains in the upper watershed occur in the April-October period, the floods in the lower reaches of the river occur in the July-December period. The highest monthly flow generally occurs in September when the average for the month at Bakel reaches about 3,500 m³/s. By May, the lowest month, the average flow has diminished to about 10 m³/s.

Climatologically, the basin goes from semi-arid in the north to tropical in the south. Average annual rainfall varies from 250 millimeters in the north to 2,000 millimeters in the south. In the north

the rainy season lasts only 3 months, July-September, while in the south it occurs in the April-November period. Generally, cool and humid trade winds (Alizes) blow in from the coastal regions, however about in March the hot, dry winds of the Harmattan begin from the east. These result in maximum monthly temperatures, averaging about 33°C in May. Minimum monthly temperatures occur in January averaging about 23°C. Average annual values of relative humidity are generally from 50 to 60 percent, but monthly values range between 10 and 90 percent. Annual potential evaporation varies from 1,500 millimeters in the Guinean area to over 3,000 millimeters in the north of the basin. The effect of this climatic pattern is that in the upper basin the evaporation rate is approximately 1.3 times the rainfall rate, while in the lower basin the evaporation rate is approximately 12 times the rainfall.

C. Human Resources

Approximately 1.6 million people occupy the Senegal River Basin: 809,000 in Mali; 300,000 in Mauritania; and 512,000 in Senegal. As soon as hydro-agricultural development gets underway, and if such development can accommodate livestock, the basin can readily absorb an additional 700,000 persons. The population growth rates within the basin, last measured in 1972, indicated a 2.3 percent growth in the Mauritanian portion; 2.4 percent in Mali; and 0.7 percent in Senegal. It should be noted that these are net growth rates, having taken into account the exodus of about 40 percent of the total active male population (approximately 150,000 annually) to cities of foreign countries in search of jobs. The whole development of this river will be limited by this pattern of migration since it will require a more favorable proportion of active male population than is found at present.

The three major activities within the basin, agriculture, livestock and fishing, are totally conditioned by the availability of rain, river and ground water. In the past, average annual overbank flooding covers some 1.5 million acres, of which some 330,000 would be put in flood recession agriculture. An average annual yield of 500 pounds of sorghum per acre allowed a satisfactory subsistence for the population without any surplus to be stored. During recent drought years, flood recession agriculture was reduced to 37,500 acres. The precariousness of the equilibrium of life is demonstrated in this latter figure, with subsistence always being threatened by variations in rainfall and fluctuations in the flow of the river. Until at least the flow of the river can be regulated, insecurity will continue to drive a large part of the active male population to leave the basin.

D. Livestock

The Senegal River Basin is estimated to contain approximately 2,000,000 head of cattle and 4,750,000 head of sheep and goats. The livestock population of the basin doubled in the past 15 years with effective disease control programs and the digging of wells which allowed the use of previously unexploited pasture-lands. With the coming of the drought the basin was subjected to tremendous overgrazing pressures which has left it in a state of ecological degradation. The sparse vegetation in the lower two-thirds of the basin cannot rejuvenate under such pressure.

E. Fisheries

Prior to the recent drought an estimated 10,000 fishermen harvested between 40,000 and 50,000 tons of fish annually. Most of the catch is consumed locally as fresh fish, and thus constitutes an important source of protein in the diet of the peoples of the basin. About 5,000 tons in Senegal and 3,000 tons in Mauritania are dried and marketed elsewhere. Approximately 90 species of fish have been reported in the Senegal River.

II. Planning and Organization Within the Basin

A. Evolution of the OMVS and the Indicative Basin Plan

In Bamako in July 1963 the riparian states of Guinea, Mali, Mauritania and Senegal established the "Comité Inter-Etats pour l'Aménagement du Bassin du Fleuve Sénégal". The "Comité Inter-Etats" adopted a resolution stating that the general policy of development of the Senegal River Basin would have as its goals: agricultural development; the production of energy and industrial development; and improvement of the conditions of river navigation. The "Comité Inter-Etats" evolved into "L'Organisation des Etats Riverains du Fleuve Sénégal" (OERS) which existed through 1971, when, with the withdrawal of Guinea from that organization, the "Organization pour la Mise en Valeur du Fleuve Sénégal" (OMVS) was formed by the three remaining members.

In January 1970 the OERS Council of Ministers, after having analysed all studies of the basin completed until that time, decided that the fundamental first step in the integrated development of the Senegal River Basin would be the establishment of a regulated year-round minimal flow of 300 m³/s. In July 1972 the OMVS Council of Ministers reconfirmed that the first stage of the integrated development of the

Senegal River Basin is based on a regulated flow of the river at 300 m³/s, with the following major mainstream projects:

- 1) a hydroelectric regulating dam at Manantali on the Bafing tributary in Mali
- 2) the dam at Diama in the Delta to arrest salt water intrusion and provide water for irrigation
- 3) a river and seaport at St. Louis, Senegal and a river port at Kayes, Mali
- 4) the improvement of ports of call along the river (Rosso, Richard Toll, Dagana, Podor, Boghe, Kaedi, Matam, Bakel, Ambidedi) and of the river bed sills.

In January 1973 the OMVS Council of Ministers approved by resolution the principle of a mid-term program of action for the integrated development of the Senegal River Basin. It also established at that time national coordinating committees for the development of the Senegal River (Comités Nationaux pour la Mise en Valeur du Fleuve Sénégal), and decided to convene a meeting of prospective donor countries and organizations to solicit financing of the development program of the Senegal River Basin. As a preparatory step for this first Donors Conference, which was held in Nouakchott in July 1974, the OMVS with UNDP financing attempted to do a synthesis of the some \$10 million in reports and studies done on the basin. This synthesis was to establish a sequential order of priorities and serve as the analytical base for an Indicative Development Plan for the Senegal River. The French firm of Norbert Beyrard completed this synthesis just prior to the Nouakchott meeting, and it has since served as the principal point of reference (along with the Senegal-Consult Study of 1970, and the SOGREAHE Delta Dam and Mathematical Model Flow Studies of 1972) in discussing basin planning.

B. Proposed Development

As presented in the Beyrard report, the programs and projects for the integrated development of the Senegal River Basin will require 35 years (1975-2010) and about 850,000 million CFA (\$3.7 billion)^{1/} of investment to complete. The main goals of the proposed development are to improve the living standards in the three countries involved through greater agricultural production and to provide foreign exchange through agricultural and mining product exports. The principal programs proposed to achieve these goals include converting from flood recession agriculture in the basin to intensive double cropped irrigation agriculture, improving and increasing livestock production,

constructing agricultural processing plants, and expanding the mining and processing of iron, bauxite, and phosphates. Improvement of inland fisheries, forestry, and tourism is also proposed.

Key projects to be constructed in the medium term (to 1990) period would include a large upstream dam and powerplant at Manantali and a low, water control dam at Diama in the Delta. These structures would provide the water and energy needed for expanded agricultural and mining production and processing, and for the river control desired for improvement of navigation.

The 60-meter-high Manantali Dam on the Bafing River would impound 13,500 million cubic meters of water, sufficient to provide a firm water supply for (1) the irrigation of 428,000 hectares of land, (2) the maintenance of a riverflow of 300 cubic meters per second for navigation, and (3) the generation of an annual average of 800,000,000 kilowatt-hours of electrical energy. The powerplant would house eight units with a total generation capacity of 150 megawatts. The dam and three generating units would be constructed in the period 1978-1984.

The Diama Dam would have a normal water elevation of 2.5 meters and impound 310 million cubic meters. Its main functions would be to (1) prevent seawater intrusion, (2) provide a reservoir of fresh water, (3) supply water to the Lac de Guiers for municipal use in Dakar and to Lac R'Kiz for irrigation use, and (4) control flows to the Aftout es Sahel depressions for local irrigation use and for municipal use in Nouakchott. Construction of Diama Dam is planned for 1978-1980.

As water and energy needs increase, the longer term plans call for construction and two reregulating dams and powerplants on the Senegal River between Manantali Dam and Kayes. The first of these, Gounia, is projected to be needed about 1990, and the other, Felou, about 1995. Power generation at these sites is estimated at 600 and 400 million kilowatt-hours, respectively.

By 1990, Beyrard estimates that 158,500 hectares would be under irrigation in the basin. This would grow to 428,000 hectares by 2010. Agriculture processing plants are to be constructed paralleling the increased agricultural production growth. By 2010, needed processing plants should total about 224.

The mining industry is to be brought to full production by 1990. This would include development of iron ore deposits in Mali and Senegal, bauxite in Mali, and phosphates in Mauritania. The iron would be shipped in the form of ore and as pellets. By 1990, Mali and Senegal would each be producing 5 million metric tons of ore and of pellets. Alumina production is projected to reach 600,000 tons by 1982.

To move the mining and agricultural products to market economically, it is proposed that the Senegal River channel and river ports be improved. The plan calls for (1) dredging and rock clearing the river to Kayes to a depth of 1.6 meters by 1980 and to 2 meters by 1985, (2) improving the ports of St. Louis and Kayes by 1982, (3) constructing wharves at Kayar and the Aftout es Sahel by 1984, and (4) preparing other ports of call between 1980 and 2005. It is proposed that the Aftout es Sahel be used for transfer of the mining products rather than the lock at Diama Dam and the port of St. Louis. Where this leaves the justification for the lock and for improvement of the port of St. Louis is unclear.

OMVS MEDIUM-TERM PROGRAM
(Combined Fund Requirements)
(In Millions of Dollars)

	(1) Irrigation Investment	(2) Diama Dam	(3) Manantali Dam and Power System	(1)+(2)+(3) Combined Total	(4) Gouina or Gourbassi Alternative	(1)+(2)+(4) Alternative Combined Total
1976	8	1.5	3.0	12.5	1	10.5
1977	8	.7	3.4	12.1	1	9.7
1978	12	9.6	4.2	25.8	10	31.6
1979	16	12.8	7.1	35.9	20	48.8
1980	16	12.8	31.2	60.0	20	48.8
1981	16	9.6	39.5	65.1	8	33.6
1982	20		58.7	78.7		20.0
1983	20		57.4	77.4		20.0
1984	20		25.6	45.6		20.0
Totals	136	47.0	230.1	413.1	60	243.0

Figures include planning design, and construction costs but exclude interest during construction and cost of operation, maintenance, and replacement. Figures do not include possible escalation of costs in future years. Irrigation investment is based on \$ 4,000 per hectare.

C. Present Level of Planning

Major concerns of reviewers of the Beyrard report emphasized three areas of deficiency in presentation:

1. A training program to develop the large staff of technicians and managers who would be needed to plan, implement and operate the development programs;
2. A coordinating and managing organism to handle the complex machinery of program implementation;
3. Engineering and technical data to permit checking the accuracy of its premises, validity of its analysis and reasonableness of its conclusions and recommendations.

The Beyrard report, and to a lesser degree the other reports, did not clearly describe all of the physical facilities proposed to be constructed or the development programs to be implemented. Especially in the Beyrard report, it cannot be determined what some of the physical components of the development consisted of, what their dimensions and capacities were, how they were proposed to be operated, or exactly where they were to be located.

The Beyrard report emphasizes economic and financial analysis but is deficient on technical data in support of its proposals. If the needed technical data exist, they should be compiled and made readily available; if they do not exist, they need to be developed. During the data investigative period, OMVS organizational development, management and technical training of OMVS personnel, and agricultural (particularly agronomic) research is required.

The OMVS Conference of Chiefs of State is the highest decision making body ruling on questions of general policy. Its decision must be unanimous and they become binding obligations of the respective states. The Chairmanship of the Conference is rotated.

The next level is the three-man Council of Ministers which is comprised of one individual of ministerial rank appointed by each state. The Presidency is rotated on a 2-year basis. This body defines the priorities for development projects, authorizes the acceptance of loans and grants and apportions repayment obligations among the member states. Here too, actions must be by unanimous vote. The Council President is authorized to represent OMVS with respect to national and international loans and to negotiate and execute treaties within Council directives. Final decision on all matters beyond the policy and fiscal limitations of the Council must be made by the Conference of Heads of State.

At their third conference held in Nouakchott in December 1975, the Chiefs of State decided upon important amendments to the OMVS Charter aimed at a total restructuring of the organization, particularly its Secretariat. A High Commissioner's Office was created with broad executive powers delegated to it by the Council of Ministers. This in effect separated deliberative from executive functions. Although the Council of Ministers retains all of its former prerogatives regarding approval of programs, the High Commissioner now acts on its behalf with full negotiating powers between its two annual sessions.

At the same time, the Technical Division of the Secretariat was reorganized into four disciplinary Technical Directorates along functional lines, rather than maintaining individual sectoral sections. This is in recognition of the array and complexity of tasks outlined in the ten-year work program which has just been completed. The four new Directorates are:

1. Planning & Coordination - Concerns itself with the long range Master Plan for the integrated development of the whole Senegal River Basin; harmonization of individual national development plans with the Master Plan; studies of other basin development plans within the region. In addition appropriate sectoral, economic and trade studies will be undertaken as appropriate with a view to strengthening these relationships among member states.

2. Training and Human Resources - Will plan and address all manpower needs of the OMVS program including training of personnel for senior, middle-grade, and staff positions of the Secretariat; personnel required for the management and operation of all mainstream infrastructure; and coordinates all training required within the member countries for realization of irrigated agricultural projects.

3. Program and Finance - Will plan and execute the overall Development Budget; execute and monitor all contracts; and manage all accounts. The foregoing activities will be carried out along guidelines outlining relationships with the OMVS member states and in close liaison with all sources of financing.

4. Regional Infrastructure - Centralizes all tasks associated with the studies, construction, management and operation of:

- a) the Diama and Manantali Dams
- b) hydroelectric power plants and transmission of electrical power
- c) all international and river ports and navigation in the mainstream channel.

In addition to this total restructuring of the OMVS Secretariat, the OMVS Chiefs of State in December 1975 decided upon the creation of two permanent executive bodies with specific advisory functions to the Council of Ministers and the High Commissioner. These are:

a) The Interstate Commission for the Rules and Control of the Use of Water of the Senegal River - Will rule on the equitable use of water among member states before and after the regulation of the flow of the river. It will examine all projects which modify appreciably the characteristics of the river, and all requests for use of its water. In this task it will seek to draft rules for the quantitative and qualitative conservation of the water of the river.

b) The Advisory Committee of Coordination - Will be composed of representatives of the OMVS and major donors, and will assist the High Commissioner to mobilize necessary financial resources, promote a better coordination of activities, and to provide a systematic exchange of information.

The OMVS most valuable asset is its decision-making structure and its ability to make binding decisions at the Council of Ministers level. The treaties pursuant to which the OMVS was created are "La Convention Relative au Statut du Fleuve Sénégal" (referred to as the "Statute") and "La Convention Portant Création de l'Organisation pour la Mise en Valeur du Fleuve Sénégal" (referred to as the "Convention-OMVS"). Both were signed on March 11, 1972. The de jure creation of the OMVS has thus been affected in accordance with international law as well as the internal laws of the Member States. Other basic operational agreements, such as a Water Rights Charter, are still in the process of being negotiated.

There appears to be clear agreement between the nations that the OMVS role shall consist of handling the financing, design, construction and operation of the major mainstream facilities and that the member nations will make their own arrangements for infrastructure. One of the unique features of the OMVS agreement is that each of the three nations assumes, as a general obligation of the nation as a whole, its share of repayment costs for the OMVS project and that any two of the three nations guarantee the share of the third, should it for some reason default. Another unique feature is that a precedent has been established for allocating repayment shares for main project costs on the basis of repayment capability, rather than on a strict ratio of benefits basis. This precedent was achieved in connection with the agreement for sharing of costs of the river navigation project between the three nations. The nations have also declared the Senegal an international river and have agreed to establish a navigation company which will operate the river ports and barges. Under the OMVS concept, it appears that charges will be made for OMVS services such as firm water supply in the river for irrigation, hydroelectric energy and river transport and that an attempt will be made to set these charges at a level which will pay for operation and for project debt service. However, if for any reason it is not possible to do this and still provide the services at a level which will permit actual use, part or all of the debt service component could conceivably be picked up by the treasuries of the three nations. An interest-free development period on major project loans is very important in this connection.

E. First OMVS Donors Conference, July 1974

The completion of the UNDP-financed Norbert Beyrard Synthesis Study gave the OMVS the wherewithal to put together an integrated plan for the development of the Senegal River Basin. The plan is described

in the OMVS document, "The Objectives and the Main Outline of the Integrated Development Strategy of the Senegal River," (Objectives Paper) dated May 1974. To discuss this development plan and to enlist financial support for projects composing the plan, the OMVS called a conference of potential donor states and international organizations at Nouakchott, Mauritania from July 11-13, 1974. While the plan envisages continuing investment over a 35-40 year period totalling some \$3.5 billion, the conference concerned itself only with the mid-term (1975-82) projects. The major mid-term projects discussed at the conference were the following:

1. The Manantali Dam with its hydroelectric power station, situated on the Bafing River. This is the kingpin of the entire development scheme, having as its basic purpose provision of a regular year-round flow of 300 m³/s.
2. The Diama (Delta) Dam to be constructed about 13 miles upstream from the port of St. Louis, the main purpose of which would be to arrest salt water intrusion which now can be traced some 270 kilometers inland from the estuary during low water season.
3. Irrigation Infrastructure, concentrating on possible irrigated perimeters on the flood plain adjacent to the main channel.
4. Equipment for River Navigation and Channel Maintenance.
5. Improvement of the ocean port of St. Louis and the inland port of Kayes.
6. Improvement of the River Channel between St. Louis and Kayes.

In addition to the U. S. and members of the OMVS, the following delegations participated in the Nouakchott meeting:

Belgium *	United Kingdom
Canada	Federal Republic of Germany
Kuwait	Sweden
France	USSR *
Iran	African Development Bank
Italy	IBRD
Japan	FED
Saudi Arabia	UNDP
Egypt *	Economic Commission for Africa
Several other UN Special Agencies	

* Represented by local Ambassadors attending as observers

The United Arab Emirates, Spain and the Peoples Republic of China were invited but did not attend.

In response to the OMVS proposals, the following pledges were made:

1. IBRD - \$30 million during the next four to five years from IDA funds to be used for design and construction of irrigation works and land development.

2. African Development Bank - A total of 50 million units of account (about \$60 million) over five to six years. These funds could be available for any projects requested by OMVS and approved by the Bank's directors after an economic and financial feasibility study.

3. France - 80 million French Francs (approximately \$16 million) which it preferred to put into a consortium to finance the construction of the Diama Dam. France was also prepared to offer suggestions for implementation procedures.

4. Federal Republic of Germany - DM 40 million (approximately \$16 million) untied, at IDA terms to be used for any of the OMVS mid-term projects.

5. Canada - Still had the documentation under study and so could not yet state the size of a commitment. Canada would prefer that its funds be used for port construction and improvement. The Canadian delegate stressed the need for a proper system of planning and management for implementation of the program and a comprehensive plan for training of the large number of skilled personnel which will be needed. Canada was ready to offer technical assistance in these fields.

6. Saudi Arabia - \$10 million in a no-interest, long-term loan for the Basin Development Plan.

7. Kuwait - The representative announced that the Kuwait Development Fund expected to conclude a bilateral agreement with Mauritania for the development of the livestock, agriculture and transportation sectors.

8. Italy - Announced that it would participate in Senegal River Basin Development but the government has, as yet, reached no decision on the form of participation. However, any participation would be through international organizations of which Italy was a member. Meanwhile, it would offer technical assistance in the design of dams and in the use of water resources.

9. Various UN Special Agencies complimented the OMVS on its imaginative approach to river basin development and approved its objectives. They offered technical assistance in various areas of expertise.

10. United States - The U.S. delegate stressed the need to include in the program alternative irrigation methods to the surface irrigation method proposed, so as to expand the irrigated regions at lower cost and higher efficiency. He also stressed the need to study the environmental impact of the proposed infrastructure to avoid ecological deterioration of the area. He urged that attention be paid to the requirements for trained manpower needed to plan and implement the OMVS program, to operate its facilities and to train farmers in the use of the irrigation systems and in new cultivation and conservation techniques.

The U. S. Delegate further stated that following further review of the various proposals and related documents received, AID would consider practical means to provide assistance for the basin. Among the areas specifically noted where U. S. experience and expertise might be brought to bear in the Senegal River Basin were environmental assessment; organization, management and training of the OMVS Secretariat; agronomic research; alternative methods of irrigation; and overall river basin planning to test if the experience gained in the U. S. Bureau of Reclamation's experience in the southwestern part of the United States would be germane to this region of Africa. Throughout the U. S. Delegate's presentation and subsequent commentary on other issues, the primary interest of the USG in food production in the basin was underlined.

The fact that OMVS received \$160 million in pledges at its first Donors Conference was clearly an endorsement of the program it proposed. Most donors viewed the development of the Senegal River Basin within the context of the rehabilitation of the Sahel region, so that probably this amount of pledges would not have been achieved two years earlier before the Sahel drought had drawn so much attention to the area. However, many of the pledges were conditional, and a discouraging factor since this conference has been the inability of the OMVS Secretariat to pursue, pattern and refine these pledges into specific multidonor funding schemes for major projects.

