



State Comptroller of Israel | Annual Report 72a – Part Two | 2021

The Government Water and Sewage
Authority

Preventing and Monitoring Pollution and Salination of Water Sources, and their Recovery

Preventing and Monitoring Pollution and Salination of Water Sources, and their Recovery

Background

Ground water is a primary strategic source of water worldwide: providing almost half of the world population's drinking water and around 40% of water for agriculture. Ground water provides the main supply of clear, natural water for Israel's water sector. There are two major ground water aquifers in Israel – the coastal aquifer and the Yarkon Taninim aquifer (also known as the mountain aquifer). Israel's natural water sources and particularly ground water are in increasing danger of pollution and salination as a result of industrial activity, fuels, agricultural activity and over-pumping of the various aquifers, which causes their levels to drop and allowing salinized water to infiltrate. The Government Water and Sewage Authority is in charge of maintaining the quality of natural and artificial water sources, of their recovery, improvement and is responsible for preventing their pollution.



Key figures

2.24**billion m³
1**

Total water consumption in Israel for 2019.

17

The number of fuel container farms that are unmonitored (out of a total 35 farms) as of November 2020.

2.3**billion m³**The total known volume of polluted water, which is 6.5% of the coastal aquifer (that has a total volume of 35 billion m³) as of 2020.**NIS 1****Billion**The recovery costs of three sites where IMI was active², according to an estimate from 2015.³**72%**

The rate of sites out of 130 sites polluted with dissolved fuel that are in process of recovery, as of November 2020.

8.3%The rate of monitored industrial areas out of all industrial areas in Israel⁴; at 77% of the sites with industrial pollution no recovery actions have been taken⁵, as of November 2020.**13.5%**

The rate of monitored fuel facilities out of 2,184 known fuel facilities; at 79% pollution was found, as of November 2020.

21%

The rate of sites out of 130 sites polluted with dissolved fuel that are in process of recovery, as of November 2020.

Audit actions

From June to December 2020 the State Comptroller's Office examined the actions taken by the Government Water and Sewage Authority, the Ministry of Environmental Protection, the Ministry of Defense, the Nezer Sharon Company Ltd. and the Ministry of Finance in order to monitor Israel's natural water sources, to prevent their pollution and

1 Cubic meter.

2 The Israeli Military Industry Ltd – IMI.

3 The Water Authority informed the State Comptroller's Office that this financial data will be updated in the coming year.

4 It should be stated that among all the industrial areas, there are areas that do not involve operations that constitute a risk of polluting water sources.

5 Sites where industrial pollution has been found and where no recovery actions have been taken are in various stages of investigation regarding the extent and nature of the pollution, monitoring for the purpose of decision making on the need for recovery or in preparation for recovery.

promote their recovery, with focus on ground water reserves. Supplementary examinations were conducted at the Ministry of Health.

Key findings



Regulation in the field of fuel pollution originating at container farms – despite the importance of fuel container farms, and in view of the immense potential for damage deriving from their use including severely high fuel pollution, the establishment of regulations to prevent pollution from fuel container farms has not been completed even though a draft in this regard was published in 2004.



Monitoring and mapping the pollution of natural water sources – at 98 (24%) of the 408 monitored sites recovery actions have been or are being performed and at only 12 sites (3%) the recovery operations have been concluded. At 48 (12%) of the sites the Water Authority found that there was no pollution that required additional action. At the remaining 262 monitored sites – 64% of all monitored sites – there are signs of existing pollution or suspected pollution.



Monitoring of the Yarkon Taninim aquifer and the other aquifers compared to monitoring of the coastal aquifer – most industrial monitoring is performed on the coastal aquifer (21 out of 157 industrial areas are located above the coastal aquifer). It appears that there are no significant industrial monitoring activities of the Yar-Tan aquifer. In the field of industrial originated pollution, no monitoring sites have been established in recent years on the Yar-Tan aquifer, and all monitored industrial areas are located above the coastal aquifer.



