

**Report No.: 106657-AM**

**REPUBLIC OF ARMENIA**  
**Irrigation System Enhancement Project (P127759)**

**Inspection Panel**  
**Report and Recommendation**

**July 8, 2016**



**THE WORLD BANK**  
IBRD • IDA | WORLD BANK GROUP



**The Inspection Panel**  
**Report and Recommendation**  
**on**  
**Request for Inspection**

**REPUBLIC OF ARMENIA: Irrigation System Enhancement Project (P127759)**

**Summary**

1. This Report and Recommendation responds to two Requests for Inspection of the Armenia Irrigation System Enhancement Project. The Requests allege potential negative impacts on the supply of irrigation water to two communities, inadequate consultation and participation processes, and impacts on cultural property. Shortly after the Panel's eligibility visit in June 2016, Bank Management informed the Panel that the Government of Armenia was proposing modifications to the Project which require the Bank's reappraisal of it. In light of these developments, the Panel is deferring its recommendation as to whether or not an investigation is warranted. The Panel will reassess the situation when further developments take place and will inform the Board of its recommendation within a period not to exceed 12 months.

**A. Introduction**

2. On March 18, 2016, the Inspection Panel (the "Panel") received a Request for Inspection (the "first Request") of the Armenia Irrigation System Enhancement Project (the "Project"), which converts four pump-based irrigation systems into gravity irrigation with the objective of eliminating electricity usage and thus reducing cost.<sup>1</sup> The Request was submitted by members of the Goght community (the "Requesters")<sup>2</sup>, who asked the Panel to keep their identities confidential. They are concerned that the Project may lead to a shortage of irrigation water for their community, which uses water from the Geghardalich reservoir, claiming that the Project's hydrological data is incorrect, and alleging lack of consultation and participation.

3. On May 3, 2016, after the Panel had already registered the first Request, the Panel received another Request for Inspection (the "second Request") relating to the same Project. The Request was submitted by Ms. Sara Petrosyan and Ms. Arusyak Ayvazyan on their own behalf and on behalf of 531 residents of Garni village<sup>3</sup> (the "Requesters") affected by the Kaghtsrashen Gravity Irrigation System. The Requesters asked the Panel to keep the identities of the 531 residents confidential. They are concerned about a lack of water for gravity irrigation, the destruction of the Azat Gorge with impacts on tourism, and issues relating to consultation and participation.

---

<sup>1</sup> The Project Appraisal Document (PAD) assumes "*savings in electricity usage resulting from [...] the conversion of pumped irrigation systems to gravity fed irrigation systems, thus eliminating pumping costs [...]*". PAD, page 24.

<sup>2</sup> The Request includes signatures of 98 Goght community members.

<sup>3</sup> Garni and Goght are neighboring villages which are located less than 10km from each other.

4. The Panel registered the first Request on April 26, 2016, and the second Request on May 24, 2016. Since both Requests raise similar issues relating to gravity irrigation under the same Project, and for reasons of economy and efficiency, the Panel is processing them jointly. The Panel received the Management Response (the “Response”), which addresses both Requests, on June 10, 2016.

5. In accordance with the Resolution establishing the Inspection Panel,<sup>4</sup> the purpose of this Report and Recommendation is to make a recommendation to the Board of Executive Directors as to whether an investigation into the matters alleged in these Requests is warranted. The Panel’s recommendation is based on its consideration of the technical eligibility of the Requests and its assessment of other factors as reflected in the Panel’s Resolution and its Operating Procedures.<sup>5</sup>

6. This document provides a description of the relevant Project (Section B), a summary of both Requests (Section C), a summary of the Management Response (Section D), and the Panel’s determination of the technical eligibility of the Requests and observations (Section E). The Panel’s recommendation is presented in Section F.

## **B. Project Description**

7. The Irrigation System Enhancement Project (P127759) was approved by the World Bank’s Board of Executive Directors (the “Board”) for an amount of \$30 million (IBRD Specific Investment Loan) on May 22, 2013, and will close on June 30, 2017. The total project cost is \$37.5 million, with the Borrower providing \$7.5 million. The project was categorized as “B” and triggered the following safeguard policies: Environmental Assessment (OP/BP 4.01); Pest Management (OP/BP 4.09); Involuntary Resettlement (OP/BP 4.12); Safety of Dams (OP/BP 4.37); and Projects on International Waterways (OP/BP 7.50).

8. The Project Development Objective relevant to these Requests is “*to reduce the amount of energy used and to improve the irrigation conveyance efficiency in targeted irrigation schemes.*”<sup>6</sup> The Project consists of three components: (i) Irrigation System Enhancement (\$33.1 million); (ii) Management Information (\$1.7 million); and (iii) Project Management and Water Users Associations’ Support (\$2.7 million). Both Requests relate to component 1, subcomponent 1.1 (Conversion of pump-based irrigation to gravity irrigation, \$24.7 million), which finances the construction of gravity irrigation systems in four areas, including the Geghardalich System, which is the subject of the first Request, and the Kaghtsrashen System, subject of the second Request.

---

<sup>4</sup> International Bank for Reconstruction and Development (Resolution No. IBRD 93-10), “The World Bank Inspection Panel”, September 22, 1993 (hereinafter “the Resolution”), para 19. Available at: <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/ResolutionMarch2005.pdf>

<sup>5</sup> Inspection Panel Operating Procedures, April 2014. Available at: <http://ewebapps.worldbank.org/apps/ip/PanelMandateDocuments/2014%20Updated%20Operating%20Procedures.pdf>

<sup>6</sup> Project Appraisal Document (PAD), page 7. The Bank expects annual electricity and maintenance savings of approximately \$2 million, as well as a reduction of 17.8 million kWh of electricity consumption. Management Response, page v.