F. Solicitation of Funds between Conferences

During the two years between the 1st and 2nd OMVS Donors' Conferences, the Secretary General, accompanied by one or more members of the Council of Ministers, made several trips to Europe and the Middle East to confirm and enlarge financial commitments to the organization. The results of these visits was summarized in the working papers distributed prior to the 2nd Donors' Conference, as follows: (Approximate due to fluctuations in exchange rates in the interim)

African Development Bank	\$ 48,347,826
Kuwait	40,260,869
Federal Republic of Germany	35,147,825
Saudi Arabia	33,000,000
France	19,652,173
Canada	5,217,391
Iran	4,347,826
	<hr/>
	\$ 185,973,910
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The foregoing indicates that approximately \$26 million in additional funding was raised during the past two years, though that of Iran is open to question due to serious problems which that nation is now encountering in its short-term debt servicing.

G. The 2nd OMVS Donors' Conference

This meeting, held in Dakar June 14-15, 1976, served as a forum for the OMVS to report on progress and problems to date, and present its ten-year work program to the international donor community.

In addition to the U. S. Delegation and Delegations of the OMVS Member States, the following bilateral donors and international institutions and organizations were represented:

- Saudi Arabia
- Canada
- France
- Kuwait
- Federal Republic of Germany
- Arab Bank for African Economic Development
- Commission of the European Community
- World Bank
- European Development Fund
- O. E. C. D.
- U. N. D. P.
- African Development Bank
- African Development Fund
- F. A. O.
- UNESCO
- UNICEF
- W. H. O.
- Economic Commission for Africa
- United Kingdom
- Club du Sahel
- Belgium
- U. S. S. R.
- Italy

The OMVS presented a detailed description of the status of all OMVS projects, their interrelationships, and the terms of financing sought. The technical assistance requirements of the OMVS Secretariat and member country institutions were outlined. The following general terms and principles were cited:

- a) All additional studies required should be grant funded.

- b) Given the integral relationships between the Diama Dam, the Manantali Dam, Mainstream Ports, and the system of river ports envisaged, they should be looked upon as inter-dependent parts of the same project and be accorded uniform terms of financing.
- c) Until revenues are realized from major capital projects in the industrial and power sectors, donors should consider according the most favorable terms of financing approximating to the degree possible those of IDA.
- d) Agricultural projects should not be evaluated individually from the standpoint of their internal IRRs, but viewed collectively from the standpoint of their introducing more productive agricultural practices, thereby improving the well-being of the basin population.

The expanded requirements in technical assistance to the CMVS Secretariat were projected in the context of the newly drafted ten-year work program. Within the next decade the OMVS plans the realization of most major mainstream infrastructure projects including the Diama and Manantali Dams, river navigation between the major ports of St. Louis and Kayes, and development of these ports and six intermediate ports in Mauritania and Senegal. Power transmission lines from the Manantali Dam are also included. The methods for achieving donor collaboration in all of the foregoing activities and the needs for regular exchange of technical information were outlined.

All donors who had made previous financial commitments at the 1st OMVS Donors' Conference reconfirmed these, and two significant new commitments were made:

- a) The Federal Republic of Germany - The FRG outlined a series of definite commitments totalling 146,000,000 DM, with an additional 14,000,000 DM earmarked for studies if needed (total approximately \$58 million). The first 6,000,000 DM is a grant for the engineering studies of Manantali, with an additional 14,000,000 DM in grant funds reserved to cover additional study costs of this project plus mainstream navigation studies which the FRG has also accepted to finance. Loan terms for the remainder allow repayment over 50 years at 0.75% interest with a 10-year grace period.

- b) Saudi Arabia - Added an additional \$10,000,000 to its previous commitment of \$33,000,000 made at the 1st Conference.

Most of the other donors present stated that their degree of participation in major infrastructure projects will be better defined once the results of studies just now getting underway come into focus. Likewise the majority of institutional and bilateral donors present extended offers of technical assistance to the OMVS and the institutions within its member states concerned with development of the Senegal River.

At this 2nd Donors' Conference, the U. S. delegation reiterated the continuing deep concern which the United States has for the welfare of the peoples of the Sahel, and that the USG looks upon the OMVS as an important instrumentality within the Sahel Region in translating this concern into meaningful undertakings. The delegation also expressed continuing strong support for the OMVS and its goals. Recognizing the integral relationship between agricultural and infrastructural development in this river basin, the delegation noted the initiatives being taken with the U. S. Congress to have Foreign Assistance legislation so interpreted as to allow AID participation in all sectors related to the improvement of agricultural activity. The U. S. delegate stated that AID would explore means of assisting in the institutional development of the OMVS and these agencies in the member countries concerned with irrigated agricultural development. The increased financial requirements of the expanded OMVS Secretariat were also noted in the hope that all donors would consider supplemental support of these in the context of the Secretariat serving as a training institution for personnel of the OMVS member nations. Lastly, the U. S. Delegate congratulated the OMVS on its formation of a Permanent Water Rights Committee, and offered to consider any request for professional assistance in this field.

III. Revision of the DAP Pertaining to the Senegal River Basin

Within the Sudano-Sahelian Region of Africa, the United States and the international donor community are now devising a strategy to provide the most meaningful investment for attaining self-sufficiency in foodstuffs. There are two methods of bettering food production in this region, e. g. improvement in rainfed agriculture for subsistence farming, and introduction of irrigation techniques in the river and lake basins for major increases in yields. Both methods should be pursued to minimize the inherent risks caused by the vagaries of this climatic zone. During future droughts, the only assured sources of food will be from irrigated agriculture using waters from river reservoirs replenished by sources outside the Sudano-Sahelian zone, such as the Senegal and Niger Rivers whose headwaters originate in the highlands of Guinea.

The countries of the Senegal River Basin -- Senegal, Mali and Mauritania -- are poised on the threshold of an enormous venture. After more than a decade of organization, planning and study, the development of the Basin is about to become a reality. The summary plan encompasses \$3.2 billion of investment, keyed to the construction of two dams, navigation and port facilities, inland transportation facilities, and the development of agro-industries and mining. Financing for the first dam, the Delta Dam at Diama, is largely assured (from FAC and Kuwait), with a target completion date of 1981. The Delta Dam will permit 30,000 hectares of land to be irrigated and farmed intensively. Financing of the much larger Manantali Dam in Mali and of other infrastructure awaits the results of studies now underway. The prospect in 40 years is for 428,000 hectares under irrigated cultivation. Countries now deficit in virtually every major cereal crop will become self-sufficient, or even exporters. Beyond agriculture, there is the prospect of electric power sufficient for mining and related industries, and of a system of river transport opening up inland areas and giving Mali access to the sea.

But the 40 years of development will be demanding. In Mauritania today, only about 600 hectares per year are being added to the irrigation total. And even this current tiny expansion is exhausting Mauritania's trained manpower, which is itself heavily dependent on expatriate personnel. The World Bank, AID, the FRG and FAC are developing a joint project to provide much needed assistance to Mauritania's newly created rural development agency (SONADER).

Senegal, the principal recipient of agricultural benefits from the Basin, is more advanced. But even in Senegal, only 9350 ha. of the 35,360 ha. scheduled for development by 1980 is currently being prepared for development. Senegal's plans, too, are heavily dependent on a major increase in its middle and project level management, a problem being addressed in projects now being formulated by IBRD and AID to assist SAED, the GOS development agency for irrigated agricultural projects in the basin.

The need for the Basin's development becomes obvious as one moves away from the Basin itself to the larger area. Senegal is gripped by the annual importation of more than 300,000 MT of grain, most of it rice, fully 20% of its imports. Increases in rice production are possible in the Casamance Valley in the south, but it is doubtful that these can be substantial enough or sufficiently in advance of population growth there to meet the needs of the cities. Intensive production along the now sparsely populated Senegal River seems to be the most promising answer to the deficit. Mali achieves the smallest amount in direct agricultural benefits, only 45,000 of the 428,000 hectares to be irrigated. But the power resources will be primarily in Mali, as will the opportunity to open up mining potential in presently depressed areas hard to reach by present transportation facilities. For Mali, with a per capita GNP of less than \$80, and a national budget of only \$60 million (\$13 per person), the development of power, industrial and mineral potential, particularly if these could be closely related to the adjacent Senegal market and transportation system, could be vital to breaking out of a marginal economic position. Senegal also looks to the power from the Manantali Dam to develop rich iron ore deposits in southeastern region on the Falémé River.

For the entire area, the development of the Basin is a critical element in assuring any hope of its future well-being. Measured in immediate cost-benefit terms, it raises questions of economic and financial viability. But in terms of development over a longer term, from both the political and economic interest of the donor community, it has enormous significance. It is hard to conceive of the agricultural systems of Senegal, Mali and Mauritania ever achieving self-sufficiency without modern forms of irrigation. It is hard to conceive of these countries ever "graduating" from the assistance roles until the potential of the basins -- both Senegal and Niger -- are brought into play. Even though basin development alone cannot solve the problems of the interior Sahel, they still offer the potential economic base in Africa to support

the investments, the markets, and the opportunities for surplus population from these areas. The full measure of these long-term benefits need to be included in an assessment of the Basin development program. In the two worst years of the drought, more than \$300 million of emergency assistance was provided to the Sahel. Over the last several years, more than 1,000,000 MT of grain was provided, beyond the commercial import levels which as noted for Senegal alone are over 300,000 MT a year. In a world conscious of food needs, this drain should be reversed.

Moreover, the Basin program is already beginning. Elements of the infrastructure such as the Delta Dam, are being financed. The worst prospect of all, in fact, is that the large infrastructure will be developed, and then go unused or largely underutilized in a world short of both energy and food. Every study made of the Senegal Basin concludes that beyond the infrastructure are enormous needs in land preparation, training, development of irrigation experience, transportation, and agronomic and sociological research. Much of this investment, particularly the training, is just now being planned. Along with the probable delays in the completion and returns from the infrastructure itself, it now appears more than likely that a 50 year time frame will be required to realize the full benefits of the Basin, with donor inputs required for the first two decades. As the recent study by the U.S. Bureau of Reclamation points out, much of this investment in land preparation and training should go forward ahead of the larger infrastructure projects. Introducing single cropping with controlled irrigation while awaiting mainstream regulation by an upstream reservoir still provides a ten-fold increase in yields over traditional flood recession cultivation.

The United States has an opportunity to play a critical role in helping in these areas of supplementary investments to the basic infrastructure, thereby enabling this infrastructure to have the intended effect on the food and other human needs of West Africa. The U.S. is not likely to participate directly in the financing of the Diama Dam nor in the navigation infrastructure. Recognizing the integral relationship which exists between such infrastructure projects as an upstream reservoir and the development of irrigated agriculture, AID is now taking initiatives with Congress to have its mandate expanded in Africa to allow participation in basic infrastructure upon which increased food production is totally dependent. This would include the Manantali Dam. In addition, there are certain areas in which the U.S. has special expertise and interest: organization and management of the OMVS; training at all levels in both OMVS and the

individual countries; environmental safeguards; specialized studies required to determine the feasibility of major infrastructure projects; and irrigated agricultural development supported by agronomic research. If the United States moves to play a positive role in the Basin's development, i. e., indicates its support for the objectives of the OMVS and its willingness to participate with both technical and capital assistance, the U. S. through these areas of activity can have a substantial impact on the returns from the entire investment. U. S. inputs in these and related activities over 5 years could exceed a \$200 million level if AID is allowed to participate in basic infrastructure projects.

Institutional Development within the OMVS and its Member Countries

The OMVS has established a legal structure to receive funds and to act on behalf of the three member states. The present OMVS structure has succeeded in reaching agreement among its three members on an overall plan of action and a coordinated program of Basin Development. Various donors have decided to support OMVS in the implementation of specific projects, and others have made general commitments to the overall program. However, as the Basin's development moves from the planning to the implementation stage, the OMVS is ill-equipped to receive funds from different sources, to coordinate them, and to execute specific projects.

Since the inception of this regional program, all donors participating and the member states as well have been concerned with upgrading the OMVS Secretariat's ability to supervise the implementation of Phase I of the medium term program, and to manage individual projects as these are completed. Several steps have been taken by the new OMVS High Commissioner which evidence this organization's overall determination to move forward in these areas of concern. He has completely reorganized and expanded the Secretariat into several interdisciplinary directorates which were formed to address the sequential order of priorities in the ten-year work program just drafted. The support costs for the increased professional and staff positions of the new OMVS Secretariat will probably exceed the annual level of assessments which member states can be reasonably expected to provide. Until revenues are realized from commonly operated infrastructure projects, these increased administrative support costs will probably have to be shared by the donor community. AID should be prepared to play a catalytic role in addressing this need. As presently structured, the Secretariat can serve as a training ground for the personnel rotated there by the member countries.

The institutional development of a counterpart agency within the Mauritanian Government, capable of managing and operating irrigated perimeters, has been the greatest inhibiting factor in the relatively slow progress achieved to date on that side of the river. The Mauritanian Government plans to advance from the 3440 ha. to be put into irrigation by the end of 1976 to some 28,000 ha. by 1984. This optimistic projection can only be attained if SONADER develops as rapidly as possible. On the Senegal side, the projection of some 44,000 ha. under controlled irrigation by 1984 from a 1976 realization of some 9300 ha. also presumes that SAED will readily absorb and utilize all assistance now being planned for it. This too is an optimistic assumption, though under SAED's present leadership, an attainable goal.

AID's investigation of the 8000 ha. perimeter at Matam is expected to result in a \$20 million loan for the irrigated development of some 4000 ha. there. The nature of the development of this perimeter could lay the groundwork for less capital intensive and wider dispersal of irrigation projects in the upper valley portion of the basin. Both at Matam and in selected lighter soil areas in the delta, AID will attempt to introduce less water intensive irrigation system to alleviate possible competing uses on reservoir capacities still being estimated, as well as to mitigate the known adverse environmental effects caused by surface irrigation. AID's participation with the World Bank in the development of the 1000 ha. perimeter of Diagambal in the delta will introduce for the first time full-scale sprinkler irrigation into the Basin.

Basin Infrastructure

As the development of irrigated agricultural projects progresses along the Senegal River, it becomes increasingly apparent that their success will depend upon concurrent investment in the basic infrastructure which the basin region requires. The Manantali Dam to create an upstream reservoir on the Bafing tributary is the most obvious example, since only an assured regulated stream flow provided by an upstream reservoir during the dry season will provide water for the double cropping for which all irrigated perimeters now being built are designed. Along with mainstream infrastructure, a considerable investment will be required in transport, cooperative equipment centers, and marketing and storage facilities, if the increases in crop production are to be

AID and other donors have made standing offers to the OMVS to provide assistance in training, management and operations. Thus far these offers have been held in abeyance until the foregoing structural changes were agreed to by the OMVS Council of Ministers. Following the next Council of Ministers meeting in July 1976 at which the remaining outstanding issues regarding the OMVS reorganization will be discussed, OMVS is expected to move forward in patterning the technical assistance available to the pattern of its immediate and long-range personnel requirements.

Concurrent with the institutional development of the OMVS, AID and other donors have been concerned with the development of those institutions in the OMVS member countries concerned with irrigated agriculture. These are the Société pour l'Aménagement et Exploitation des Terres du Delta (SAED) in Senegal, which is already operational, and the Société Nationale pour le Développement Rural (SONADER) in Mauritania, which has just been created. Disparities in the rate of development of these agencies have in turn created disparities in the rate of benefits derived from use of the river's waters. AID and other donors are trying to correct these in some degree through assistance to SONADER, while at the same time maintaining the momentum achieved in the development of irrigated perimeters to date by providing continuing assistance to SAED. The World Bank will be involved in providing technical and financial assistance to both these agencies, with either donors patterning their assistance accordingly.

Irrigated Agricultural Development

In anticipation of recurring droughts, and the mainstream reservoir storage which dams now going into their design stage will provide for double cropping during the next decade, OMVS and its donor community are attempting to accelerate the pace of irrigated agricultural project development along the river's flood plain. The IBRD, FAC, FED, the FRG, and AID are all participating in this program. To date most other donors have concentrated their efforts in the delta region on the Senegal side of the river. The IBRD and FED have extended their financing into the middle basin on the Mauritanian side where the Gorgol River intersects the Senegal River. AID is undertaking the investigation of irrigated perimeter development at the population center of Matam on the Senegal side of the middle basin.

assured and accommodated in the economics of the OMVS member countries. Agricultural and infrastructural development are integrally related in this basin, and investments in both must necessarily be closely coordinated. Both are essential for the increases sought in production of food crops. The feeder roads which AID and FAC are planning to undertake to break the isolation of potentially productive areas within the 1st Region of Mali, multiply the infrastructural investments which must precede agricultural development in the middle and upper areas of the river.

Environmental Assessment

Regulation of the Senegal River and the development of 428,000 hectares of irrigated agricultural lands on its present flood plain will create profound ecological changes in this basin. AID is financing the most comprehensive study of such changes ever undertaken on a river at this stage of its development. This study will get underway in the summer of 1976 and continue for two years. It will measure the individual and composite beneficial and adverse effects of all projects planned and underway. These are expected to extend into some 25 areas which encompass all forms of animal and plant life, the public health and socio-cultural conditions of human settlements, and factors related to water quality and usage. The results of this study will be relayed directly to the service concerned within the OMVS member countries as well as to the OMVS itself for incorporation into both national and regional planning. Preventive and control programs for endemic water-borne diseases are to be implemented prior to the realization of projects promoting environments where such vectors will multiply.

Specialized Studies

In participating in this long-range multi-donor river development scheme, AID will be largely dependent upon the professional backstopping available from other federal agencies with domestic and overseas experience in this field. Foremost among these is the U. S. Bureau of Reclamation, which from the outset of this program has undertaken a series of investigations aimed at refining the nature and scope of AID's involvement.

From these have come recommendations for studies in areas where the U.S. has a particular technical preeminence it can bring to bear within the OMVS Indicative Basin Plan. The Environmental Assessment was the first of these cited, and as the AID role evolves, there are others coming into focus which will lay the groundwork or provide basic data essential to the realization of the plan and the continuing pace of investment sought. Among these are the establishment of a basin hydrometeorological system; establishment of a geodetic system of coordinates within the basin and more precise mapping of priority project areas; and continuing hydrogeological investigations to explore the relationship and usage of groundwaters in the flood plain of the valley and upper basin. The U. S. Geodetic Survey and the Defense Mapping Agency will be involved in these projects. Private U. S. engineering firms will also be used as required where these continuing specialized studies require their professional capabilities.

A. Summary Table I: Funding Levels for FY 1976, IQ, FY 1977, FY 1978

	1) <u>FY 1976</u>	Interim <u>Quarter</u> 1)	<u>FY 1977</u>	<u>FY 1978</u>
<u>Food and Nutrition</u>				
<u>Grants</u>				
Flood Recession Crop Improvement Agronomic Research			300	800
Study of Matam Perimeter	1,002			
Basin Hydrometeorological System				1,870
Basin Hydrogeologic Investigation				1,970
Mali Feeder Road Development				3,000
Basin Geodetic Survey and Mapping				3,920
Basin Investigation and Studies				200
Mauritania Forage Research			583	239
<u>Subtotal FN Grants</u>	<u>1,002</u>		<u>883</u>	<u>11,999</u>
<u>Loans</u>				
Matam Irrigated Perimeter		20,000		
Irrigated Perimeter Development Senegal				6,000
<u>Subtotal FN Loans</u>		<u>20,000</u>		<u>6,000</u>
<u>Education and Human Resources</u>				
<u>Grants</u>				
Management and Organizational Assistance to SONADER				3,200
OMVS Institutional Support				1,000
OMVS Management and Staff Support			600	845
<u>Subtotal EH Grants</u>			<u>600</u>	<u>5,045</u>
<u>Health</u>				
<u>Grants</u>				
Health Research Program				1,635
<u>Subtotal Health Grants</u>				<u>1,635</u>
<u>TOTAL GRANTS</u>	<u>1,002</u>		<u>1,483</u>	<u>18,679</u>
<u>TOTAL LOANS</u>		<u>20,000</u>		<u>6,000</u>

ABS/CP Summary		1. Transaction Code A A=Add C=Change D=Delete			2. Document Code 6		3. Country/Entity O.M.V.S.				
4. Document Revision No.		5. Operational Year FY 77		6. Budget A. Symbol AFR B. Code 1			7. Geographic Code 628				
8. Type Data 1 1=ABS 3=CP 2=ABS Revision 4=CP Notification				9. Type Assistance 1			1=Project Assistance 2=Program Assistance				
10. Project No.	11. Project Title	12. Qtr for Oblig	13. Est. FY Auth/Oblig Final	14. Appro- priation	15. Prim. Pur- pose Code	16. L/G	17. Budgets (in \$000)				
							AY	IQ	OY	BY	LOP
685-0701	OMVS Matam Irrigated Perimeter	IQ	IQ	FN	B 123	L	0	20000	0	0	20,000
625-11-120-616	OMVS Agronomic Research	1/77	77	FN	B 141	GC	0	0	300	0	1,260
625-11-755-620	OMVS Management and staff support	2/77	79	EH	B 663	GN	0	0	600	845	1,980
625-11-995-617	OMVS Environmental study	3/77	77	AD	B 994	GC	2500	0	1,000	0	3,500
682-0602	OMVS Mauritania Forage research	3/77	81	FN	B 143	GN	0	0	583	239	1,487
628-0502	OMVS Flood Recession crop improvement	1/78	80	FN	B 112	GN	0	0	0	800	940
628-0507	OMVS Hydrometeor- ological System	1/78	84	FN	B 753	GN	0	0	0	1,870	2,500
628-0503	OMVS Hydrogeologic Investigations	1/78	80	FN	B 771	GN	0	0	0	1,970	2,500
688-0801	OMVS Mali Feeder Road Development	2/78	80	SD	B 701	GN	0	0	0	3,000	5,000
682-0601	OMVS Management & Organ- izational Assistance to SONADER	2/78	80	EH	B 283	GN	0	0	0	1,000	5,000
628-0506	OMVS Institutional Support	2/78	82	EH	B 184	GN	0	0	0	1,000	5,000
685-0702	OMVS Diagambal Irri- gated Perimeter	3/78	78	FN	B 123	LN	0	0	0	6,000	6,000
628-0504	OMVS Basin Geodetic Survey and Mapping	1/78	80	FN	B 183	GN	0	0	0	3,920	7,700*
628-0508	OMVS Investigations and studies	3/78	80	FN	B 183	GN	0	0	0	200	500
628-0505	OMVS Health Research Program	4/78	80	PH	B 591	GN	0	0	0	1,635	2,600
	18. Date Document Received in AID/W	MM	DD	YY							

* This figure includes prior year obligations of \$ 1,200,000 from the Special Appropriation (Sahel Special Studies).