Monitoring pollution from fuels – at 69% of the monitored sites, 203 in all, pollution was discovered in the water source, and at 36% of the monitored sites severe and very severe pollutions were found. In addition, monitoring actions performed at 295 sites from 1999 to 2020 constitute a coverage of 13.5% of all known sites. Despite fuel farms being responsible for the major portion of pollution from fuel facilities, 17 out of the 35 container farms have not yet been monitored, which means that the potential for severe pollution (fuel lenses) from fuels may be significantly higher than the known extent.



Monitoring industrial pollution – 12 years have lapsed since the publication of the Tahal report⁶ which indicated a high potential for pollution at 23 industrial areas ; as of the audit completion date two of these industrial areas have not yet been monitored. It was further shown that of the 157 industrial areas above the coastal aquifer and out of

6 Tahal, the Israel Water Planning Company Ltd, submitted a summary report in November 2008, to the Water Department at the Water Authority, on the subject of a monitoring plan for selected industrial areas on the coastal aquifer.



the total of 253 industrial areas in Israel, 21 industrial areas that are high risk (8.3% of the total industrial areas), are monitored.

Recovery of fuel pollutions in natural water sources – out of 261 fuel sites – where recovery actions were or may be required, recovery actions at only 8 (3%) of the 261 sites have been concluded. As for the remaining 253 sites, at 77 (30%) recovery activities are currently being performed. The result of this situation is that in addition to the low monitoring rates, the recovery rates of sites already monitored are low and does not provide a solution to the existing and potential extent of pollution from fuels in the ground water. Moreover, the Water Authority does not have a plan for the recovery of polluted sites.

Handling sites where ground water pollution derives from the activity of IMI and the Defense Establishment – at 12 of these 14 sites recovery actions have not yet been performed despite the large pollution extent totaling 1.4 billion m³ and the presence of various dangerous pollutants, and although a long time has passed since the commencement of investigation to determine the pollution extent and to monitor and detect pollutions. It should be noted that at the major polluted centers, where a volume of over 1.2 billion m³ of polluted water was discovered – IMI Ramat Hasharon, IMI Givon, IMI Magen and IMI Arvei Nahal – the pollution was discovered ten or more years ago, and at IMI Nof Yam, IMI Tirat Hacarmel and ⁷ the Tel Hashomer Recovery and Maintenance Unit, pollution was discovered five or more years ago. Moreover, it was found that at four of the 14 sites no initial investigation was carried out and there is no source for financing such investigation.

The Water Authority's use of corrective orders – the Water Authority limits its use of corrective orders, which allow it to order the polluters to take all required measures to stop water pollution, including recovery through restoration to the pre-pollution state and to prevent recurrence of water pollution. It does not allocate an appropriate part of its budget for treating pollution, despite being expected to collect these funds from the polluters. At industrial areas two disfiguration amendment orders have been issued over the past ten years, despite the scores of extensive and severe pollution epicenters that are not treated, and although some were discovered over 15 years ago.

Improving the efficiency of the use of nitrates – although there is an increase in the concentration of nitrates in Israel's coastal aquifer and Israel is positioned high on the scale of average nitrate quantity per area compared to OECD countries, the relevant bodies – the Ministry of Agriculture, the Ministry of Environmental Protection and the Water Authority – have not yet formulated a plan to reduce and improve the efficiency of the use of nitrates. Failure to take action may lead to the continued spread of pollutants and to the closure of additional water wells.






⁷ Recovery and maintenance center



Monitoring industrial areas with high pollution potential – the Water Authority is acting to monitor the industrial areas of Kiryat Arye and Ramat Siv, which were defined 12 years ago as having high pollution potential.

Preparations for treating pollutions originating from IMI activity in Ramat Hasharon – a joint tender committee of the Accountant General, the Water Resources Ministry and the Water Authority was formed to promote an international tender for planning, establishing and operating a facility to treat polluted ground water to be pumped from polluted areas at the IMI compound in Ramat Hasharon.

