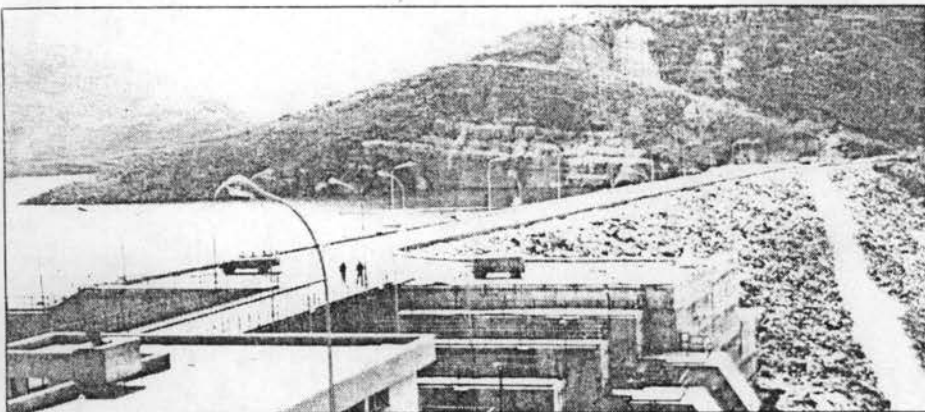


NEWS FEATURE

Pollution outpaces Amman water supply



King Talal dam — too polluted for domestic use

THE crisis in Amman's domestic water supply, so evident in recent summers, has been alleviated by the piping of water from Azraq oasis in the eastern desert (MEED 20:2:81). However, the city has still to sort out its sewerage problems. The rapid expansion of the Amman-Zarqa conurbation — where half Jordan's population now lives — and more or less uncontrolled industrial growth have far outpaced existing sewage treatment facilities.

Rivers, particularly the main Zarqa river, and ground water have become polluted. Few controls exist to prevent factories from dumping untreated waste. An example of the problem is the King Talal dam, on the Zarqa river, originally intended for agricultural irrigation in the Jordan valley. When Amman's water shortage became chronic in the late 1970s, it was proposed to shift part of the dam's capacity to domestic use. However, pollution from untreated waste in the Zarqa river finally made this impossible.

The National Planning Council (NPC) has in the past year commissioned a waste water disposal master-plan, and several specialist studies, for the Amman region. The master-plan is a three-phase scheme covering an area with a 30-kilometre radius from Amman city centre. California-based consultants James M Montgomery Consulting Engineers and DM-JM International — a subsidiary of Daniel Mann Johnson and Mendenhall —

with the local Engineering Consulting Office have completed a draft report for the NPC. Studies began in June 1980 and the report is expected to be finalised in about three months.

The project's second phase will be detailed design of sewage treatment works and pumping stations. The third phase is to cover construction supervision.

As the proposals stand, work falls into two sections. The first is a major expansion of the Amman city sewage treatment system, operated by the Amman Water & Sewerage Authority (AWSA). This work, estimated at current prices to cost a total of JD 27 million (\$84.8 million), includes upgrading the existing Ain Ghazzal sewage works' capacity to 68,000 cubic metres a day from 30,000 cubic metres a day. The works' activated sludge process will also probably be switched from diffused to mechanical aeration. A recent AWSA tender for upgrading the Ain Ghazzal works was withdrawn, apparently to allow further consideration within the context of the master-plan (MEED 23:1:81).

This section also entails building a new works near the headwaters of the Zarqa river on upper Wadi Abdoun, near Jebel Amman's Sixth Circle. It would have a capacity of 7,000 cubic metres a day by 1990, with provision for further expansion. Both this and the Ain Ghazzal works could discharge treated effluent into the Zarqa river, although the former would have the

option of discharging further south into Wadi Kafraïn. The US Agency for International Development (USAID) is believed to be considering financial assistance for these projects.

A second section of the Montgomery/DM-JM master-plan concerns outlying areas. Eight projects have been outlined.

A separate but related study has been done by the US' Malcolm Pirnie for another treatment plant and pipe system. This is for the Amman region's other main population and industry centres, Zarqa and Rosaifa. In January Pirnie was awarded the design contract for a plant with a capacity of about 45,000 cubic metres a day by 2000. The plant would be run by the Water Supply Corporation.

The Zarqa-Rosaifa area includes several big industries — such as the Amstel brewery, a phosphate mine, distilleries, and battery and textile factories. Some of the largest may be required to pretreat their waste. Effluent will initially be treated for irrigation, rather than domestic, use. Further treatment processes would be needed if the waste water were to be used domestically, Pirnie says. Tenders for the system's pipes and pumping stations are expected to be ready in about two months. Tender documents for the treatment plant are planned to be issued in the autumn.

In addition to the expansion of sewage treatment facilities, it is clear that more stringent regulation of solid and liquid waste dumping is required. The NPC "understands this problem very well," informed sources say. A solid waste disposal plan for the Amman region by two UK consultants, Watson Hawksley and Environmental Resources, is moving to the detailed design stage — for which 19 firms have been shortlisted by the client, Amman municipality. Controls are already being imposed in particular areas and more are planned (MEED 6:2:81). As in many other countries, the question remains whether these controls can be enforced effectively.

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