C. Narrative Statement: Deviations from FY 1977 CP

Project 625-11-995-617: OMVS Environmental Study: An additional \$1,000,000 is being requested in FY 1977 to cover the total estimated cost of the contract. AID officials (AID/OMVS, SER/CM, SER ENGR) with the analysis of the submissions of the eight firms have concluded that the existing funding (\$2,500,000 - FY 1976) will be insufficient to cover the amount of the contract expected to be negotiated.

Project 685-0701: OMVS Matam Irrigated Perimeter: This \$20 million loan has been deferred to the Interim Quarter because of the additional time required to prepare a PP for authorization.

Project 625-11-755-620: OMVS Management and Staff Support: The \$460,000 expected to be obligated in FY 1976 has been deferred to FY 1977 because the OMVS Secretariat has not completed its determination of long-term management staff and training requirements. Such a determination is expected shortly. On this basis a PP will be prepared for FY 1977 initial obligation.

Project 625-11-120-616: OMVS Agronomic Research: An additional \$300,000 is being requested in FY 1977 to cover operating expenses for CY 1977. Justification for this request is attached to the project fiscal data sheet.

D. Rank Ordering of FY 1978 Project Identification Documents (PID)

<u>Project Title</u>	<u>FY 1978 Funding (\$000)</u>	<u>Life of Project Funding (\$000)</u>
1. Flood Recession Crop Improvement	800	940
2. Basin Hydrometeorological System	1,870	2,500
3. Basin Hydrogeologic Investigation	1,970	2,500
4. Mali Feeder Road Development	3,000	5,000
5. Management and Organizational Assistance to SONADER	3,200	5,000
6. OMVS Institutional Support	1,000	5,000
7. Diagambal Irrigated Perimeter	6,000	6,000
8. Basin Geodetic Survey and Mapping	3,920	6,500
9. Basin Investigation and Studies	200	500
10. Health Research Program	1,635	2,600
	<u>\$ 23,535</u>	<u>\$ 36,540</u>

E. Narrative Statement: Explanation of Rank Ordering

1. The program presented here represents AID involvement to the fullest possible degree with realization of the OMVS Indicative Basin Plan in a spectrum of interrelated activities where U.S. proficiencies can best be brought to bear. To date the U.S. program has been very specialized, concentrating in particular areas set forth in statements made by the U.S. Delegation to the first OMVS Donor's Conference in Nouakchott in July 1974. The basis for the expanded program in FY 1978 is the continuing dialogue since then between AID representatives and OMVS officials, periodic discussions with other major donors, the further investigations of U.S. missions, particularly those of the U.S. Bureau of Reclamation, and the experience gained through implementation of the projects at hand. Also the change of leadership within the OMVS and its total reorganization within the past six months have had a major bearing on the accelerated realization of the OMVS Indicative Basin Plan and the role the USG and other donors can play in its implementation. The latter factors and the donor community reaction to it created the very positive atmosphere at the OMVS second Donors' Conference in Dakar in June 1976. At this conference the U.S. Delegation outlined the possibilities of an expanded role for AID in concert with the pace to be maintained by the OMVS and the offers of increased participation by other donors present. That expanded role is embodied in the FY 1978 ABS.

2. Within this proposed program, Flood Recession Crop Improvement is still accorded first priority since for a relatively small investment it can favorably affect the well-being of the greatest number of people in the basin. Flood recession will still be the principal form of agriculture practiced there at least for the next two decades, and any means of bettering the yields here will have the widest spread effect of any project now underway. The project is designed to implement field trials of research conducted to date on flood recession sorghum in Senegal and in other West African river and lake basins. These will take up to three years, and will be conducted by selected farmers in all three OMVS member countries.

3. Second and third priorities within the program are accorded to much needed hydrogeological investigation of the Senegal River Valley and Upper Basin and the establishment of a basinwide hydrometeorological system. The former is to explore and analyze the relationship between the mainstream and known aquifers existing on the river's flood plain east of Podor; the results of its findings could create a village level, less-capital intensive approach to introducing controlled irrigation projects to the basin's populace. The latter is to establish a uniform coordinated system of daily measurement of the volume and velocity of the mainstream flow; such a stream profile has been largely lacking in the

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basic data gathered to-date. The River Basin Engineer on the Sahel Study Task Force recommended that AID proceed with both of these studies immediately so that at least their preliminary findings within the next three years might be brought to bear on the design studies of major infrastructure projects which are now underway.

4. Fourth and fifth priorities within the ABS go to projects designed to correct in some degree the imbalance in benefits derived to date by the OMVS member countries from the river's development. They are refinements of the two components outlined in the OMVS multisector Loan PID. The preponderance of activities are in Senegal, and all factors indicate this will continue to be the case for the foreseeable future. The development of feeder roads within the first Region of Mali, the area of that country which will be most affected by regulation of the Senegal River, will provide access to heretofore isolated arable lands and introduce production techniques and marketing to these small farmers at a most opportune time. This feeder road improvement under the aegis of the OMVS is being undertaken in concert with a USAID/Mali agricultural development project, and will provide access to marketing areas in Mali and Senegal for the anticipated increased production of this latter undertaking. It is altogether possible that this activity could be ready for financing in FY 1977. Concurrently under OMVS aegis, AID will, with the World Bank and other donors, seek to provide the wherewithal for the institutional development required within Maritania for that nation to realize the benefits of irrigated agricultural projects. Lack of such a counterpart institution has been the largest single factor inhibiting investment in irrigated perimeter development along the Maritanian side of the river. In response, the Mauritanian Government created a rural development agency (SONADER), which will have 80% of its activities in the river basin, the only region where Mauritania might attain self-sufficiency in domestic food requirements. AID has been requested to assist in making SONADER operational, and will follow the lead of French financed studies now underway and the establishment of a resident IBRD team within SONADER later this calendar year.

5. The sixth priority is the institutional development of the OMVS itself along the organizational lines set forth for this regional river basin development authority to achieve its prescribed work program over the next ten years. To accomplish this OMVS must attract and retain some of the best talents available within its member states and to recruit, train and employ at least twice the staff it now has. It is believed that such augmented needs will impose financial requirements upon the OMVS member states beyond their capabilities to respond. The present OMVS budget which is now borne entirely by its member countries will probably have to be doubled. It is to ease this financial burden which must occur before the OMVS has any revenue producing projects to mitigate it, that AID will undertake the OMVS Institutional Support Project. As stated, it is believed such a U.S. initiative, at this time, will have a catalytic effect among other donors.

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6. The Diagambal Irrigated Perimeter is the one loan project in this ABS, and as such is accorded seventh rank in overall program priorities. It serves two purposes, by first of all maintaining some degree of momentum in irrigated perimeter development along the river preparatory to the double cropping which the Diama Dam reservoir will allow, and secondly by allowing AID to undertake the first major sprinkler irrigation activity in the basin, a technology in which the U.S. is far ahead of any other donor. AID's providing the capital funding for development of the 1,000 hectares of sandy loam soil at Diagambal is an undertaking developed in close concert with the World Bank, which has financed the feasibility studies and is now completing the engineering studies of this and two other irrigated perimeter projects in the delta region. Diagambal lies adjacent to and will be developed concurrently with the 2,500 hectare Lampsar perimeter. Its elevation, lighter soils, and sprinkler irrigation obviate any salinity or drainage problems, a unique characteristic in the delta area. All of its foreign manufactured equipment requirements will be purchased in the U.S., and the installation and turn-key type of operation required for its sprinkler system will be largely dependent on U.S. technical know-how.

7. The Basin Geodetic Survey and Mapping is a continuing activity addressing a long-range requirement for the development of areas most favorable for irrigation in concert with construction of major mainstream infrastructure projects. This project is providing a uniform fixed system of coordinates for the survey and mapping of all activities in the basin, by linking the basin to the system of coordinates now existing on the 12th parallel. In addition, it will provide new photography of the river's flood plain and its tributaries, and from this photography new maps at 1:10,000 scale will be made of ten priority areas where irrigated agriculture is first likely to be introduced. Four of these areas lie in Mauritania, four in Senegal, and two in Mali. Such maps with 1/2 meter contour accuracy are a prerequisite for proper feasibility appraisal and engineering studies.

8. The Basin Investigation and Studies Project will provide the wherewithal for continuing funding of Bureau of Reclamation and other federal agency teams under PASAs, as well as occasional expertise from universities or private engineering firms. Experience to date has shown that such investigations are a continuing requirement for AID project appraisals, and that there have been a series of highly specialized studies for which U.S. expertise has been requested. Assistance in revising the Terms of Reference for the Manantali Dam exemplifies this type of request. The Sahel Study Task Force as well as the latest study made by a Bureau of Reclamation Team outlined several more, including the possibility of a mainstream irrigation diversion dam at Bakel. Given the international prominence of the U.S. Bureau of Reclamation, the OMVS and the other donors attach much importance to BUREC's continuing availability as a technical resource in this basin scheme.

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9. The Health Research Program proposed here will provide an institutional relationship between the OMVS member states and the Medical Faculty of Yale University. Investigations have shown that much basic data has to be gathered and analysis done on the endemic diseases most prevalent in the Senegal River Basin. This work should be undertaken as soon as possible to provide a sufficient base of information on which to design the programs which will be forthcoming from the OMVS Environmental Assessment. It is assumed that much of the infrastructure now being designed will create an environment in which vectors of known waterborne diseases can multiply. Projects to control or eradicate these vectors will require more information about their current prevalence, human tolerance, and the success and shortcomings of previous and current Public Health programs, than is now readily available. The Yale Medical Faculty will carry out this analytical research, the first findings of which should provide data to the OMVS member states to allow them to plan realistically for whatever programs the Environmental Assessment might prescribe.

10. The Mauritania Forage Research Project will be receiving its second increment of funding in FY 1978, and will still be in its initial phase of development. By this time the research tract for the introduction of new species of forage on the dieri soils of the basin will have been prepared, and planting underway. No major modifications in the anticipated pace of this undertaking are foreseen at this time.

F. Narrative Progress Statement for Ongoing Grant Activities

Project 625-11-120-616: OMVS Agronomic Research Project

All three AID financed components of this project were obligated in June 1975: \$600,000 for equipment; \$300,000 for local salaries; and \$60,000 for technician's services. Local salary payments began in September 1975. The technician arrived in January 1976, and has ordered the greater part of the equipment, most of which has been delivered to the three OMVS Agronomic Research Stations at Guede, Senegal; Kaedi, Mauritania; and Same, Mali. This equipment is now being used to prepare terrain prior to the seasonal rains for extended field trial plots of research accomplished to date, all of which will be carried out by farmers in adjacent villages. To-date this has been a jointly funded OMVS, UNDO/FAO, and AID activity. The UNDP's budgetary crisis does not allow it to assume activities as previously planned for CY 1977. OMVS has requested other donors to assist as possible to maintain the momentum achieved thus far in this program, AID is responding to this request, reiterated by UNDP/NY, by requesting \$300,000 in FY 1977 to fund continuing local salary payments through CY 1977. This will allow the member states of OMVS sufficient time to prepare to assume these costs in their own operational budgets.

Project 625-11-995-617: OMVS Environmental Assessment

This initial obligation for this capital grant activity was made in February 1976 under a Grant Agreement with the OMVS for \$2,500,000. Of 21 firms submitting expressions of interest in response to the announcement in the CBD, eight were short-listed. Eight firms submitted their proposals, in response to the RFP, on June 7, 1976. They are, at this writing, currently being reviewed, evaluated and ranked by the OMVS Secretariat and by representatives of the three Member States. Informal reviews by representatives of SER/CM and SER/ENG have led to a conclusion that negotiations with the chosen contractor are likely to lead to agreement on costs somewhat higher than the amount already funded. For this reason, an additional \$1,000,000 of FY 1977 funds is being budgeted to fully fund this project.

PROJECT NAME: OMVS Environmental Assessment
 PROJECT NUMBER: 625-11-995-617
 APPROPRIATION: S D

INITIAL OBLIGATION: FY 1976
 FINAL OBLIGATION: FY 1977
 TOTAL COST: \$ 3,500,000

DATE NEXT PAR: December 1977

U.S. DOLLAR COST (IN THOUSAND)

Actual	FY 1976	FY 1977	FY 1978	Unliquidated	as of:	FY 1977 and FY 1978				
						Direct Aid	Contract	PASA	Total	
2,500	0	2,500	0	6/30/76	77	78	77	78	77	78
Estimated	0	0	0	9/30/76	50	50	50	50	50	50
Interim Qtr.	0	0	0	2,500	Participants	Participants	Participants	Participants	Participants	Participants
Estimated	1,000	1,750	1,000	9/30/77	100	100	100	100	100	100
Proposed	0	0	0	9/30/78	Other Costs	Other Costs	Other Costs	Other Costs	Other Costs	Other Costs
FY 1978	0	1,500	250	Total	1,000	1,000	1,000	1,000	1,000	1,000

Contract/PASA Funding Periods

Name of	FY 1976	Int. Qtr.	FY 1977	FY 1978	On Board Personnel
Contractor Obligations	From To	From To	From To	From To	6/30 1976 - 9/30 1977
(to be chosen)	From To	From To	From To	From To	1976 1976 - 1977 1978
Period	10/76	2/78	3/78	10/78	Direct Hire
Amount	2,500	000	1,000	000	PASA
Period					Contract
Amount					Participants
					24
					2

II. FY 1978 New Projects Listing: Alternative Funding Levels

Project	(Alternative A)		(Alternative B)	(Alternative C) Mission Alternative if Grant Resources Curtailed	
	Full Funding Level	Months from Date of Obligation	Forward Funding According to A-368	Dollars	Months from Date of Obligation
	Dollars		Dollars	Dollars	
<u>Food and Nutrition</u>					
OMVS Flood Recession Crop Improvement	800	36	400	340	12
OMVS Hydrometeorological System	1,870	36	1,192	1,131	15
OMVS Hydrogeologic Investigations	1,970	36	1,243	1,025	15
OMVS Diagambal Irrigated perimeter	6,000	36	4,200	2,100	12
OMVS Mali Feeder Road Development	3,000	36	2,290	1,940	12
OMVS Basin Geodetic Survey and Mapping	3,920	36	3,270	2,650	12
OMVS Investigations and studies	200	18	200	100	12
<u>Education and Human Resources</u>					
OMVS Management and Organizational Assistance to SONADER	3,200	36	2,900	1,900	12
OMVS Institutional Support	1,000	12	1,000	1,000	12
<u>Population and Health</u>					
OMVS Health Research Program	1,635	36	1,085	595	12

1. FY 1978 New Projects Listing: Narrative Statement for Proposed Funding Levels:

A. Food and Nutrition

1. OMVS Flood Recession Crop Improvement:

Alternative A is based on the realistic desirability of funding all components for this project except operating costs, the balance of which would be funded in FY 1979 and 1980. This would consist of: technical services (\$210); all commodities (\$130); and operating costs (\$460). Alternative B is the minimum amount required to fund 18 months of the agronomist's services, all commodities, and minimal operating costs. Alternative C would cover the first 12 months of project operations. This would include one year's services of the agronomist (\$70), 12 months' coverage of operating expenses (\$200) and all vehicles and some equipment (\$70).

2. OMVS Hydrometeorological System:

Alternative A assumes three full years of forward funding for all components: 11 man-years of technical services (\$770); all participant training costs (\$110); all equipment (\$750); and two years of operating costs (\$240) instead of three years because the first year of project life will not entail disbursements under this category. Alternative B would fund one year of a PISA for four man-years (\$280); the first 15 months' costs of participants (\$90); all equipment (\$750); and one year's operating costs (\$124). Alternative C differs from alternative B by the reduction of the first year's in-country training (\$39) and by the reduction of operating cost to cover six months only (\$62).

3. OMVS Hydrogeological Investigations:

Alternative A is based on six man-years of technical services (\$420); all participant costs (\$150); all equipment (\$700); and three years' operating costs (\$700). Alternative B would fund three man-years of technical services (\$210); four to five man-years of U.S. training (\$48) and short-term in-country or third-country training (\$35); all equipment (\$700,000); and one year's operating costs (\$250,000); Alternative C would fund two man-years of technical services (\$140,000); four man-years of U.S. training (\$48) and a lesser amount of in-country or third-country training (\$12); all equipment (\$700); and six months' operating costs (\$125).

4. OMVS Diagamhal Irrigated Perimeters:

Alternative A assumes the full amount of the loan would be authorized and disbursed within three years (\$6,000); of this amount, 70% would, according to the PID, be allocated to foreign exchange costs of commodities (\$4,200);

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the balance has been equally divided between technical services (\$900) and other costs (\$900). Alternative B would reduce these elements by 30% to: commodities (\$2,940); technical services (\$630); and other costs (\$630). Alternative C would further reduce alternative A by another 30% to: commodities (\$1,470); technical services (\$315); and other costs (\$315).

5. OMVS Basin Geodetic Survey and Mapping:

Alternative A would fund the first three years' requirements of technical services for continuation of the horizontal control and all the mapping control work (\$1,850); all commodities needed for continuing the horizontal control work (\$400); and other costs to finish the horizontal control work and to carry out the mapping control work (\$1,670). Alternative B would reduce technical services required (\$1,550); keep the same level of commodities (\$400); and reduce other costs (\$1,320); Alternative C would further reduce technical services (\$1,050); retain the same commodities level (\$400); and reduce other costs slightly (\$1,200).

6. OMVS Investigations and Studies:

Alternative A and B envisage identical amounts of funding for anticipated investigations and studies requested by OMVS (\$200); Alternative C would cut this figure in half to a bare-bones amount (\$100).

B. Education and Human Resources

7. OMVS Management and Organizational Assistance to SONADER:

Alternative A would fund three man-years of direct-hire technical services (\$200); all the equipment (\$2,500); and one-third of the construction materials and operating costs (\$500); Alternative B would reduce the construction materials and operating costs to (\$200); Alternative C would further reduce equipment to (\$1,500);

8. OMVS Institutional Support:

The nature of this project is such that each alternative would demand the same amount of funding (\$1,000). This is because the financial support to the OMVS would have to be consistent from year to year.

C. Selected Development Problems

9. OMVS Mali Feeder Roads Development:

Alternative A would fund three years each of four technicians (144 m/m) (\$840); all equipment and vehicles (\$1,160); and initial costs of construction materials and other costs (\$1,000). Alternative B would fund 108 man-months of technical services (\$630); all equipment and vehicles (\$1,160); and a reduced amount for construction materials and other costs (\$500); Alternative C would fund three man-years of technical services (\$280); all

.../...

equipment and vehicles (\$ 1,160); and the same reduced amount for construction materials and other costs (\$ 500)

10. OMVS Health Research Program:

Alternative A would fund three years' duration of technical services, including consultants (\$ 1,200); the first three years' participant requirements (\$ 130); all equipment (\$ 105); and three years' requirements of other costs (\$ 200); Alternative B would reduce technical services funding to the first two years (\$ 800); participant requirements to the first 15 months' forward funding (\$ 80); all equipment (\$ 105); and would reduce operating costs to (\$ 100). Alternative C would fund one year's requirement for technical services (\$ 400); and for participants (\$ 40); all equipment (\$ 105); and would further reduce operating costs (\$ 50).

J.