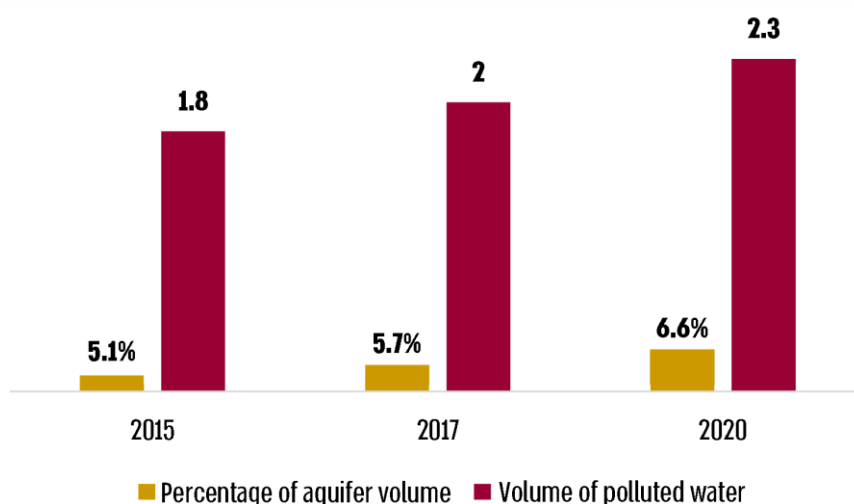
Key recommendations

-  It is recommended that the Water Authority examine the possibility of increasing its fuel monitoring setup, formulate a multi-year monitoring plan and initiate together with the Ministry of Environmental Protection and the local authorities a mapping process of unauthorized fuel facilities and monitoring thereof.
-  It is recommended that the Water Authority promote the preparation of a comprehensive and overall monitoring plan that will enable the establishment of an effective monitoring setup, including the detection of pirate (unauthorized) fuel facilities and focusing on monitoring container farms, and act to receive information on the extent of pollutions originating from the Palestinian Authority territories. It is also recommended that the Authority conduct a survey for assessing the potential risk and pollution of the Yar-Tan aquifer and of other aquifers.
-  It is recommended that the Water Authority, the Ministry of Agriculture and the Ministry of Environmental Protection promote the formulation and implementation of a plan to improve the efficiency and reduce the use of fertilizers, paying attention to the actions taken by OECD countries in this matter and to the possible effect on the extent of agricultural activity and formulate a suitable solution, in order to reduce nitrate damage to ground water.
-  It is recommended that the Water Authority act to formulate a recovery plan for sites polluted by industrial activity while examining the benefits in relation to all sites where pollution was discovered, and to increase the recovery actions at fuel polluted sites. According to the findings from monitoring all fuel farms, the Authority should act to recover the fuel-derived pollutions.
-  It is recommended that the Ministry of Defense, the Ministry of Finance, the Companies Authority, the Nezer Sharon Company and the Water Authority cooperate to resolve their disputes concerning responsibility for performing and financing pollution recovery actions from the IMI activity, including: financing recovery actions, complete pollution



investigations, preparation of and carrying out a recovery program, with a set budget and schedule for executing the project. If the disputes are unbridgeable, it is recommended to bring this issue for the decision of the Government Attorney General.

Volume of polluted water (billion m³) and its percentage of the total aquifer volume



Source: The Water Authority.

Summary

Past activities of defense industries and of IDF bases are the major cause of pollution in the coastal aquifer, which is a vital source of supply of clear water for Israel's water sector. The Water Authority, the Ministry of Finance and the Ministry of Defense, which are the bodies responsible for treating pollution, especially those originated from the activity of the defense industries and IDF bases, have not yet completed recovery actions to treat the pollution. The bodies concerned – the Water Authority, the Ministry of Defense, the Ministry of Finance, the Ministry of Environmental Protection and the Ministry of Agriculture and Village Development – should act to rectify the deficiencies detailed in this report and examine the implementation of its recommendations, including formulation of a multi-year plan to treat pollutions, allocating appropriate budget according to predetermined priorities and operate to remove pollutants from the various aquifers.