O.M.V.S., FY-78 ABS
LONG RANGE PROJECTIONS
(\$ million)

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
(FN) <u>FOOD NUTRITION</u>					
Flood Recession Crop Improvement	800	100	40	630	
Basin Hydrometeorological System	1,870		530 A)	2,000 B)	2,000 B)
Basin Hydrogeologic Investigation	1,970 A)		1,000 A)	2,000 B)	1,000 B)
Mali Feeder Road Development	3,000 A)	1,000 A)	1,000 A)	2,000 B)	
Basin Geodetic Survey and Mapping	3,920		2,580		
Basin Investigation and Studies	200 A)	150 A)	150 A)	200 B)	150 B)
Mauritania Forage Research	239 A)	311 A)	177 A)	177 A)	1,500 B)
Irrigated Perimeter Development - Senegal	6,000	10,000	10,000	10,000	10,000
Irrigated Perimeter Development - Mauritania		5,000	10,000	10,000	20,000
Irrigated Perimeter Development - Mali			25,000	10,000	10,000
AID Participation Mainstream Infrastructure				25,000	
AID Participation Basin Infrastructure					25,000
(E&HR) <u>EDUCATION AND HUMAN RESOURCES</u>					
Management & Organizational Assistance to SONADER	3,200		1,800		
OMVS Institutional Support	1,000	1,000	1,000	1,000	1,000
OMVS Management and Staff Support	845	535			
Agricultural Extension Agent Training Centers		2,000	1,000	1,000	1,000
Farmer Mechanized Equipment Cooperatives		1,000	1,000	2,000	2,000
(H) <u>HEALTH</u>					
Health Research Program	1,635	600	365	3,000	2,000
Waterborne Endemic Disease Control Programs					
Totals	<u>24,679</u>	<u>22,996</u>	<u>54,642</u>	<u>67,007</u>	<u>74,650</u>

K. Long Range Projections: Narrative Statement

The Organisation Pour la Mise en Valeur du Fleuve Senegal (OMVS) is the avant garde river basin development authority within the Sudano-Sahelian zone of West Africa. It is the only regional grouping actually in the process of implementing a multi-billion dollar plan extending over four decades which will transform a river basin into one of the principal granaries of this zone. What these three Sahelian member nations and the some thirty donors participating in the realization of this Indicative Basin Plan learn here will have applicability to the drafting and implementation of plans for the other river and lake basins of the Sahel, which are now in a much earlier stage of their evolution. The U.S. role in the development of the Senegal River Basin is viewed in this context and as a corollary to any multinational program to improve the well-being of the peoples of the Sahel.

There has been a new momentum imparted to the realization of the OMVS Indicative Basin Plan by a recent change of leadership within, and a total restructuring of, the OMVS itself. A greatly accelerated pace of activities has been attained during the past six months, and all indications are that it will continue. The Long Range Program Plan presented in section J is premised on this assumption. The strengthening of the institutional framework of the OMVS and that within its member states concerned with utilization of this river's waters is a major component of the FY 1978 program. The success of these activities will determine in large part at what rate irrigated agriculture will proceed in the basin, and how successful the planning, implementation and operation of major infrastructure projects will be.

The institutional foundations established now will be expanded progressively to embody all of the elements required for the successful transformation of traditional agricultural practices to controlled irrigated double-cropping systems. This will require donor support of what experience has shown to be the key factor in this transitional process, e.g. the "encadreur" or extension agent - young men with six years primary education, each of whom will work with from 15 to 30 families once they themselves have been instructed in modern agricultural practices. Along with the expansion of these cadres of change-agents will be the extension of related co-op facilities providing the equipment and materials needed by small farmers to work their irrigated lands with maximum efficiency. Equipment Cooperatives (small farmer cooperatives for mechanized agriculture) are being established on a pilot basis this year.

Concurrent with the strengthening and expansion of the institutional base of the OMVS and its member states, giving them the wherewithal to absorb an increasing rate of capital in irrigated agriculture, will be the steady rate of investment required to maintain a desirable pace of construction of irrigated perimeters. At the moment Senegal is the only member state with

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a demonstrated capacity to plan, implement and operate irrigated perimeters, and even this capacity has been overtaxed in maintaining developments achieved to date. Through assistance provided by the World Bank and USAID/Senegal, it is assumed that SAED will be able to attain an annual rate of development of 4 - 5,000 hectares on the Senegalese side of the river. AID should plan to assist in maintaining this rate of irrigated agricultural development where such capacity exists, and at the same time project-related investments for the Mauritanian and Malian portions of the basin commensurate with these countries' institutional capacities to utilize capital investments. Accordingly, a steady rate of capital investment in irrigated perimeters is projected for Senegal, with similar investments for Mauritania beginning on a smaller scale in 1979 and accelerating by 1982. The proposed road improvement projects in the first Region of Mali should allow investments in irrigated perimeters there by 1981 preparatory to regulated streamflow by an upstream reservoir becoming a reality in 1985.

The presumption that there will be an upstream reservoir allowing regulated stream flow by 1985 also assumes that the USG will participate in the financial consortium such mainstream infrastructural projects will require. To be a feasible undertaking in this river basin, irrigated agriculture will be dependent upon upstream regulation for a double cropping system. The Internal Rates of Return calculated for all agricultural projects undertaken to date presumes that an upstream reservoir will allow such double cropping within the next decade. Both the Diama and Manantali Dams are now in their final design stage. The smaller Diama Dam has its total financing fully subscribed. The study of the Manantali should be completed within thirty months. The magnitude of this undertaking (estimated \$300 - \$350 million) will require the participation of all major donors participating in the OMVS Program, including the United States. Initiatives are now being taken with the Congress to allow the AID mandate in Africa to include support of justifiable infrastructure projects. By 1980 we will have reached the point in this river's development where U.S. capital participation will be required as a de facto endorsement of the whole venture, and therefore assumes a critical importance beyond the levels suggested here. It is difficult to envisage how sufficient support could be mustered from the rest of the donor community without such an endorsement forthcoming from the United States and the World Bank. Accordingly \$25 million is shown as the initial U.S. subscription to the Manantali Dam in 1980 assuming the studies now underway produce favorable recommendations. An additional \$25 million is earmarked for Manantali the following year in anticipation of upward adjustments of the funding requirement when the results of the international tendering for the project are known.

The \$25 million shown for Basin Infrastructure is also predicated upon a Congressional expansion of the AID mandate in Africa allowing participation in infrastructure critical to the improvement of agricultural production. The type of infrastructure envisaged here includes diversion dams and related

.../...

irrigated canal systems, feeder roads, and rural electrification where such is deemed desirable for irrigated perimeter development. This will be patterned according to the rate of agricultural development achieved by 1981, and designed to alleviate whatever infrastructural shortcomings are then apparent.

Several of the studies being undertaken in 1977 and 1978 are expected to produce findings which will require subsequent grant or loan financing. These in this category therefore show: A) funding through their initial investigative phases, and B) funding when on the basis of the preceding investigations these projects can be expanded into technically sound activities. The Basin Hydrogeologic Investigation and Mauritania Forage Research fall into this category. The Mali Feeder Road funding shown for 1981 will be an essentially new activity still in the first Region of Mali, but directed at feeder roads north of Kayes where studies are now underway. Within the Health Sector the three year investigative program to be undertaken by Yale University beginning in 1978 should provide the basis for fully funded disease control programs getting underway by 1981.

The foregoing program is believed to represent the measure of U.S. support required by OMVS programs consonant with the rate of progress projected for its realization. The grant funded technical assistance activities are in areas where U.S. technical expertise or equipment will be the principal factor assuring success. A major portion of the scale of loan activities through 1982 is predicated upon AID participation in basin infrastructure projects since these are integrally related to the development of irrigated agriculture. The composite of these projects fits within and complements the overall strategy for development of the Sahel Region as that strategy has been articulated thus far by the Club du Sahel and in other regional forums.

V. COUNTRY/PROGRAM - OMVS - SENEGAL RIVER BASIN

<u>Mission Evaluation Plan for FY 1977 and FY 1978</u>				
(1)	(2)	(3)	(4)	(5)
<u>Project Title & Number/Subject</u>	<u>Date of Last Evaluation</u>	<u>Number of Last PAR (if applicable)</u>	<u>Date of Submission FY 1977 and/or FY 1978 Evaluation</u>	<u>Period Covered Next Evaluation</u>
625-11-120-616 O.M.V.S. Agronomic Research	-	-	January 1978	Jan. 76-Dec. 77
625-11-995-617 O.M.V.S. Environmental Study	-	-	March 1978	Feb. 77-Feb. 78
625-11-755-620 O.M.V.S. Management and Staff Support	-	-	June 1978	Jul. 77-Jun. 78
685-0602 O.M.V.S. Mauritania Forage Research	-	-	August 1978	Jul. 77-Jul. 78
685-0701 O.M.V.S. Matam Irrigated Perimeter	-	-	January 1978	Jan. 77-Dec. 77
685-11-190-618 O.M.V.S. Study of Matam Perimeter*	-	-		

* This is a feasibility/design study being carried out by Bechtel Corporation in support of the proposed Matam Irrigated Perimeters proposed loan. No formal evaluation report on this activity is planned, since the project's output is, in effect, a Project Paper to be submitted for assessment and approval.

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>	1 TRANSACTION CODE <input checked="" type="checkbox"/> A Add <input type="checkbox"/> C Change <input type="checkbox"/> D Delete	PID 2 DOCUMENT CODE 1
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3 COUNTRY ENTITY OMVS - Senegal River Basin	4 DOCUMENT REVISION NUMBER <input type="checkbox"/>
5 PROJECT NUMBER (7 digits) [628-0502]	6 BUREAU/OFFICE A Symbol: AFR B Code: [1]
7 PROJECT TITLE (maximum 40 characters) [OMVS Flood Recession Crop Improvement]	

8 PROPOSED NEXT DOCUMENT A <input checked="" type="checkbox"/> 2 PRP <input type="checkbox"/> 3 PP B DATE: MM YY [10 76]	10 ESTIMATED COSTS (\$000 or equivalent, \$1 =) FUNDING SOURCE Life of Project a AID Appropriated 940 b OTHER 1 U.S. 2 c Host Country d Other Donor(s) TOTAL 940
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9 ESTIMATED FY OF AUTHORIZATION/OBLIGATION a INITIAL FY [78] b FINAL FY [80]	
--	--

II PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A APPROPRIATION	B PRIMARY PURPOSE CODE	PRIMARY TECH CODE		E FIRST FY 7 ^e		LIFE OF PROJECT	
		C Grant	D Loan	F Grant	G Loan	H Grant	I Loan
PN	B 112	073		800		140	
(1)							
(2)							
(3)							
(4)							
TOTAL				800		140	

12 SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

OPO 012

13 SPECIAL CONCERNS CODES (maximum six codes of four positions each) BR BS R/AG	14 SECONDARY PURPOSE CODE B 111
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15 PROJECT GOAL (maximum 240 characters)

To develop and utilize the human and natural resources of the Senegal River Basin for increased food production.

16 PROJECT PURPOSE (maximum 480 characters)

To conduct field trials of improved varieties of seed, principally sorghum, on the flood recession areas cultivated along the Senegal River in order to develop proven out varieties that can be broadly disseminated to farmers of the flood recession lands.

17 PLANNING RESOURCE REQUIREMENTS (staff funds)

AID DH agronomist and agriculture engineer.

18 ORIGINATING OFFICE CLEARANCE Signature: <i>[Handwritten Signature]</i> Title: OMVS Coordinator Date Signed: MM DD YY [06 23 76]	19 Date Document Received in AID/W or for AID/W Documents. Date of Distribution MM DD YY []
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PROJECT IDENTIFICATION DOCUMENT: (PID)
OMVS FLOOD RECESSION CROP IMPROVEMENT

I. Summary of the Problem to be Addressed and the Proposed Response

A. The Problem

Approximately 120,000 hectares of flood recession lands along the Senegal River are planted in sorghum each year. The amount varies considerably from year to year, depending on the height of the flood crest. The flood recession sorghum produced is the principal source of food and income for the farming population of the middle valley of the Senegal River Basin in Senegal and Mauritania. It will remain the principal occupation and source of food of the valley, even after the major upstream dam is built, until a large part of the projected irrigation perimeters have been developed.

The varieties and methods used in this crop are primitive. Yields are low, estimated at 400 to 600 kilograms per hectare. Planting is done by punching holes in the ground with a rod, dropping in seeds, and covering them over. Area planted and yields are reduced by the inability to plant rapidly enough to take full advantage of the recession of the flood waters.

B. The Proposed Response

Over the years the research facilities in the valley have made sporadic efforts to test improved varieties and methods of cultivation. There has been no sustained effort on a significant scale to prove out improved varieties and methods of cultivation through properly conducted field trials. Proposed is a three year period of field trials in the Senegal River Valley of flood recession grains, principally sorghum, and experimentation with improved practices of cultivation.

C. Relation to the Central-West African Region DAP, 1976-1980

The DAP assistance strategy statement concludes by stating that the U.S. must both continue to assist in increasing food production in dry land and currently irrigated areas, and embark upon assisting the expansion of the productive resource base through river basin development. The development of proven improved varieties of flood recession grains, principally sorghum, and the development of improved practices of their cultivation would result in sustained increases in food production and would contribute to the achievement of the DAP assistance strategy statement vis-a-vis increasing food production in dry land areas.

D. Description of the Proposed Project

Over a three year period field trials will be carried out in approximately fifty villages on the flood recession lands of approximately three farmers per village. The participating farmers would receive all inputs and would be guaranteed a minimum yield equal to the average yield for the area using traditional varieties. Experimentation with improved practice of cultivation, primarily animal traction will be carried out in the same villages with the same farmers. The headquarters for the project would be located at the OMVS Agronomic research stations.

E. Estimated Project Outputs

1. Proven out improved varieties of flood recession grains.
2. Results of experimentation with improved practices of cultivation.

F. Estimated Technical and Physical Resources Required

1. Technical assistance: 3 man years.
2. Vehicles.
3. Seed, fertilizer, pesticide.
4. Animals and equipment.

G. Estimated Disbursement Period: FY 1978 - FY 1980

H. Major Assumptions Pertinent to Project Success

1. The careful controls necessary to prove out the new varieties will be followed as established by the participating farmers.
2. The farmers selected will participate for the entire three year trial period.

I. Activities by the OMVS, OMVS Member Countries, and Other Donors

Neither the OMVS nor its member countries have any field trial programs to prove out improved varieties of flood recession grains. It is anticipated that the identification of varieties to test would be coordinated with the AID assisted semi-arid food grain research and development project as would the results as they are developed.

J. Realistic Alternatives

None.

K. Identification of Major Intended Direct and Indirect Beneficiaries

The OMVS, member country agriculture services, and the participating farmers are the direct beneficiaries. The flood recession farmers who would benefit from the widespread distribution of improved varieties and the development of improved practices of cultivation would be the indirect beneficiaries.

L. Spread Effect

The results would be useful in the other Sahel river basins that cultivate flood recession lands.

II. Financial Requirements and Plans

1. Technical assistance (agronomist)	\$210,000
2. Seed, fertilizer, pesticide, equipment	100,000
3. Vehicles	30,000
4. Operating costs (local salaries, guaranteed yield)	<u>600,000</u>
TOTAL	\$940,000

AID financing would be grant funds for the total project cost as the OMVS will be unable to provide any contribution to project financing over the next several years. The grant agreement would be with the OMVS.

III. Development of the Project

The development of the project design would be undertaken by a two man agriculture (AID DH) team composed of an agronomist and an agriculture engineer. The PRP would be scheduled for October 1976 and the PP for mid FY 1977.

IV. Issues of Policy or Programmatic Nature

None.

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>				1 TRANSACTION CODE A Add C Change D Delete		PID 7 DOCUMENT CODE 1	
3 COUNTRY ENTITY OMVS - Senegal River Basin				4 DOCUMENT REVISION NUMBER			
5 PROJECT NUMBER (7 digits) [628-0507]		6 BUREAU/OFFICE A Symbol APR		B Code [1]		7 PROJECT TITLE (maximum 40 characters) [OMVS Hydrometeorological System]	
8 PROPOSED NEXT DOCUMENT A [3] 2 - PRP 3 - PP B DATE MM YY [04 77]				10. ESTIMATED COSTS (\$000 or equivalent, \$1 =)			
9 ESTIMATED FY OF AUTHORIZATION/OBLIGATION a. INITIAL FY [78] b. FINAL FY [80]				FUNDING SOURCE			
				a AID Appropriated		2,500	
				b OTHER		1	
				U.S.		2	
				c Host Country			
				d Other Donor(s)			
				TOTAL		2,500	
II PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)							
A APPROPRIATION	B PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E FIRST FY 78		LIFE OF PROJECT	
		C Grant	D Loan	F Grant	G Loan	H Grant	I Loan
(1) FN	B 183	876		1,870		2,500	
(2)							
(3)							
(4)							
		TOTAL		1,870		2,500	
12 SECONDARY TECHNICAL CODES (maximum six codes of three positions each)							
877		873		190		242	
13 SPECIAL CONCERNS CODES (maximum six codes of four positions each)						14 SECONDARY PURPOSE CODE	
BR		BS					
15 PROJECT GOAL (maximum 240 characters) [To develop and utilize the human and natural resources of the Senegal River Basin for increased food production.]							
16 PROJECT PURPOSE (maximum 480 characters) [To strengthen the technical planning competence of the Secretariat of the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS) by establishing within the OMVS a hydrometeorological system to provide a continuous record of river flow and rainfall by time units for key stations on the mainstream and major tributaries in order to provide basic data essential for basin planning and water resource project design and for the timing of agriculture activities related to flood and low river flows.]							
17 PLANNING RESOURCE REQUIREMENTS (staff/funds) PASA with the Bureau of Reclamation							
18 ORIGINATING OFFICE CLEARANCE						19 Date Document Received in AID/W, or for AID/W Documents, Date of Distribution	
Signature <i>[Signature]</i>						Date Signed	
Title OMVS Coordinator						MM DD YY 06 23 78	

PROJECT IDENTIFICATION DOCUMENT (PID):
OMVS HYDROMETEOROLOGICAL SYSTEM

I. Summary of the Problem and the Proposed Response

A. The Problem

The problem is that the lack of continuous records of river flow and rainfall by time units (reporting from all stations at the same time) for the Senegal River and its tributaries does not allow for proper river basin water resource project planning and design, and for timing of agriculture activities related to flood and low river flows.

B. Proposed Response

The establishment of a hydrometeorological system and the corollary training of riparian staff members of the OMVS to operate the system will provide on a continuous basis this basic data which is essential for river basin planning and development.

C. Relation to the Central-West African Region DAP, 1976-1980: The DAP assistance strategy statement concludes by stating that the U.S. must both continue to assist in increasing food production in dry land and currently irrigated areas, and embark upon assisting the expansion of the productive resource base through river basin development. The establishment of a hydro-meteorological system in the Senegal River Basin would provide the basic river-flow and rainfall data that the technical planners must have to develop and design the projects that would contribute to the achievement of the DAP assistance strategy statement vis-a-vis the development of the Senegal River Basin.

D. Description of the Proposed Project: The proposed project would include (1) technical assistance; (2) provision of equipment; (3) training; (4) operating costs for the initial five years. The hydrometeorological network would consist of (1) recording flow gauges for hydrologic stations on the mainstream and tributaries; (2) a network of rain gauges at selected points in the basin; (3) a radio network for daily reporting to a headquarters location of rainfall and river flow or stage. The technical assistance portion of the proposed project would be a team (from NOAA, USGS, Bureau of Reclamation, or individual contract) composed of a senior hydrometeorologist for five years, two hydrologists for three years, and one communications technician for two years. The training element would include (1) the training of one hydrometeorologist for the OMVS Secretariat to the M.S. level at a U.S. university; (2) one equipment specialist for each member country (Mali, Mauritania, Senegal) trained in the U.S. for approximately ten months; (3) short-course training at the OMVS Secretariat and on-the-job training for the hydrologic and meteorologic technicians that would man the system (10 Mali, 5 Mauritania, 10 Senegal); (4) three months of in-service training for two communication technicians per country.

E. Estimated Project Outputs

1. Installation of flow gauges, rain gauges, and communications equipment.
2. Training of 30-35 riparian personnel to man the system.
3. Proper and regular compilation of river flow and rainfall data.

F. Estimated Technical and Physical Resources Required

1. Technical assistance team composed of one senior hydrometeorologist, two hydrologists, and one communication's technician.
2. Equipment for the system.
3. Vehicles and boats.

G. Estimated disbursement period: FY 1978 to FY 1983

H. Major assumptions pertinent to project success.

1. Qualified candidates will be made available for the proposed training.
2. Operation of the system by the OMVS will be coordinated with the appropriate national services.

I. Activities by the OMVS, OMVS member countries, and other Donors:

The OMVS and the member countries have compiled 67 years of river flow observations which have been based on visual observations at irregular intervals of time. River flow gauges have been operational at irregular intervals of time at a limited number of locations on only the Senegal River. The accuracy of these observations is questionable and can not be used to develop a water profile for the Senegal River and its tributaries. None of the other donors to the OMVS are active in this area nor are any of them presently contemplating any activity in this area. A.I.D. is currently providing assistance to the Inter-African Committee for Hydrology Studies (CIEH) which as a planning and water information dissemination center would be one of several users of the data produced by the OMVS hydro-meteorological system. The proposed project will also complement the WMO agrometeorological project which A.I.D. is assisting through the Sahel water data network project and which will be active in the establishment of national meteorological and hydrological services in the Sahel countries and will serve as a Sahel-wide center for the compilation and dissemination of this information for agricultural planning purposes.

J. Realistic Alternatives:

None

K. Major Intended Direct and Indirect Beneficiaries

The OMVS Secretariat and the national hydraulic and meteorology services of the three member countries are the direct beneficiaries. As the data that results from the system is essential for planning and designing water resource projects, indirect beneficiaries would be those who would ultimately benefit from the completion of the projects.

L. Spread Effect

The experience and knowledge gained during the establishment and initial operation period of the system would be used when designing similar hydrometeorological systems for the Niger and Volta river basins and for the Lake Chad basin.

II. Financial Requirements and Plans

The best estimate of the proposed cost by major component follows:

Personnel	\$910,000
Training	220,000
Equipment	750,000
Operating Costs for the initial five years	<u>620,000</u>
	\$2,500,000

A.I.D. financing would be grant funds for the total project cost as the OMVS will be unable to provide any contribution to project financing over the next several years. The grant agreement would be with the OMVS.

III. Development of the Project

The proposed project idea resulted from the Sahel Task Force consideration of the data required for the systematic development of the Sahel river basins. Preliminary discussions with the OMVS indicate that it would be receptive of the proposed project.

The development of the project design would be undertaken by a two or three man PASA team from the Bureau of Reclamation. It is envisioned that this team would be in the field for three to four weeks and would require eight to ten weeks in Washington to complete their final report. The findings and recommendations developed by the PASA team would be used to prepare a PP. The PASA team would be scheduled for late CY 1976 or early CY 1977 with an approved PP by the end of FY 1977.

IV. Issues of Policy or Programmatic Nature

None

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>	1 TRANSACTION CODE <input checked="" type="checkbox"/> A Add <input type="checkbox"/> C Change <input type="checkbox"/> D Delete	PID 2 DOCUMENT CODE 1
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3 COUNTRY ENTITY OMVS - Senegal River Basin	4 DOCUMENT REVISION NUMBER <input type="checkbox"/>
5 PROJECT NUMBER (7 digits) [628-0503]	6 BUREAU/OFFICE A Symbol: AFR B Code: [1]
7 PROJECT TITLE (maximum 40 characters) [OMVS Hydrogeologic Investigations]	

8. PROPOSED NEXT DOCUMENT A <input checked="" type="checkbox"/> 3 PRP B DATE: MM YY [07 77] <input type="checkbox"/> 2 PRP 3 PP	10. ESTIMATED COSTS (\$000 or equivalent, \$1 =) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:80%;">FUNDING SOURCE</th> <th style="width:20%;">Life of Project</th> </tr> <tr> <td>a AID Appropriated</td> <td style="text-align: right;">2,500</td> </tr> <tr> <td>b OTHER: 1</td> <td></td> </tr> <tr> <td> US: 2</td> <td></td> </tr> <tr> <td>c Host Country</td> <td></td> </tr> <tr> <td>d Other Donor(s)</td> <td></td> </tr> <tr> <td style="text-align: right;">TOTAL</td> <td style="text-align: right;">2,500</td> </tr> </table>	FUNDING SOURCE	Life of Project	a AID Appropriated	2,500	b OTHER: 1		US: 2		c Host Country		d Other Donor(s)		TOTAL	2,500
FUNDING SOURCE	Life of Project														
a AID Appropriated	2,500														
b OTHER: 1															
US: 2															
c Host Country															
d Other Donor(s)															
TOTAL	2,500														

9 ESTIMATED FY OF AUTHORIZATION/OBLIGATION a. INITIAL FY [78] b. FINAL FY [80]	
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II PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)							
A APPROPRIATION	B PRIMARY PURPOSE CODE	PRIMARY TECH CODE		E FIRST FY 78		LIFE OF PROJECT	
		C Grant	D Loan	F Grant	G Loan	H Grant	I Loan
(1) FN	B 183	876		1,970		2,500	
(2)							
(3)							
(4)							
TOTAL				1,970		2,500	

12 SECONDARY TECHNICAL CODES (maximum six codes of three positions each)							
873	980	190					

13 SPECIAL CONCERNS CODES (maximum six codes of four positions each)	14 SECONDARY PURPOSE CODE
BR RGEN BS	B 669

15 PROJECT GOAL (maximum 240 characters)

To develop and utilize the human and natural resources of the Senegal River Basin for increased food production.

16 PROJECT PURPOSE (maximum 480 characters)

To strengthen the technical planning competence of the Secretariat of the Organisation pour la mise en Valeur du Fleuve Senegal (OMVS) by undertaking investigations to identify the location, quantity, and quality of sub-surface water and its relationship to surface water flows in the Senegal River Basin.

17 PLANNING RESOURCE REQUIREMENTS (staff/funds)

Bureau of Reclamation/United States Geologic Survey PASA

18 ORIGINATING OFFICE CLEARANCE	19 Date Document Received in AID/W, or for AID/W Documents, Date of Distribution
Signature: <i>[Handwritten Signature]</i> Title: OMVS Coordinator	Date Signed: MM DD YY [06 23 76]

PROJECT IDENTIFICATION DOCUMENT: (PID)
HYDROGEOLOGIC INVESTIGATIONS

I. Summary of the Problem and the Proposed Response

A. The Problem

The April 1976 "Report to the United States Congress: Proposal for a Long-Term Comprehensive Development Program for the Sahel" made reference to the apparent huge underground resources of fresh water in the Sahel and its potential for irrigation use. The problem is that almost nothing is known regarding the sub-surface water in the Senegal River Basin.

B. Proposed Response

The proposed project would through an intensive drilling program throughout the Basin and the ensuing analysis of the drilling results provide the basic data needed to undertake the proper planning for the use and management of the sub-surface water resource.

C. Relation to the Central-West African DAP, 1976-1980

The DAP assistance strategy statement concludes by stating that the U.S. must both continue to assist in increasing food production in dry land and currently irrigated areas, and embark upon assisting the expansion of the productive resource base through river basin development. The proposed project would develop essential basic data concerning the location, quantity, and quality of the sub-surface water resource in the Senegal River Basin. This data is essential for the planning and design of water resource projects which would utilize the sub-surface water resource and thus contribute to the achievement of the DAP assistance strategy statement.

D. Description of the Proposed Project

The project would be comprised of (1) an analysis of all existing data concerning groundwater in the basin and the preparation of a qualitative report and map indicating where the lack of hydrogeologic data could be critical for future water and land management; (2) implementation of a comprehensive hydrogeologic investigation; (3) training of OMVS and member country personnel to assist in implementation of the investigation and to continue the monitoring and analysis of the sub-surface water resource on a permanent basis after the hydrogeologic investigation has been completed.

E. Estimated Project Outputs

1. Qualitative report and maps detailing hydrogeologic data deficiencies in preparation for the drilling program.
2. Drilling at 1,000 to 1,500 locations in the Basin.
3. Analysis of the drilling results and preparation of a geologic map.

4. Training of one hydrogeologist for the OMVS Secretariat.
 5. Training of one technician/engineer for each member country.
 6. Training of 20 to 25 riparian field technicians.
 7. Monitoring and analytical capability of the sub-surface water resource within the OMVS Secretariat.
- F. Estimated Technical and Physical Resources Required
1. Technical assistance: 10 man years.
 2. Drilling equipment: Three drilling rigs, spare parts, and ancillary drilling supplies and equipment.
 3. Support vehicles: Three four wheel drive medium size trucks.
- G. Estimated Disbursement Period: FY 1978-1982.
- H. Major Assumptions Pertinent to Project Success
1. Qualified candidates will be made available for the proposed training.
- I. Activities by the OMVS, OMVS Member Countries, and Other Donors

Limited investigation of the sub-surface water resource in the Basin has been undertaken, usually in relation to the study of specific project proposals. However, there has not been undertaken a comprehensive basin-wide drilling program to determine the location, quantity, and quality of the sub-surface water resource. A.I.D. is currently providing assistance to the Inter-African Committee for Hydrology Studies (CIEH) which as a planning and water dissemination center would be one of several users of the data produced by the proposed hydrogeologic investigation.

J. Realistic Alternatives: None

K. Identification of Major Intended Direct and Indirect Beneficiaries

The OMVS Secretariat and the national irrigation/water resource services of the three member countries would be the direct beneficiaries as would the populations at the locations where the test drilling is undertaken. As the data that results from the system is essential for planning and designing water resources projects which would utilize the sub-surface water resource, indirect beneficiaries would be those who would ultimately benefit from the completion of the project.

L. Spread Effect

The experience and knowledge gained during the implementation of the proposed investigation would have application to similar investigations as they are undertaken in the Niger and Volta river basins, and in the Lake Chad basin.

II. Financial Requirements and Plans

The best estimate of the proposed cost by major components follows:

Personnel	\$700,000
Training	150,000
Equipment	700,000
Operating Costs	950,000
	<hr/>
	\$2,500,000

A.I.D. financing would be grant funds for the total project cost as the OMVS will be unable to provide any contribution to project financing over the next several years. The grant agreement would be with the OMVS.

III. Development of the Project

The development of the project design would be undertaken by a PASA team from the Bureau of Reclamation/United States Geologic Survey. The findings and recommendations developed by the PASA team would be used to prepare a PP. The PASA team would be scheduled for early CY 1977 with an approved PP by the end of FY 1977.

IV. Issues of Policy or Programmatic Nature: None

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>	1 TRANSACTION CODE <input checked="" type="checkbox"/> A Add <input type="checkbox"/> C Change <input type="checkbox"/> D Delete	PID 2 DOCUMENT CODE 1
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3 COUNTRY ENTITY OMVS/MALI	4 DOCUMENT REVISION NUMBER 1
5 PROJECT NUMBER (7 digits) [688-0801]	6 BUREAU/OFFICE A Symbol AFR B Code [1]
7 PROJECT TITLE (maximum 40 characters) [OMVS/MALI - FEEDER ROAD DEVELOPMENT]	

B. PROPOSED NEXT DOCUMENT A. <input checked="" type="checkbox"/> 2 - PRP <input type="checkbox"/> 3 - PP B. DATE MM YY 0 9 7 6	10. ESTIMATED COSTS (\$000 or equivalent, \$1 = 450 MF) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">FUNDING SOURCE</th> <th>Life of Project</th> </tr> <tr> <td>a. AID Appropriated</td> <td></td> <td>5,000</td> </tr> <tr> <td>b. OTHER</td> <td>1</td> <td></td> </tr> <tr> <td> US</td> <td>2</td> <td></td> </tr> <tr> <td>c. Host Country</td> <td></td> <td>200</td> </tr> <tr> <td>d. Other Donor(s)</td> <td></td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right;">TOTAL</td> <td>5,200</td> </tr> </table>	FUNDING SOURCE		Life of Project	a. AID Appropriated		5,000	b. OTHER	1		US	2		c. Host Country		200	d. Other Donor(s)			TOTAL		5,200
FUNDING SOURCE		Life of Project																				
a. AID Appropriated		5,000																				
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TOTAL		5,200																				
9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION a. INITIAL FY [7 8] b. FINAL Y [8 0]																						

II PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)							
A. APPRO PRIAT. ON	B. PRIMARY PURPOSE CODE	PRIMARY TECH CODE		E FIRST FY 78		LIFE OF PROJECT	
		C Grant	D Loan	F Grant	G Loan	H Grant	I Loan
(1) FN	B 220	061		3,000		5,000	
(2)							
(3)							
(4)							
TOTAL				3,000		5,000	

12 SECONDARY TECHNICAL CODES (maximum six codes of three positions each)							
200	252						
13 SPECIAL CONCERNS CODES (maximum six codes of four positions each)							14 SECONDARY PURPOSE CODE
BR	BF						B 101

15 PROJECT GOAL (maximum 240 characters)

[To improve the quality of rural life by facilitating access to Services and evacuation of agricultural production.]

16. PROJECT PURPOSE (maximum 480 characters)

[To stimulate the rural economy of Mali's large, economically depressed First Region by assisting with the upgrading of certain existing road links in the region and by strengthening the region's road maintenance and repair capabilities.]

17. PLANNING RESOURCE REQUIREMENTS (staff/funds) 4 weeks for the following:

Rural Sociologist	Civil/Highway Engineers
Agricultural Economist	Project Design Officer

18 ORIGINATING OFFICE CLEARANCE Signature: <i>Therese F. [unclear]</i> Title: OMVS Coordinator	19 Date Document Received in AID/W. or for AID/W Documents, Date of Distribution Date Signed: MM DD YY 0 5 2 8 7 6
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PROJECT IDENTIFICATION DOCUMENT (PID):
OMVS/MALI FEEDER ROADS DEVELOPMENT

I. The Problem and the Proposed Response

A. The Problem

The First (Or Kayes or Northwest) Region of Mali is an isolated area of approximately 128,000 square kilometers located in the western portion of the country. The region contains a relatively large population and possesses considerable economic potential. But, as noted in the DAP (page B-16), "Good areas are remote from markets. Transport is especially poor in this part of the country." The region's main link (and only surface link during the rainy season) with other parts of Mali and other countries is the rail line which runs from Bamako to Dakar, Senegal. Because of the rail line and the fact of isolation, the First Region has been relegated to a relatively low priority status for development investments by both the Government of Mali and the donor community. And this has adversely affected the development of projects in this part of the Senegal River basin.

Lying as it does within the Senegal River basin, the region is hoping to benefit from the development program being coordinated by the Senegal River Basin Development Authority (OMVS). The DAP (page B-16) notes "Once the Mananatali Dam scheme is underway both the market and transport situations may change rather rapidly. The northwest in particular will benefit from the OMVS program for the Senegal River basin. Irrigation, water transport, cheap electrical power, industrial centers will all come in the wake of the scheme. For the time being western Mali must remain somewhat neglected."

This remarkable conclusion poses a problem in that the OMVS must strive for an overall balance of investments and benefits accruing to the member countries and, to date, most of the major capital investments have been in Senegal. If greater interest is not paid to Mali and Mauritania, the present rate of inequities in the pattern of investments will probably increase, with a resultant weakening of this regional organization.

B. Proposed Response

1. Project Purpose

The purpose of this project is to assist in the upgrading of certain existing road links in the First Region as well as to strengthen the region's road maintenance and repair capabilities. This kind of effort should help to stimulate the rural economy of this large economically depressed area. As stated in the CWR DAP overview, (page 179), "In general, rural roads, whether for areas of existing farm production or for new settlement areas, are a prerequisite for development"

Also of importance, one of the selected roads parallels the Falome River which is the tributary of the Senegal River harboring the largest known pocket of Onchocerciasis in the Senegal River Basin. By improving the route and opening up the area, the project will facilitate extending the ongoing OCCGE Onchocerciasis Control Program into the First Region of Mali well in advance of the construction of the Manantali Dam.

The French Government has already assisted Mali with the re-surfacing of significant stretches of the selected road links. A laterite surface has now upgraded these portions to an all-weather status. However the requirement now is for the resurfacing of the remaining portions as well as for the construction of culverts and bridges which will protect the road from deterioration by heavy rains and flooding. Otherwise the re-surfacing, even that done by the French, will have been to little avail. Regular maintenance and repair of the roads will also be required, and therefore we are also proposing to organize and equip Public Works Brigades, similar to those now operating in other regions of Mali.

2. Project Details

a. Project Outputs will include the following:

(1) Forty to fifty culverts and bridges along the almost 200 kilometers of the Kayes-Kenieba road, thus opening up one of the most isolated areas of Mali.

(2) Three or four bridges on critical routes in the immediate vicinity of Kayes.

(3) Twenty to thirty culverts and bridges as well as laterite re-surfacing on the 105 kilometers of the road from Kayes to Nahe, on the Senegal River, which would link up with the Senegalese-planned Nahe-Tambacounda-Dakar road.

(4) At least two Public Works Brigades organized and equipped to maintain and repair the roads of the area.

b. Physical resources will include the construction materials and equipment and vehicles necessary to re-surface portions of the roads and to construct the bridges and culverts. The equipment and vehicles will also form part of the Public Works Brigades.

Technical assistance will provide for the four to six experts required to implement the project.

c. Disbursements are expected to bulge in the first year of the project as bills for equipment purchases come in.

3. Major Assumptions

It is assumed that the Malian Government's support will be sufficient throughout the project to meet the project's purpose. It is also assumed that the increased economic progress resulting from the improved roads will encourage the Malians to continue the required maintenance and repair services after U.S. assistance has terminated.

4. Host Country and Other-Donor Activities

The French Government has provided most portions of the selected roads with an all-weather laterite surface. The Federal Republic of Germany is financing the improvements to the Tambacounda (Senegal) - Nahe Road which will link up with one of the portions AID is proposing to upgrade. The Malian Government, in recognizing the great potential of the First Region, has called for considerable investment in agricultural production, which will justify the road improvements. The UNDP has financed a study to determine the optimum route from Bamako to Nahe.

5. Project Alternatives

The roads could be left to deteriorate further until detailed economic and engineering studies are completed, which would then lead to major reconstruction of the roads in anywhere from five to ten years.

Also a more labor-intensive, less capital-intensive approach to road maintenance might be more viable.

6. Project Beneficiaries

Project beneficiaries are expected to be many of the one million people living in Mali's First Region who will be able to better market their farm products and who in turn will generate greater economic activity on the part of other people in the area. In fact, this activity will tie in directly with an AID bilateral activity, "First Region Integrated Agricultural Production", which is being proposed in order to increase agricultural development and which will require the improved roads being proposed in this PID if the farmer is to maximize his profits.

7. Spread Effect

The project is expected to have an effect on more people than reside in the direct target area simply because the economic activity is expected to benefit other parts of Mali via lower food prices, increased revenues from internal taxes, and possibly foreign exchange revenues as surplus production is exported.

II. Financial Requirements and Plans

A. \$5 million over 3 years (1978-1980) broken down as follows (\$000):

Technical Assistance (4 men X 3 yrs. X \$70 pa.)	\$ 840
Equipment and Vehicles	1,160
Construction Materials for bridges and culverts	2,500
Other Costs	500
Total	<u>\$5,000</u>

B. AID assistance is expected to be entirely in the form of a Technical Assistance Grant.

C. The Malian Government is expected to provide the equivalent of \$200,000 for personnel (primarily Traveau Neuf brigades to do construction work), other local cost expenditures and in-kind services. This is obviously not expected to total 25 percent of total project costs, but this is not vital since the assistance is being provided through the OMVS, a regional organization.

III. Project Development

This project should be developed in concert with AID's bilateral project in agricultural production described in Section I.6 (Project Beneficiaries) above. It is anticipated that members of the bilateral project design team will also be able to provide information for this project. Primarily, these will be the Rural Sociologist, Agricultural Economist and Civil/Highway Engineers as well as the Project Design Officer/Team Leader. Assuming concurrent development of the two projects, a four to six week period beginning in early September will permit submission of the PRP by October 30, 1976. The two PP's would then be completed in June/July 1977 for submission and approval in FY 1978.

IV. Issues

- A. Should this be provided as a loan instead of a grant?
- B. Is Malian Government support sufficient or realistic?

PROJECT IDENTIFICATION DOCUMENT (PID) :
OMVS MANAGEMENT AND ORGANIZATIONAL ASSISTANCE TO SONADER

I. Summary of the Problem and the Proposed Response

A. The Problem

Mauritania's only possibility for becoming self-sufficient in food production lies in its lands adjacent to the Senegal River. Along this river's flood plain are most of the country's arable lands populated by the only sedentary farmers of that nation. It is currently estimated that some 200,000 hectares of this land could be irrigated by water from the Senegal River for double cropping of food grains. A series of ten pilot irrigated perimeters of between 75 to 125 hectares each has been undertaken by the European Development Fund during the past six years to demonstrate the advantages of this method of cultivation to local farmers. These lie between Rosso and Kaedi, and they have shown that the farmers in the basin can readily adapt to modern agricultural techniques. Another ten pilot irrigated perimeters are now being studied between Kaedi and Selibabi, the object being to have such techniques introduced the length of the Mauritanian side of the river by the time an upstream reservoir is constructed which will allow sufficient water for double cropping. In addition, the PRC has developed an irrigated perimeter of 800 hectares at Rosso, and the FED and IBRD have started the development of another 3500 hectare perimeter where the Gorgol and Senegal Rivers intersect.

The main component lacking in all irrigated perimeter development in Mauritania thus far has been a counterpart organization within the GIRM with the capability to eventually assume all of the managerial, logistical support, operational and marketing functions that irrigated agricultural projects require. The lack of such an organization has been the greatest single factor inhibiting the development of irrigated agriculture on the Mauritanian side of the river. The small pilot perimeters begun by FED are supported entirely through a FED financed contract with a Dutch engineering company. Neither FED nor the IBRD can plan for their phased withdrawal from perimeters begun in the absence of a GIRM counterpart agency to assume full responsibility for the operation of these projects. Understandably, neither the FED, IBRD nor any other donor will consider the development of additional irrigated perimeters until such a counterpart agency is developed.

B. Proposed Response

1. Project Purpose

The 1975 Mauritanian Party Congress emphasized development of the rural sector including more efficient and coordinated use of available land resources. In order to satisfy the increased demands on the rural sector, the government established by decree in July 1975 a government agency called the Société Nationale pour le Développement Rural (SONADER). It was not until January 1976 that this agency was announced publicly. Cheikh Benani Youba, an extremely capable former Director of Agriculture in the GIRM, has been named director of SONADER. The agency is under the direction of the Ministry of Water Resources which is headed by Minister Mohamed Ould Amar, former Secretary General of the OMVS. Its charter states that SONADER will be financially independent.

To initiate and support the implementation of programs to develop the rural sector of Mauritania, SONADER will be responsible for:

a. Studies, implementation and control of work related to hydro-agricultural projects. Within its activities, it initiates studies to determine identification, prefeasibility and implementation procedures for realization of these projects.

b. The association will be responsible for the management of and training for the program with which SONADER will be entrusted.

c. Coordination and maintenance of the hydro-agricultural equipment entrusted to it.

d. The control, on request of the administration, of rural management activities by private individuals or organizations.

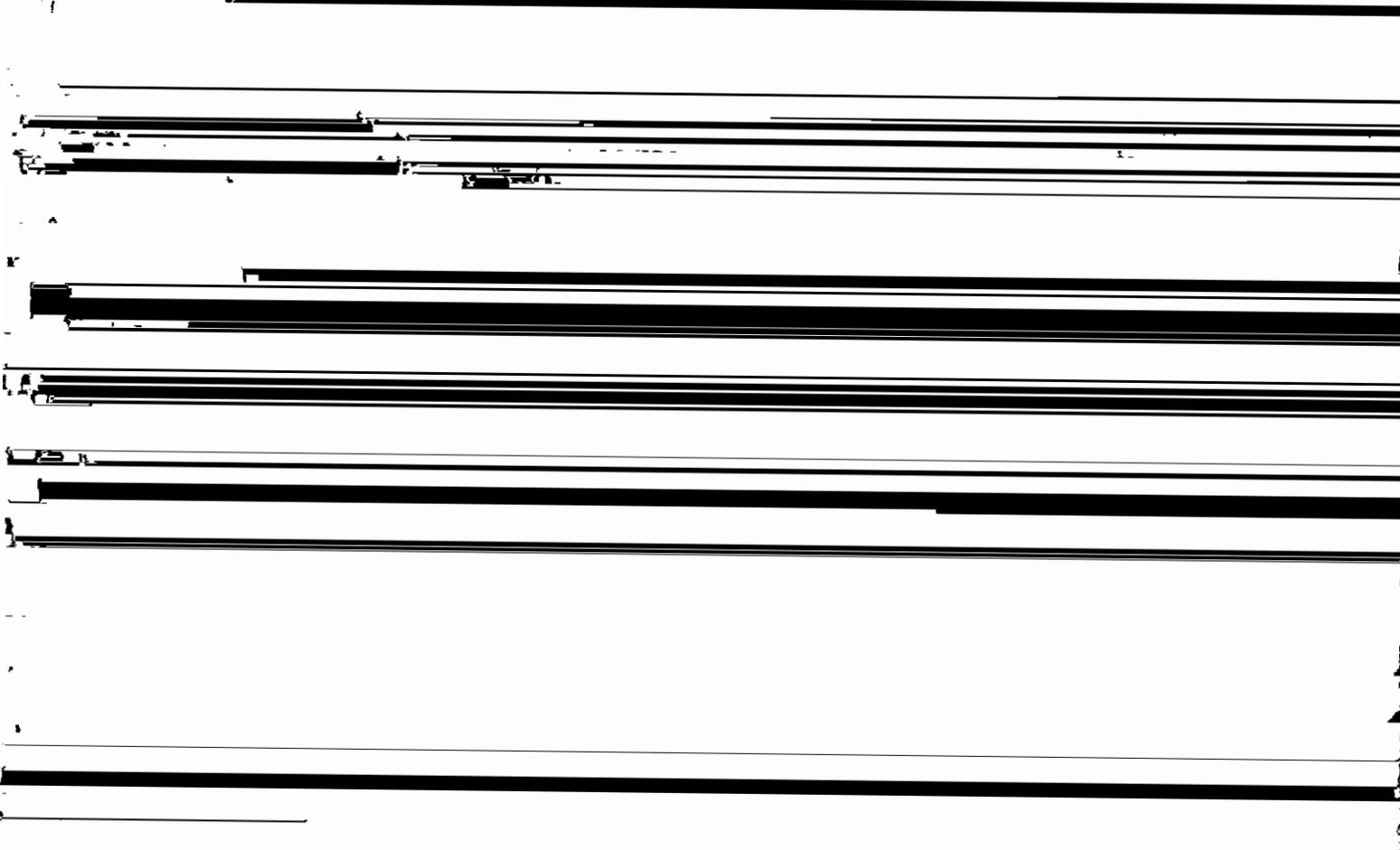
2. To initiate necessary studies and/or surveys associated with the programs/projects entrusted to it, studies can be subcontracted in whole or in part by SONADER. SONADER will be administered by an Administrative Council but managed by the Director. The Administrative Council is composed of:

Chairman
 Vice-Chairman (Director of Rural Engineering)
 Representative of the Ministry of Water Resources
 Representative of the Ministry of Finance
 Representative of the Ministry of Construction
 Representative of the Ministry of Commerce, Transport
 and Tourism
 Representative of the National Assembly
 Representative of the Mauritanian Labor Union (UTM)
 Representative of the Central Bank
 Director of Agriculture
 Director of Animal Husbandry
 Representative of the General Secretariat of the
 President's Office
 Representative of the GIRM Personnel Office

The annual estimated budget of the agency will be prepared by the Director of SONADER and submitted for consideration to the Administrative Council. After approval by the council, it will be passed to the Ministry of Water Resources and the Ministry of Finance for approval. SONADER is authorized to receive funds, grants, or loans from public or private organizations (Mauritanian or foreign). In addition, the agency is authorized to acquire all necessary real property and equipment to achieve its operational goals. For its initial current year operations, the SONADER budget is 25,000,000 UM (\$1.00/44 UM). The initial focus of SONADER's attention is the Senegal River Basin where, according to its Director, 80% of its activities will probably be concentrated.

To assist it in getting SONADER underway and fully operational as soon as possible, the GIRM has requested both technical and financial assistance from France, the Federal Republic of Germany, the World Bank, and AID. In July 1976 a FAC-financed team from the Société Centrale pour l'Équipement du Territoire International (SCET-International) will arrive in Nouakchott to do a preliminary study of the tasks ordained for SONADER over the next decade, and outline its organizational, personnel and equipment requirements. The World Bank plans to send a high-level mission headed by one of its regional directors to Mauritania in August to plan its participation in SONADER. The FRG has a standing offer to provide technical assistance to this agency. The Minister of Hydraulic Resources has requested AID to study the possibility of providing both technical and financial assistance, noting that in all likelihood most of the heavy equipment to be purchased by SONADER will be of U.S. origin.

The GIRM looks to the OMVS to assist in the institutional development of agencies such as SONADER. This was one of the major factors emphasized in the role projected for the OMVS at its 2nd Donors' Conference in June 1976. The present Director of SONADER estimates that 80% of its activities will be in the river basin. Mauritania's principal interest as a member of the OMVS is in the development of irrigated agriculture with waters of the Senegal River. Both Mauritania and the OMVS are aware that until now the GIRM has received only minimal benefits in this regard,



mind, AID assistance to SONADER will be provided through the OMVS.

2. Project Details

In the wake of its mission to Mauritania, the World Bank plans to provide a resident three-man team to work within SONADER. This team will consist of an Agricultural Economist, an Agricultural Engineer,

AID's role will be welcome. OMVS as intermediary will provide an all-important coordinative function between the development of SONADER on the Mauritanian side of the river, and the much more advanced SAED on the Senegalese side of the river, so that the former may profit from the experience to date of the latter, and both may share common training facilities.

5. Project Alternatives

If SONADER were left to develop with its own resources, its coming of age would be a lengthy and questionable proposition. The disparity between the accelerated rate of development on the Senegalese side of the river and the lack of development on the Mauritanian side of the river would only grow, creating understandable resentment on the part of the GIRM with resultant weakening of the OMVS as a regional entity.

6. Project Beneficiaries

The beneficiaries will be the 300,000 people living along the Mauritanian side of the Senegal River who will have an organization capable of planning, implementing and operating irrigated agricultural projects to be financed by external assistance. The pilot irrigated perimeters operated to date show that a ten-fold increase in present yields can be realized with single cropping, twenty-fold with double cropping.

7. Spread Effect

The project will have an effect on a much greater portion of the Mauritanian population than resides in the basin. The development of irrigated agriculture in this part of Mauritania will give the assurance of a more stable and increased food supply for the whole of the country. Given the relatively small population of Mauritania (1,000,000), there is also the possibility of foreign exchange earnings as surplus production is realized.

II. Financial Requirements and Plans

A. A \$ 5 million AID contribution over five years (1978 -1983) is envisaged with a preliminary breakdown as follows: (\$000)

Technical Assistance	\$ 1000
Equipment and Vehicles	2500
Construction Materials	1000
Other Costs	500
	<hr/>
	\$ 5000

B. AID assistance is to be in the form of a Technical Assistance Grant made through OMVS to SONADER.

C. The GIRM is expected to continue to place emphasis on the development of SONADER through a steady increase in the resources allocated this organization from its recurring annual operational budget. This emphasis will be further measured by the number and caliber of professional personnel which the GIRM will transfer to SONADER from its other ministries. Eventually SONADER should become financially self-sustaining, though this will not be for many years to come.

III. Project Development

This project should be developed in concert with the agricultural activities scheduled within the bilateral program of USAID/Nouakchott, some of which are in the river basin. The AID design team should first of all consult with the members of the World Bank team which should have completed its mission and returned to Washington by mid-September. The AID team should plan to proceed to Mauritania by the end of September, and remain for three weeks. Included in this team should be an Agricultural Economist, Equipment Specialist, Irrigation Engineer, and the Project Design Officer/Team Leader.

IV. Issues

A. What assurances should be obtained from the GIRM that a realistic degree of support will be forthcoming for SONADER?

B. Should the AID contribution through OMVS be placed in a common fund to be used largely as directed by and mutually agreed with the World Bank as principal participant in this undertaking?

AGENCY FOR INTERNATIONAL DEVELOPMENT -71-
PROJECT IDENTIFICATION DOCUMENT FACESHEET
 TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE
 A A = ADD
 C C = CHANGE
 D D = DELETE

PID
 2. DOCUMENT CODE
 1

3. COUNTRY/UNIT
 O.M.V.S. Senegal River Basin

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 DIGITS)
 [628-0506]

6. BUREAU/OFFICE
 A. SYMBOL [AFR] B. CODE [1]

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)
 OMVS Institutional Support

8. PROPOSED NEXT DOCUMENT
 A. 2 = PRP 3 = PP
 B. DATE MM YY [10 76]

10. ESTIMATED COSTS (\$000 OR EQUIVALENT, \$1 =)

FUNDING SOURCE		BASE
A. AID APPROPRIATED		5,000
B. OTHER U.S.	1. 2.	
C. HOST COUNTRY		7,500
D. OTHER DONOR(S)		?
TOTAL		12,500

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION
 a. INITIAL FY [78] b. FINAL FY [84]

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY 78		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1) FN	B 184	050		1,000		5,000	
(2)							
(3)							
(4)							
TOTAL				1,000		5,000	

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)
 BR BS

14. SECONDARY PURPOSE CODE
 B 291

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)
 [To develop the OMVS Secretariat into a regional organization with the full range of professional and staff capabilities required to implement the Senegal River indicative basin plan.]

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)
 [To provide during the period that the OMVS must operate without earned revenues of its own, the financial means for it to recruit and retain in its secretariat the high level executive talents required for the expanded project implementation and operation, and financial, coordinative and staff development functions it must now assume.]

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)
 Contract team, three weeks each, consisting of: Management Analyst (Team Leader); Manpower Classification Specialist; and River Basin Engineer. (\$12,000)

18. ORIGINATING OFFICE CLEARANCE
 Signature: *Henry Rodriguez Jr.*
 Title: OMVS Coordinator
 Date Signed: MM DD YY [06 25 76]

19. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
 MM DD YY

PROJECT IDENTIFICATION DOCUMENT (PID)
OMVS INSTITUTIONAL SUPPORT

I. Summary of the Problem and the Proposed Response

A. The Problem

The problem is that the OMVS Secretariat must of necessity undertake a greatly expanded role in executing a multimillion dollar work program during the next decade. OMVS must now recruit and train personnel from its member countries to undertake positions at all levels in its newly reorganized structure. Its present staff of some one hundred managerial and administrative personnel will have to be doubled in the shortest possible time to fulfill the functions which the nature of the regional program and projects now underway requires OMVS to assume.

Within the last six months alone, under the direction of its new High Commissioner, the OMVS Secretariat has brought two of its four principal mainstream infrastructure projects to the stage of final engineering studies. The execution of these and other major studies underway, along with the financial, coordinative, informational exchange and training functions which the OMVS was asked to undertake at its 2nd Donors' Conference in June 1976, require that this organization move rapidly into a fully operational role. These operational functions of OMVS depend largely upon the acquisition of a work force capable of meeting the demands of its progressive development.

The OMVS Secretariat is now being reorganized from several divisions along traditional sectoral lines into four major interdisciplinary directorates as follows:

- a) Human Resource Development
- b) Planning and Coordination
- c) Programming and Finance
- d) Regional Infrastructure

Within each there is a requirement for professional talents which the present salary scale of the OMVS is not likely to attract. The OMVS High Commissioner recognizes this, and is seeking to establish salary levels somewhere between the United Nations and Senegalese Government scales which will retain the African expertise he is now trying to recruit. It is these upper and middle echelons of professional expertise which,

while executing the expanded operational role of the OMVS Secretariat, can also carry out training of staff members rotated to the Secretariat by the member countries so that these latter can advance to more responsible positions within the OMVS and their own national committees. This is how the implementation and monitoring of the Comprehensive Basin-wide Environmental Assessment will evolve.

In addition, certain ongoing activities will be augmented in large measure. The Documentation Center will expand to include the periodic publication of information news letters to the donor community and become equipped to handle reproduction and enlargement of the new series of maps and aerial photographs now being done. The Hydraulic Division is to be equipped with drilling apparatus and teams to undertake hydrogeological exploration of the valley and upper basin.

Unfortunately, the requirements for these greatly expanded functions coincide with financial difficulties which are becoming more and more evident. The expenses of the OMVS Secretariat have been met until now through annual contributions from its member states according to an agreed formula. Total contributions are 345,000,000 CFA annually (Approx. \$1,500,000), and considering the internal budgetary constraints of Mali, Mauritania and Senegal, it is most unlikely that these annual assessments can be increased substantially. At a minimum, the operational costs of the OMVS can be expected to double within the next two years. Therefore some measure of participation by the external donor community in meeting these costs is required until such time as OMVS will be earning revenues from its own projects which can be used to defray its operational requirements.

B. Proposed Response

1. Project Purpose

AID is to take the initiative in establishing a General Support Fund to help defray the costs of OMVS's accelerated requirement for trained personnel and equipment at all levels of its expanded activities. Such a USG initiative should serve as a catalyst for similar participation by a number of the other bilateral and institutional donors participating in the OMVS program, all of whom have recognized the critical importance of this issue.

2. Project Details

The greater portion of this fund will be used to defray the expanded personnel salary costs of the OMVS Secretariat. A segment of these funds will be used for "topping-off" executive salaries at the Directorate level, and certain selected positions immediately below these. The remainder for salaries will be used as required for the salaries of lesser-grade personnel to be recruited as the activities of OMVS grow to include full feasibility studies of projects, supervision of engineering studies and basin-wide investigations, and preparations for and operations of mainstream infrastructure projects such as dams, ports and navigational systems.

A portion of this fund will be used to meet the costs of new equipment now required by the various roles which OMVS is assuming. These include some rather sophisticated apparatus for photographic interpretation and map reproduction; new microfilm, copying and printing machines at the OMVS Documentation Center; and some office equipment for the Secretariat. Stocks of materials to operate these machines can be expected to be a substantial recurring cost which should be eligible for financing from this General Support Fund.

3. Rate of Disbursements

USG participation should be planned over a five-year period. A constant level of expenditures should be assured for each year for OMVS to facilitate its planning. This should not vary in any great degree, so that A. I. D. would not be picking up a disproportionate share of these expenditures during any one year, and other donors participating can likewise project a fairly uniform rate of contributions.

4. Major Assumptions

The basic reorganized OMVS structure as proposed by the OMVS High Commissioner has been adopted by the OMVS Council of Ministers. It is assumed that the Council of Ministers will continue to allow this regional body to expand in all of the areas of activity the High Commissioner has ordained for it, and that the member states will continue to contribute as expected of them toward its annual budget.

5. OMVS and Other Donor Activities

The OMVS Member States are now providing as much financial support of the organization as can reasonably be expected of them. Other donors, particularly the European Development Fund, has expressed a willingness to participate in such a fund. In this regard, several of the some twenty-five bilateral and institutional donors now participating in OMVS activities can be expected to join with A. I. D.

6. Project Alternatives

The 1976-1980 DAP assistance strategy points out that the OMVS has succeeded in having all three of its member states reach agreement on an overall plan of action and coordinated program of integrated basin development, but that the structure of the OMVS itself is ill-equipped to receive funds from different sources, coordinate them, and to execute specific projects. The U. S. has been instrumental in having, through the Development Assistance Committee (DAC) of the OECD, explored ways in which the donor community can act in concert, particularly in river basin development in the Sahel-Sudano region. By helping African regional organizations organize and operate better, AID can facilitate multi-donor funding. This remains a priority concern.

The absence of some measure of support from its donor community in assisting the OMVS in its required and rapidly expanding functions would mean that it would never become fully effective as a regional river basin development authority.

The next five years are the crucial ones in project planning, design, implementation, and monitoring. If OMVS conducts its functions less than effectively, then there is increased risks of errors in realization of the Indicative Basin Plan with resulting loss of confidence from member states and donors alike.

7. Project Beneficiaries

The direct beneficiaries will be the personnel of the OMVS member countries assigned to the Secretariat, who by virtue of more professional direction and the equipment required to do their work, will emerge from their tenure with this regional organization as a cadre of professionals. The indirect beneficiaries will be the population of the Senegal River Basin who will have greater assurance of well-designed projects and a basin development program properly run.

II. Financial Requirements and Plans

A. \$5 million over 5 years (1978-1982) in annual tranches of \$1 million. At this time it would be premature to identify the exact breakdown of expenses which the AID contribution would finance, but current estimates range roughly as follows:

- Topping-off of Professional Salaries	\$ 2,500,000
- Sub-Professional and Middle-level Salaries	\$ 1,500,000
- Equipment & Materials	\$ 1,000,000
	<hr/>
	\$ 5,000,000
	=====

B. A. I. D. assistance will be in the form of a Technical Assistance Grant.

C. The OMVS Member Countries of Mali, Mauritania, and Senegal will continue their combined annual assessments of \$ 1,500,000 during the life of this project. Other donor participation is expected to be forthcoming but at this time we can only speculate as to what amounts.

III. Project Development

By early September the OMVS High Commissioner should be in a position to define at what rate the restructured OMVS Secretariat can be staffed. His latest proposals in this regard are to be considered by the Council of Ministers' meeting in July. The total reorganization and possible relocation of the Secretariat should take place by September. At that time AID should plan to field a contract team from an engineering management consultant firm consisting of a:

- Management Analyst (Team Leader)
- Manpower Classification Specialist
- River Basin Engineer.

With the previous studies done on the OMVS structure, and consultations with the OMVS High Commissioner and Secretary General here, this team should be able to formulate a PRP within three weeks. The Team Leader should plan to meet with World Bank officials dealing with the OMVS prior to departure.

IV. Issues

Once such support is initiated, how can it be so phased that it can be eventually terminated?

How can a determination be made as to what is a realistic share of total support costs to be borne by OMVS member countries?

Should AID or OMVS pursue similar contributions from other donors, and should AID's contribution be made conditional on such participation?

PROJECT IDENTIFICATION DOCUMENT FACESHEET

TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE

A = ADD
 C = CHANGE
 D = DELETE

PID

2. DOCUMENT CODE
1

3. COUNTRY/ENTITY

O.M.V.S. Senegal

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 DIGITS)

[685-0702]

6. BUREAU/OFFICE

A. SYMBOL AFR
 B. CODE [1]

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)

[OMVS Irrigated Perimeter Diagambal]

8. PROPOSED NEXT DOCUMENT

A. 2 = PRP
 3 = PP

B. DATE MM YY
 [12] [76]

10. ESTIMATED COSTS

(\$000 OR EQUIVALENT, \$1 =)

FUNDING SOURCE		AMOUNT
A. AID APPROPRIATED		6,000
B. OTHER U.S.	1.	
	2.	
C. HOST COUNTRY		2,200
D. OTHER DONOR(S)		9,500
TOTAL		17,700

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION

a. INITIAL FY [7] [8] b. FINAL FY [7] [8]

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY ⁷⁸		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1) FN	B 123	064		6,000		6,000	
(2)							
(3)							
(4)							
TOTAL				6,000		6,000	

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

0 2 2 0 2 3 0 7 3 0 7 5

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)

B R B S

14. SECONDARY PURPOSE CODE
B 143

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)

[To create the first large scale sprinkler Irrigated Agricultural Project in the Senegal River Basin.]

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)

[To develop, in concert with the World Bank, a 1,000 hectare sprinkler irrigated perimeter at Diagambal lying adjacent to a 2,500 hectare surface irrigated perimeter at Lampsar being developed by the IBRD in the Delta Region of the Senegal River Basin.]

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)

Four man-weeks each consisting of: 1) REDSO Project Design Officer; 2) Irrigation engineer (PASA-BuRec); 3) Agricultural Economist; 4) Project Cost Analyst (\$18,000).

18. ORIGINATING OFFICE CLEARANCE

Signature

Harry Foster

Date Signed

MM DD YY
 [06] [30] [76]

OMVS Coordinator

19. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

PROJECT IDENTIFICATION DOCUMENT (PID)
OMVS SPRINKLER IRRIGATED PERIMETER, DIAGAMBAL, SENEGAL

I. Summary of the Problem and the Proposed Response

A. The Problem

Under OMVS auspices various studies are now underway to realize the Senegal River Basin's fullest potential as an integrated river system. One of the principal mainstream components of this system will be the low-level Diama Dam in the river delta which will arrest salt water intrusion during the low water season and also provide a storage reservoir sufficient for the irrigation of some 30,000 hectares. The design study for the Diama Dam is now underway with the dam scheduled for completion by 1981.

The World Bank has taken the initiative in doing feasibility studies of irrigated perimeters in the delta and lower basin which would be the first to benefit by double cropping from the Diama Dam reservoir. The first of these, the 3500 ha. perimeter at Dagana is now in operation. Three more sites have had feasibility studies completed, and following the favorable outcome of these, now have engineering studies underway. Two of these latter sites, the 2500 hectare perimeter at Lampsar and the 1000 hectare perimeter at Diagambal, are adjacent to and will be run in concert with one another. Both lie between the Lampsar and Gorom Rivers which are tributaries of the Senegal River flowing through to its estuary. Lampsar is low lying and composed almost entirely of the heavier clay soils typical of the delta region. Diagambal is relatively elevated and is characterized by its lighter sandy loam soils which are very permeable and thereby lend themselves to sprinkler rather than surface irrigation. The local tomatoe paste company SOCASE has already introduced tomatoe cultivation successfully by sprinkler irrigation on a pilot scale at Diagambal.

The World Bank and the Senegalese Société pour l'Aménagement des Terres du Delta (SAED) have approached AID via the OMVS to participate in the development of these three perimeters. The World Bank has agreed to concentrate on the two largest, Debi and Lampsar, but prefers that AID join in this endeavor by accepting to finance Diagambal which will require an irrigation technology in which the U. S. is preeminent. For its part, OMVS is most anxious to have a major effort using less water-intensive irrigation practices on the djeri (upland) soils of the basin which up until now have not been addressed in any of its projects. The soils of Diagambal typify these. USAID/Senegal will undertake an additional facet of this overall undertaking with a \$4 million long range training project to upgrade the personnel and capabilities of SAED.

B. Proposed Response

1. Project Purpose

AID will join with the World Bank in this development of irrigated perimeters on the Senegal side of the river by providing loan financing for the installation of irrigated agriculture on the 1000 hectares of the Diagambal perimeter. At Diagambal peasant farmers in collective groups of 15 families working 0.7 hectare each, will grow rainfed millet during the normal wet season, followed by a second crop of tomatoes, onions and mixed vegetables realized through sprinkler irrigation for their own consumption and the commercial markets. These same families will each be working 1.5 hectares of rice land on the adjacent Lampsar perimeter, for investigations conducted to date have indicated that small farmers would refuse to work the 0.7 hectares of upland soil alone without having access to cultivation of rice, the staple in the diet of the peoples on the Lampsar plain. Developing Diagambal in tandem with the Lampsar perimeter will introduce sprinkler irrigated commercial crops as a source of increased revenue for small farmers who have not yet participated in the market economy. The lighter soils of Diagambal will also allow the full use of animal-drawn implements in the cultivation of all crops/grown there, another first in the development of this basin. AID's joining with the World Bank in this endeavor will also provide a mutual vehicle in presenting jointly prerequisite conditions for total loan financing of these perimeters which are a common concern, the foremost of which is a water rights agreement between Senegal and Mauritania.

2. Project Details

The engineering study of this perimeter should be completed within the next month and should provide the basis for a Project Paper. Basic physical components of the project consist of a major pumping station at Ronq d'Août on the Senegal River which will pump into the Goram and Lampsar rivers, using these channels for irrigation water storage. From the Lampsar River a main irrigation canal will be cut the length of the Diagambal Perimeter, and from this main canal secondary canals will extend into the perimeter. From these water will be pumped into sprinkler systems. The layout will be such that each cooperative grouping of fifteen families will be responsible for one pump and the attached sprinkler system. The entire perimeter will be electrified so that easier to maintain, more efficient electric pumps will be used. This will be done through an

African Development Bank Loan now being made to the Senegalese Electric Company (SENELEC) to increase the electrical output of the power station at St. Louis to 5000 KW, and extend power lines the 34 kilometers from St. Louis to the Diagambal-Lampsar perimeters. Stations for breaking oxen to the plow are now being constructed at Diagambal, and each family will be provided a brace of oxen, animal-drawn implements, and a cart on credit through the SODEVA, the GOS agriculture extension agency. A SAED warehouse already exists at the project site, and most farmers who will be working the perimeter are familiar with the distribution and marketing systems of this agency. The project site is adjacent to the main highway between St. Louis and Richard Toll and readily accessible by heavy trucks the year round. Initial second cropping at Diagambal will probably concentrate on tomatoe production which has been successfully introduced at other perimeters in the area and found to be very profitable to small farmers. Senegal is still far from producing its 60,000 Ton annual domestic requirement in tomatoes, a standard ingredient in the local diet.

3. Rate of Disbursement

Studies to date indicate that all disbursements will be completed within three years after signing of the loan agreement, with major expenditures occurring at the end of the first year and through the first half of the second year as most equipment components are delivered.

4. Major Assumptions

It is assumed that SAED will be able to address its present known operational shortcomings by the time this project becomes operational. On the basis of studies now underway analyzing these, technical assistance is to be provided by the World Bank and AID. It is also assumed that the World Bank will be able to control possible salinity problems it will encounter on the adjoining Lampsar perimeter; rice has a salinity tolerance, and thus far no major problems have been encountered in raising rice by traditional methods. It is also assumed that the farmers in this area will respond to market incentives of commercial crops upon which the IRR of Diagambal is largely predicated; experience to date warrants this assumption. We are now awaiting the operational curve on reservoir usage from the engineering studies underway on the Diama Dam; it is assumed there will be no overriding competing uses for this water at the time of irrigated second crop needs at this perimeter.

5. Host Country and Other Donor Activities

The World Bank will be providing a minimum of \$ 18.5 million for the development of the Debi and Lampsar perimeters; the success of Diagambal depends upon the simultaneous development of the latter. The GOS through its assurance of providing whatever deficits may occur in the budget of SAED, will in effect provide all personnel and support costs required for the operations of this perimeter. The ADB will be financing the increased power generating capacity of the electric plant at St. Louis which will be used for pumping at Diagambal.

6. Project Alternatives

As stated in the DAP, it is hard to conceive of the agricultural systems of Senegal, Mali and Mauritania ever achieving self-sufficiency without modern forms of irrigation. Elements of the OMVS infrastructure such as the Delta Dam are being financed. The worst prospect of all is that the large infrastructure will be developed and then go unused or largely underutilized in a world short of both energy and food. Diagambal will be the first major OMVS project employing sprinkler irrigation, the technology of which is much farther advanced in the United States than any other country. The technical assistance required to install and operate such a system will be part of the U.S. contribution. For the U.S. not to participate in the development of sprinkler irrigation in the Senegal River Basin will be to relegate this technology to another donor much less qualified to introduce it.

7. Project Beneficiaries

The direct beneficiaries will be the 1430 small farmers in the Lampsar plain who will be cultivating sprinkler irrigated cash crops at Diagambal in addition to food staples on the neighboring Lampsar perimeter. Considering the size of the average family in the area, some 10,000 persons should benefit from the marketing of these crops in the commercial sector.

II. Financial Requirements and Plans

A. A \$6 million loan is to be authorized in FY 1978 (\$4,888,888 + 20% inflationary allowance during three year drawdown). An estimated 70% of this amount will be used for the foreign exchange costs of pumps, sprinkler equipment, construction materials, electrical transformers, and vehicles. The exact breakdown of these costs will be available upon completion of the World Bank financed engineering studies within the next two months.

B. AID assistance will be in the form of a loan approximating the IDA terms of the loans accorded by the IBRD for development of the Debi and Lampsar perimeters.

C. The GOS will assume all operational and management costs of this perimeter beginning about the middle of the second year when the first sprinkler systems are scheduled to be installed. Under the term of the ADB loan to SENELEC, adequate electrical power at an agreed fixed rate will be made available to the Diagambal Perimeter.

III. Project Development

By August the World Bank should make available to AID the final engineering studies of the Diagambal Perimeter. These contain environmental impact statements which were done by Rumford Laboratories of Puerto Rico. Conceivably these engineering studies, combined with the earlier feasibility studies, should provide sufficient material and analysis from which to move directly to a Project Paper. Development of this PP should be undertaken by the REDSO Project Design Officer handling the OMVS Program, assisted by an Irrigation Engineer from the U. S. Bureau of Reclamation, an Agricultural Economist, and a Project Cost Analyst. Further sociological investigation will be undertaken in August for four weeks by Mr. Jasper Ingersoll, AID Resident Anthropologist on the staff of the Foreign Service Institute. Additional agronomic analysis will also be conducted at that time.

IV. Issues

What conditions precedent should be considered in addition to those governing the World Bank loan?

The project as now planned will be largely dependent upon the success of irrigated rice cultivation on the neighboring Lampsar perimeter; the feasibility and engineering studies of this perimeter should also be taken into account.

The success of Diagambal being predicated upon the marketing of its cash crops, should a more thorough marketing survey than that conducted by the World Bank be undertaken?

Should the terms of the AID loan coincide with those of the World Bank?

How realistic is the introduction of animal traction implements on this perimeter and in what degree will the cultivation of intended crops be dependent on such a development?

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>				1 TRANSACTION CODE A Add C Change D Delete		PID 2 DOCUMENT CODE 1																						
3 COUNTRY/ENTITY OMVS - Senegal River Basin				4 DOCUMENT REVISION NUMBER																								
5 PROJECT NUMBER (7 digits) [628-0504]		6 BUREAU/OFFICE A Symbol AFR B Code [1]		7 PROJECT TITLE (maximum 40 characters) [OMVS Basin Survey and Mapping Program]																								
8 PROPOSED NEXT DOCUMENT A [3] 2 - PRP 3 - PP B DATE MM YY [05 77]				10 ESTIMATED COSTS (\$000 or equivalent, \$1 = 220 CFA)																								
9 ESTIMATED FY OF AUTHORIZATION/OBLIGATION a INITIAL FY [78] b FINAL FY [80]				<table border="1"> <thead> <tr> <th colspan="2">FUNDING SOURCE</th> <th>Life of Project</th> </tr> </thead> <tbody> <tr> <td>a. AID Appropriated</td> <td></td> <td>6,500</td> </tr> <tr> <td>b. OTHER</td> <td>1</td> <td></td> </tr> <tr> <td>US</td> <td>2</td> <td></td> </tr> <tr> <td>c. Host Country</td> <td></td> <td>200</td> </tr> <tr> <td>d. Other Donor(s)</td> <td></td> <td></td> </tr> <tr> <td colspan="2">TOTAL</td> <td>6,700</td> </tr> </tbody> </table>				FUNDING SOURCE		Life of Project	a. AID Appropriated		6,500	b. OTHER	1		US	2		c. Host Country		200	d. Other Donor(s)			TOTAL		6,700
FUNDING SOURCE		Life of Project																										
a. AID Appropriated		6,500																										
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TOTAL		6,700																										
II PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)																												
A APPRO PRIATION	B PRIMARY PURPOSE CODE	PRIMARY TECH CODE		E FIRST FY 1978		LIFE OF PROJECT																						
		C Grant	D Loan	F Grant	G Loan	H Grant	I Loan																					
(1) EN	B 183	051		3,920		6,500																						
(2)																												
(3)																												
(4)																												
TOTAL				3,920		6,500																						
12 SECONDARY TECHNICAL CODES (maximum six codes of three positions each) 876 190																												
13 SPECIAL CONCERNS CODES (maximum six codes of four positions each) BR BS							14 SECONDARY PURPOSE CODE																					
15 PROJECT GOAL (maximum 240 characters) [To achieve increased agricultural production and a higher, more secure standard of living for the inhabitants of the Senegal River Basin, while protecting the Basin from further environmental deterioration.]																												
16 PROJECT PURPOSE (maximum 480 characters) [To complete the surveying and mapping of critical portions of the Senegal River Basin in order to assist the OMVS with the coordinated development of the Basin.]																												
17 PLANNING RESOURCE REQUIREMENTS (staff/funds) Due to the information-gathering nature of this activity, planning should move to the PP stage, which would require several mapping experts from DMA or BuRec and an AID project design officer, all for one month in Washington at a cost of \$15,000.																												
18 ORIGINATING OFFICE CLEARANCE Signature: <i>[Handwritten Signature]</i> Title: OMVS Coordinator				19 Date Document Received in AID/W. or for AID/W Documents Date of Distribution Date Signed MM DD YY [06 23 76]																								

PROJECT IDENTIFICATION DOCUMENT: (PID)
OMVS BASIN SURVEY AND MAPPING PROGRAM

I. The Problem and the Proposed Response

A. The Problem

In order to meet the Congressional mandate "to develop a long term comprehensive development program for the Sahel", priority attention must be given to the need for basic resource data in the various river basins. The planning of irrigation, drainage and flood control projects, which will be a very important part of long term Sahelian area development, can only be done on a sound basis attractive to donors and investors when adequate information exists on topography, suitability of land for farming, water supply, susceptibility to flooding, other physical resources and human and economic resources. This comprehensive planning is specifically required for AID projects both by logic and by Section 101 of our appropriations legislation. Therefore, basin-wide and regional master plans identifying potential projects need to be prepared. Experience has shown that contour maps to a scale of 1:10,000 or 1:20,000 are generally needed to identify irrigable lands and to make feasibility designs and estimates for alternative projects. Lacking such maps, individual projects might be built which would later prove incompatible with effective development of the river basin.

In order to achieve such development planning for the Senegal River Basin, new surveying and mapping are required. Existing maps of the area are small scale (1:50,000 and smaller), lacking in detail, and incomplete in their coverage of the areas where, according to the Indicative Basin Plan, major developments will occur. Existing surveys in the basin are not, in many cases, related to a common horizontal or vertical reference point. This lack of adequate topographic information, if not corrected, will lead to more costly and less satisfactory projects within the basin. In fact, in the absence of better topographic information, some potentially feasible gravity irrigation projects may not be identified, and some development may occur which is incompatible with optimum resource use.

The CWR DAP Overview (page 101) states, "... it is appropriate that the U.S. should be involved in (river basin development) as part of a continuing interest in the (Sahel) Region," and notes that "water resource development and irrigated farming are major areas of U.S. expertise; not only do we have the technology and the experience, but also we have some awareness of the range of problems involved in the transformation toward modern water use."

B. Proposed Response

1. Project Purpose

The purpose of this project is to complete the surveying and mapping of critical portions of the Senegal River Basin in order to assist the OMVS with the coordinated development of the Basin. This project consists of two phases, the first of which will provide the OMVS with the precise horizontal and vertical

networks required to put all mapping in the area on a common system. The second phase will consist of the large-scale mapping of selected sites and 1:50,000 scale photography of the entire basin area including Falewe, Bafing and Bakoye/ ^{tributaries.} The project activities being presented in this PID are expected to be the continuation of activities which have been proposed for funding under separate funds provided especially for the Sahel by the Congress.

2. Project Details

a. Projects Outputs

The Project's first phase will establish precise horizontal control by means of a precise geodetic traverse connected to the 12th parallel at Kayes, Mali, passing through the Senegal River Valley to the vicinity of Rosso, Mauritania before turning south and rejoining the 12th parallel near Thies (which lies about 40 kilometers east of Dakar). At the same time vertical control will be established by carrying out basic first order levelling. This establishment of proper horizontal and vertical control is necessary because the currently existing horizontal and vertical networks do not meet the required standards and are not based on a common datum. The only existing horizontal control in the area is the net of astronomical stations established by the French National Geographic Institute (IGN) over 20 years ago for 1:200,000 scale maps. This net was an expedient just adequate for that scale but is not reliable for large-scale mapping. Precise vertical control is required because gravity-powered irrigation is planned for several regions in the Basin.

These first phase activities will support the second phase activity which includes the aerial photography and preparation of the maps. The photography will include the entire Basin from the Delta to Kayes at a scale of 1:50,000 in order to provide basin development planners with information on such topics as navigation, forestry, positioning of levees and dams, identification of types of crops, diseased or dead vegetation areas subject to flooding, and other relevant studies. Beginning after the photography is completed will be the surveys for mapping control which tie the photographs into the vertical and horizontal control.

The aerial photography will also provide for the mapping at a scale of 1:10,000 of the following ten sites within the Basin: (1) Aftout es Sahel, (2) Rosso (Lac R'Kiz), (3) Podor, (4) Bogue, (5) Salde, (6) Kaeci, (7) Matam, (8) Bakel, (9) Karakoro, (10) Kayes. (See attached Maps for details).

b. Technical and Physical Resources for the first phase horizontal and vertical control networks will include equipment and commodities as well as such personnel as surveyors and related technicians and laborers required for identifying and marking natural benchmarks, constructing new ones, and making

.../...

observations. These same resources will conduct the mapping control surveys to be conducted once the second phase aerial photography is completed. The second phase aerial photography and map preparation will include film, airplanes, pilots and support personnel and also the personnel and support services required to make the maps.

c. Disbursements during the early phases of the project will bunch up each year as a result of the seven-month working period between rainy seasons. Once map preparation gets underway, disbursements are expected to occur on a more regular basis.

3. Major Assumptions

It is assumed that weather conditions will remain "normal" and will not adversely affect the implementation or results of the program.

4. Host Country and Other Donor Activities

There is no host country surveying and mapping of the Senegal River Basin in the scale required for proper development. Individual activity sites and surrounding areas, such as the Diama and Manantali Dam sites, will be mapped by the Other Donors conducting the pertinent engineering studies on those projects, and for that reason these sites have not been included for the detailed mapping indicated on the attached maps.

5. Project Alternatives

There is no sensible alternative to conducting a survey and mapping program. However the implementation of such a program could be done solely with U.S. support, as proposed in this PID, or could be done in conjunction with one or more Other Donors. Perhaps this alternative should be explored before the IP stage.

6. Project Beneficiaries

Project beneficiaries will ultimately be the Senegal River Basins approximately 1.6 million inhabitants who will share in the results of basin development activities which have been better planned and coordinated as a result of this proposed activity.

7. Spread Effect

The proposed activity is designed for Basin-wide impact, with all Senegal River Basin inhabitants in mind. However, as a result of the activity, other River and lake basins not yet possessing such a data base may be more interested in doing so.

II. Financial Requirements and Plans

A. The entire project as proposed in draft by the U.S. Defense Mapping Agency Topographic Command would cost about \$7.7 million. A.I.D. is proposing to fund \$1.2 million of the project's initial costs with funds appropriated especially by the U.S. Congress for the Sahel. This will allow project activities

to begin in FY 1977. The details are presented elsewhere. The remaining \$6.5 million being proposed here will cover seven years (1978-1984) and is broken down as follows (\$000):

1. Vertical control (funded within the \$1,200)

2. Horizontal control (partially funded within the (\$1,200)

Technical Assistance	\$550
Commodities	400
Other Costs	320
	<u>\$1,270</u>

3. Mapping Control

Technical Assistance	\$1,300
Other Costs	1,350
	<u>\$2,650</u>

4. Aerial Photography and Map preparation

Technical Assistance	\$ 100
Commodities	2,030
Other Costs	450
	<u>\$2,580</u>

TOTAL	<u>\$6,500</u>
-------	----------------

B. A.I.D. provision of the \$6.5 million is expected to be entirely in the form of a Technical Assistance Grant.

C. The OMVS is expected to provide the equivalent of \$200,000 of local cost expenditures and in-kind services. This is obviously not expected to total 25 percent of total project costs but this does not pose any legislative problems since the assistance is being provided through the OMVS, a regional organization.

III. Project Development

Since this is basically a project to gather information rather than to build an institution or train local people, it is suggested that project development move to the PP stage. PP preparation may be accomplished best after the initial results are available from the activities funded by the special Congressional funds for the Sahel. The PP therefore could probably be ready by May 1977 and require a design team of several mapping experts and a Project Design Officer/Team Leader all of whom could probably do their work in Washington with a month's effort.

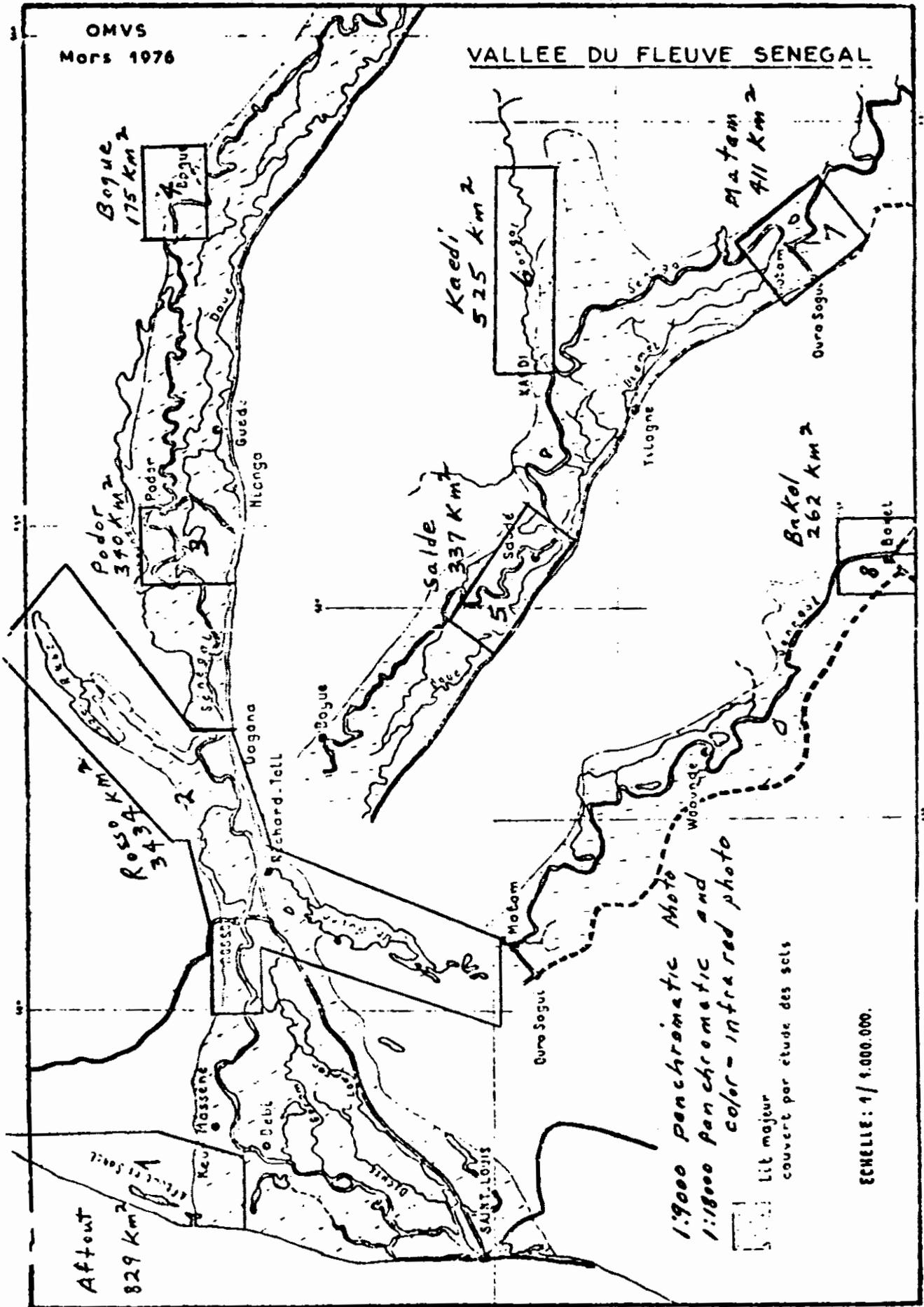
IV. Issues

A. Project obligations are expected to run from FY 1978 through FY 1984. These seven years exceed A.I.D.'s 5-year policy but since this is a project to gather information rather than to build an institution or train local people, it seems reasonable to seek a waiver of the 5-year limitation. Alternatively, this project does have separate activities and could therefore be trached, but it still makes more sense to go for the full seven-year approval.

B. Should the United States conduct this project alone or should we seek Other-Donor participation? This question could be especially important if the Senegal-based French National Geographic Institute (IGN) were the most logical candidate to implement much of the project, yet we might not want to use U.S. dollars to fund their participation. In this case, we might want to seek French or Other-Donor participation.

OMVS
Mars 1976

VALLEE DU FLEUVE SENEGAL



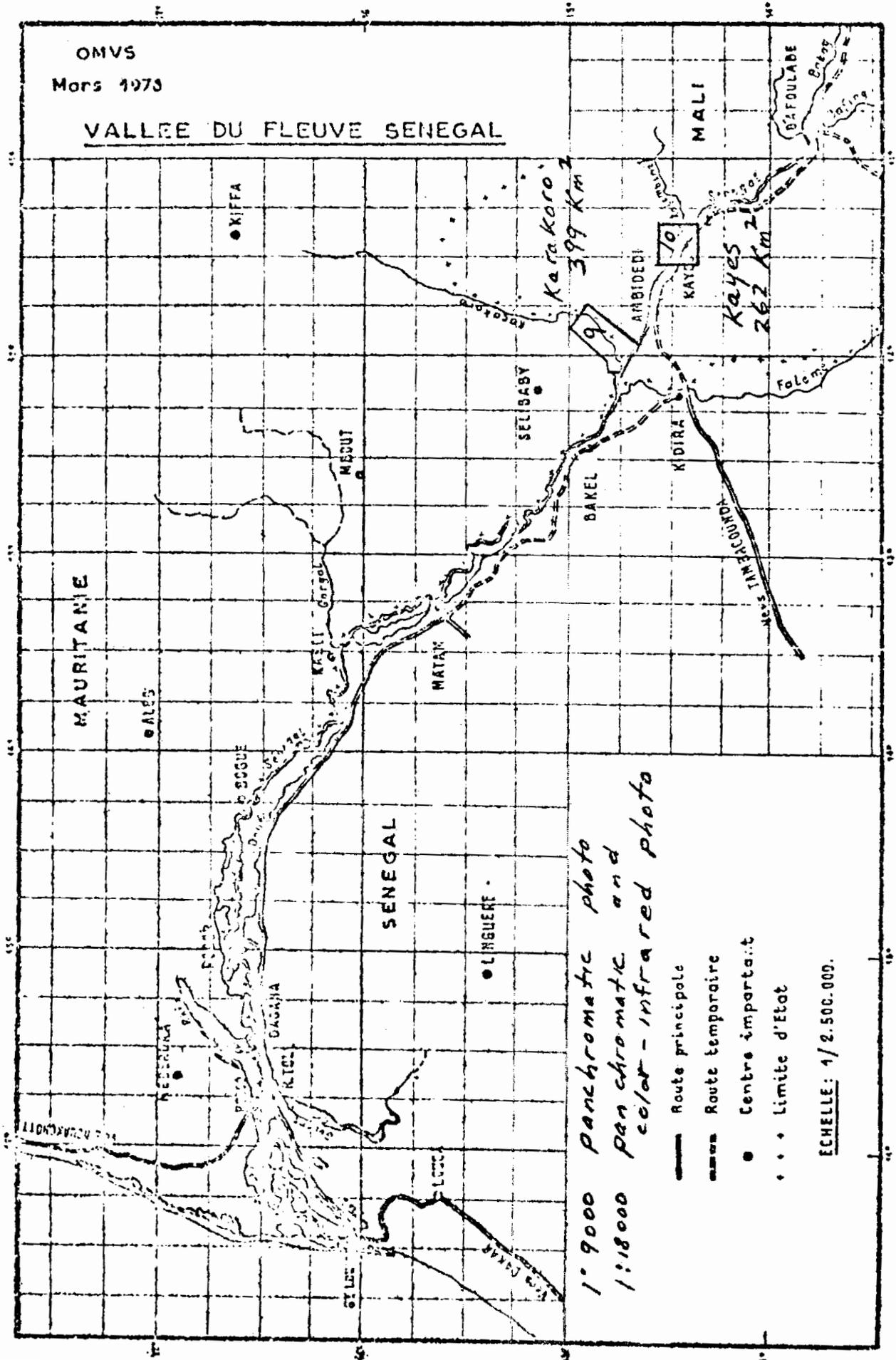
1:9000 panchromatic photo
 1:18000 panchromatic and
 color - infrared photo

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ECHELLE: 1/4.000.000.

OMVS
Mars 1973

VALLEE DU FLEUVE SENEGAL



1:9000 panchromatic photo
 1:18000 pan chromatic and
 color - infrared photo

- Route principale
- - - - - Route temporaire
- Centre important
- • • Limite d'Etat

ECHELLE: 1/2.500.000.

AGENCY FOR INTERNATIONAL DEVELOPMENT -93-
PROJECT IDENTIFICATION DOCUMENT FACESHEET
 TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE
 A A = ADD
 C C = CHANGE
 D D = DELETE

PID
 2. DOCUMENT CODE 1

3. COUNTRY/ENTITY
 OMVS - Senegal River Basin

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 DIGITS) [628-0508]

6. BUREAU/OFFICE
 A. SYMBOL AFR B. CODE [1]

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)
 [OMVS Investigations and Studies]

8. PROPOSED NEXT DOCUMENT
 A. 3 2 = PRP 3 = PP B. DATE 02 77

10. ESTIMATED COSTS (\$000 OR EQUIVALENT, \$1 =)

FUNDING SOURCE		BASE
A. AID APPROPRIATED		500
B. OTHER U.S.	1.	
	2.	
C. HOST COUNTRY		
D. OTHER DONOR(S)		
TOTAL		500

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION
 a. INITIAL FY [78] b. FINAL FY [80]

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY 78		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1) FN	B 183	053		200		500	
(2)							
(3)							
(4)							
TOTAL				200		500	

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)
 059

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)
 BR BS

14. SECONDARY PURPOSE CODE

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)
 [To develop and utilize the human and natural resources of the Senegal River Basin for increased food production.]

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)
 [To strengthen the planning competence of the Secretariat of the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS) by providing short-term technical assistance for pre-feasibility investigations, studies and project proposal reconnaissance.]

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)

18. ORIGINATING OFFICE CLEARANCE
 Signature: *Harry Kesteven*
 Title: OMVS Coordinator
 Date Signed: 06 77

19. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

PROJECT IDENTIFICATION DOCUMENT (PID)
OMVS INVESTIGATIONS AND STUDIES

1. Summary of the Problem and the Proposed Response

A. The Problem

The problem is that the OMVS Secretariat does not have the financial resource nor the technical staff to undertake pre-feasibility investigations, short term studies, and project proposal reconnaissance. The realization of OMVS projects would be accelerated and the commitment of funds by donors to the OMVS would most likely be increased if the OMVS were able to undertake the pre-design work and determine a rough feasibility or non-feasibility and order of magnitude costs as new project proposals are identified by the member countries and the OMVS Secretariat, and before approaching the donors for design assistance and funding.

B. The Proposed Response

A PID proposing a project of institutional support to the OMVS has been submitted along with this PID in the FY-1978 ABS for the OMVS. Envisioned under the institutional support project is the provision of financial assistance so that the OMVS Secretariat can recruit from the member countries competent professional expertise to meet the staff requirements of the Secretariat. It is expected that as a result of the reorganization currently underway (the melding of several divisions along traditional sectoral lines into four major interdisciplinary directorates - human resource development, planning and coordination, programming and finance, regional infrastructure) and the staffing requirements to implement the work program planned for the next decade, that the Secretariat staff will have to be doubled. The proposed project would consist of short-term technical assistance to work with the newly established OMVS technical expertise to carry out pre-feasibility investigations, short term studies, and project proposal reconnaissance.

C. Relation to the Central-West African Region, 1976-1980

The DAP assistance strategy statement concludes by stating that the U.S. must both continue to assist in increasing food production in dry land and currently irrigated areas, and embark upon assisting the expansion of the productive resource base through river basin development. The increased ability of the OMVS Secretariat to move rapidly into the design stage for projects and thus advance the timing of the utilization of present donor commitments and the securing of new donor commitments would result in the realization of a greater portion of the objectives of the OMVS Indicative Basin Plan over the next decade and would thus contribute to the achievement of both aspects of the DAP assistance strategy statement.

.../...

D. Description of the Proposed Project

As project proposals and ideas are advanced by the member countries or as developed by the OMVS Secretariat many of them will require pre-feasibility investigations, preliminary reconnaissance, or possibly a short in-house study before the OMVS could with confidence approach donors for final design assistance and project assistance. During the formative years of the Secretariat the provision of short-term technical assistance to carry out with the OMVS Secretariat these tasks necessary to determine which project proposals should go forward into the design stage would contribute to a more rapid realization of projects under the OMVS. Under the proposed project short-term (two to eight weeks) technical assistance experts, primarily PASA but including some contract, would be provided to assist the OMVS technical staff complete these investigations and studies. For example, as a result of the recently completed Bureau of Reclamation preliminary basic data examination of the Senegal River Basin, a preliminary reconnaissance of the potential for diversion irrigation at Bakel was recommended. In this example a two man short-term team from an agency such as the Bureau of Reclamation could with the OMVS technical staff determine the pre-feasibility of Bakel for single and double cropped diversion irrigation and decide whether sufficient potential exists to go forward with a full scale feasibility study and project design.

E. Estimated Project Outputs

Completion of twelve to twenty investigations and studies.

F. Estimated Technical and Physical Resources Required

Technical assistance expertise, primarily PASA and contractor.

G. Estimated Disbursement Period

FY 1978-1980.

H. Major Assumptions Pertinent to Project Success

That the OMVS Secretariat will be able to fully staff its newly organized directorates with properly qualified technicians.

I. Activities by the OMVS, OMVS Member Countries, and other Donors

None as presently envisioned in this PID.

.../...

J. Realistic Alternatives

The alternative is to continue to have individual donors undertake pre-feasibility investigations, studies, and project proposal reconnaissance for specific project possibilities that the individual donors become interested in through their own unique search-for-projects procedures. This traditional manner is less expedient than that which would result from the project proposed and places more control of the decision making with the donors. The proposed project would allow the OMVS to become more active in the identification of project proposals and the necessary pre-design work that should be completed before approaching the donors for final design and project assistance.

K. Identification of Major Intended Direct and Indirect Beneficiaries

The OMVS Secretariat and the member countries would be the direct beneficiaries. The indirect beneficiaries would be the population of the Senegal River Basin who would benefit by any acceleration in the realization of the OMVS indicative basin plan objectives.

II. Financial Requirements and Plans

The best estimate of cost is that approximately \$500,000 of short-term technical assistance expertise could be utilized by the OMVS to achieve the objectives of the project proposal. AID would fund the total cost of the project by a grant agreement with the OMVS.

III. Development of the Project

As the total estimated cost of the project is \$500,000, the next document would be the preparation of a PP in early CY 1977 so that an approved PP could be obtained by the beginning of FY 1978. The PP would be undertaken by the OMVS Coordinator's office in Dakar with the assistance of a REDSO design officer.

UNITED STATES INTERNATIONAL DEVELOPMENT PROJECT IDENTIFICATION DOCUMENT FACESHEET <i>To Be Completed By Originating Office</i>				I. TRANSACTION CODE <input checked="" type="checkbox"/> A Add <input type="checkbox"/> C Change <input type="checkbox"/> D Delete		PID 2. DOCUMENT CODE 1			
3. COUNTRY ENTITY OMVS-Senegal River Basin			4. DOCUMENT REVISION NUMBER 1						
5. PROJECT NUMBER (7 digits) 628-0505		6. BUREAU/OFFICE A Symbol: AFR B Code: 1		7. PROJECT TITLE (maximum 40 characters) OMVS Health Research Program					
8. PROPOSED NEXT DOCUMENT A <input checked="" type="checkbox"/> 3 PRP <input type="checkbox"/> 3 PP B DATE: MM YY <u>10 77</u>				10. ESTIMATED COSTS (\$000 or equivalent \$1 = 220 CFA) FUNDING SOURCE a. AID Appropriated: 2,600 b. OTHER: 1 US: 2 c. Host Country: 200 d. Other Donor(s): TOTAL: 2,800					
9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION a. INITIAL FY: <u>78</u> b. FINAL FY: <u>80</u>									
II. PROPOSED BUDGET AID APPROPRIATED FUNDS \$000									
A. APPROPRIATION PH		B. PRIMARY PURPOSE CODE B 591		C. PRIMARY TECH CODE 544		E. FIRST FY 1978 1,635		LIFE OF PROJECT 2,600	
		C Grant		D Loan		F Grant		G Loan	
(1)									
(2)									
(3)									
(4)									
		TOTAL				1,635		2,600	
12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each) 540 549									
13. SPECIAL CONCERNS CODES (maximum six codes of four positions each) BR BL R/H ENV								14. SECONDARY PURPOSE CODE	
15. PROJECT GOAL (maximum 240 characters) To control, eradicate or establish effective preventive and curative measures against endemic waterborne diseases in the Senegal River Basin.									
16. PROJECT PURPOSE (maximum 480 characters) To develop the data necessary for designing preventive and curative health projects in the Senegal River Basin, and by extension, in comparable water basins of West Africa as a basis for improved health planning for the rural poor as well as to consider how to prevent the deterioration of health standards caused by the adverse effects of river basin development.									
17. PLANNING RESOURCE REQUIREMENTS (staff funds) To be determined when the Yale University pilot study has been completed and a decision has been made as to whether the next step is the completion of a PRP or a PP									
18. ORIGINATING OFFICE CLEARANCE Signature: <i>[Handwritten Signature]</i> Title: OMVS Coordinator						19. Date Document Received in AID/W, or for AID/W Documents, Date of Distribution Date Signed: MM DD YY <u>06 13 77</u>			

Project Identification Document (PID):
OMVS Health Research Program

I. The Problem and the Proposed Response

A. The Problem

Residents of the Senegal River Basin are affected by many diseases, among which are Malaria, Schistosomiasis and Onchocerciasis, all of which are caused by parasites that are spread by aquatic vectors and are currently endemic to the Basin. Development of the program planned by the Senegal River Basin Authority (OMVS) would increase the habitat for some of the host species, and opportunities for contact with vectors would increase. The combination is likely to result in increased incidence of these diseases. There are also diseases spread by other than aquatic vectors, such as trypanosomiasis, enteric viruses, and bacterial infections, all of which affect adversely the way of life of the basin population. There is, therefore, the need for continuing professional research and analysis if these problems are to be properly addressed.

B. Proposed Response

1. Project Purpose

The purpose of this project is to develop the data necessary for designing preventive and curative health projects in the Senegal River Basin, and by extension, in comparable water basins of West Africa. A team of researchers, with U.S. institutional backstopping, would conduct long term studies in the basin as a basis for improved health planning for the rural poor as well as to consider how to prevent the deterioration of health standards caused by the adverse effects of the river basin development. Ideally, the U.S. institution so involved would develop the expertise and capability to respond broadly to basin health study requirements, thus becoming a valuable resource for A.I.D. and other organizations to draw upon over the long term.

2. Project Details

a. Project Outputs will consist of the data required by the OMVS, A.I.D. and other organizations in designing effective health projects in such areas as virology, parasitology, immunology and medical entomology. It is expected that the project will be able to build on the results of the Environmental Assessment which is expected to begin in the fall of 1976. This project will also supplement such ongoing and projected health programs as the Onchocerciasis Control and the Mali and Senegal Rural Health Services Development projects. An important aspect of the activity will be the affiliations developed by the team with locally-based institutions and organizations for purposes of consultation, joint efforts and sub-contracting work, i.e., OMVS, OCCGE, Ministries of Health, local hospitals, University of Dakar Faculty of Medicine, the Institut Pasteur and other research institutes. The project is also expected to train ten short and long term participants, both on-the-job and in the United States. Additionally, the project will result in a fully equipped laboratory in the basin.

b. Technical and physical resources will include the services of six to eight full-time researchers on a site in the basin, with short-term assistance as required from the parent institution. The technical services will also contribute to the training of host nationals. Physical resources will include the material and commodities required to conduct such a program e.g., possibly the construction of a laboratory and staff housing, research equipment, chemicals and other laboratory and medical supplies, and vehicles.

c. Disbursements are expected to run through September 1982, with start-up costs being higher in order to accommodate initial construction and commodity procurement, and contract forward funding.

3. Major Assumptions

It is assumed that OMVS and riparian country support for the project will be sufficient throughout the project to meet the project's purpose.

4. Host Country and Other Donor Activities

The OMVS does not have an office concerned solely with health but rather includes this subject in a broader "Environment Office". Consequently there has been very little attention paid to health problems. The situation regarding member countries is somewhat better. Senegal is the most organized in the health field but rural health programs are still inadequate. Mauritania, at the other extreme, has paid very little attention to rural health, especially as it is affected by basin development. With regard to Other Donors, the World Bank has been the most active, with the financing of a program of public health studies being conducted at the actual and proposed irrigated perimeter projects at Dagana, Debi and Lampsar. Also, Mali is participating in the Onchocerciasis Vector Control program which is expected to eventually control the disease in that country.

5. Project Alternatives

Perhaps one could mount a similar project by financing a local Senegal-based institution to do the studies. It might also be possible to fund a series of ad hoc research efforts from various U.S. institutions in the health field, although the highly coordinated program and focussed institutional development would not be possible.

6. Project Beneficiaries

Project beneficiaries will originally be the organizations and institutions using the data resulting from the research. However the project's value is derived from the use of this data by others to design projects which will benefit the average basin inhabitant, which is to say the poor farmers, herders and fishermen and their families.

7. Spread Effect

The spread effect should be considerable as the data begins to result in effective health programs first in the Senegal Basin, but then spreading to other basins as well as possibly prompting programs in non-basin portions of the Sahel. Better health programs are expected to result in greater economic productivity on the part of the local people which in turn should be able to stimulate greater economic development.

II. Financial Requirements and Plans

A. \$2.4 million over 5 years (1978-1982) broken down as follows (\$000):

Technical Assistance (8 technicians plus short-term consultants for five years)	\$2,000
Training (10 short & long term participants, and on-the-job)	170
Commodities (vehicles, research equipment + supplies)	105
Operating Costs (laboratory work, travel, & lab & housing construction)	325
	<hr/> 2,600

B. A.I.D. assistance is expected to be entirely in the form of a Technical Assistance Grant.

C. The OMVS is expected to contribute personnel for training as well as some local support costs and in-kind services, amounting in total to perhaps the equivalent of \$200,000. This is obviously not expected to total 25 percent of total project costs, but this is not a major consideration since the assistance is being provided to the OMVS, which is a regional organization.

III. Project Development

Yale University has submitted a proposal for a Pilot Health Study to be conducted for six months during FY 1977 to determine the feasibility of a project along the lines of the one described in this PID. If A.I.D. approves and finances the proposal, we would expect that Yale University's final report, probably available around May 1977, would provide the information required for preparation of the PP, whose completion is expected to be in the first quarter of FY 1978.

IV. Issues

None