9. At the Geghardalich site, the Project will replace three of the seven existing pump stations from the Azat River and reservoir, and instead use a gravity irrigation system to supply water from the Geghardalich reservoir. This work includes the raising of the reservoir dam height by 1.6 meters to increase its storage volume from 2.4 million m<sup>3</sup> to 3.4 million m<sup>3</sup>, and the construction of a 23-kilometer (km) pressure pipeline and associated structures.

10. At the Kaghtsrashen site, the existing pump irrigation scheme takes water from the Artashat Canal and lifts it 180 meters through its pump station and then distributes it by gravity. The Project will construct an intake structure on the Azat River nine kilometers upstream from the Azat Reservoir. It will also construct a 23.5 km pipeline that will take water to the current discharge basin of the Kaghtsrashen pump station to enable gravity irrigation for the land covered by the existing system.

### C. Summary of the Requests for Inspection

11. The following section provides summaries of the two Requests for Inspection. The first Request is attached to this document as Annex 1 and the second as Annex 2.

#### First Request relating to the Geghardalich Scheme

12. The first Request was submitted by Goght community members affected by the Geghardalich gravity irrigation scheme. The Request alleges that there is not sufficient irrigation water supply to respond to the community's water demand, the methodology used by the Project to calculate the hydrological data is flawed, and that there was insufficient community consultation and participation in the Project.

13. **Water demand and supply.** The Requesters allege that the Goght community's water demand is 4.4 million m<sup>3</sup> annually, while project documents refer to only 2.25 million m<sup>3</sup>. According to the Request, the proposed gravity irrigation scheme under the Project, which will also supply additional communities through the pressure pipeline constructed under the Project, cannot be successfully implemented and will likely lead to insufficient irrigation water supply to meet the demands of the Goght community.

14. **Hydrological data.** The Request states that the hydrological data of the Project "*does not correspond to reality*," arguing that the Karmir River does not carry sufficient water to supply the required volumes for the reservoir. The Requesters ask for a group of independent experts to recalculate the hydrological data of the Karmir River.

15. **Consultations.** The Requesters complain about a lack of consultation and participation in the Project. They explain that on November 19, 2015, the Goght community opposed the project but no further hearings or discussions were conducted, thus violating their rights. The Requesters ask for the Project to be stopped until another participatory hearing is held in their community.

16. The Request also includes a proposal for additional works, including the construction of new infrastructure, such as a canal connecting the Gilanlar River to the Geghardalich reservoir.

## Second Request relating to the Kaghtsrashen Scheme

17. The second Request was submitted by two members of the Garni community, representing 531 residents, affected by the Kaghtsrashen Gravity Irrigation Scheme. The Requesters claim that the Project has adverse environmental and social impacts, is economically inefficient, risky, and unsustainable. They complain about insufficient water for gravity irrigation, the destruction of the Azat Gorge with impacts on tourism, and issues related to consultation and participation.

18. **Water supply and environmental flow.** The Request alleges that there is insufficient water in the Azat River to ensure the environmental flow of the proposed scheme, which will result in the drying up of the river. The Requesters explain that they have noted the water level in the Azat River continuously dropping; the water level severely dropped in July and August 2015 because the Azat feeder tributaries had dried up.

19. **Azat Gorge.** The Requesters are concerned about the Azat Gorge, a national landmark and part of the Upper Azat Valley listed on the UNESCO's World Heritage List. They claim that the Project-related works will “destroy” the landmark, including significant visual impacts. In addition, the Requesters note that the Project overlooked the unique importance of Garni for enhancing tourism in Armenia. They explain that for the past 20 years, the socioeconomic conditions of Garni residents have been directly linked to the development of local tourism. In the Request, they explain that they made proposals to the government but have not received any response. Project works in the Azat Gorge started on April 2, 2016. The Requesters explain that they blocked the road on two occasions and forced authorities to remove construction equipment from the Gorge.

20. **Consultations.** The Request alleges a lack of sufficient information, consultation and participation. The Requesters note that the community was not informed about public hearings and the opponents of the project were prevented from participating in meetings. The Requesters also claim that Garni residents were intimidated on several occasions and “*deception was used*” to garner the community's approval. The Requesters further claim that the expenditure procedure was not transparent and documents were forged.

21. The Requesters propose that a solar electric station or wind turbines be built at the reservoir, the 50-year-old pump stations be replaced with modern and energy-efficient pumps designed for current water levels, new reservoirs be built to store water flowing into the Azat River and five-year measurements of the Azat River be conducted, only after which the Project's usefulness should be discussed.

## **D. Summary of the Management Response**

22. The following section provides a summary of the Management Response, which is attached to this document as Annex III.

23. At the outset, Management “*does not agree that harm alleged exists, or that it results from instances of Bank policy noncompliance.*” According to the Response, both irrigation schemes have been “*carefully prepared and are consistent with Bank policy requirements.*”<sup>7</sup> Management explains that the Project would not change the volume of available irrigation water nor its distribution; the water would merely be transported by gravity. Management maintains that the two irrigation schemes are viable, the water flow calculations are “*realistic and conservative,*” and the Project will not reduce irrigation water supply but rather is designed to ensure that both communities will continue to receive their water supply. Management argues that many of the concerns in both Requests are “*based on inaccurate information and incorrect assumptions.*” Management’s detailed response to the two Requests is summarized below.

#### Management Response to the First Request relating to the Geghardalich Scheme

24. Management notes that two earlier complaint letters related to the same irrigation scheme were submitted to the Bank, the first one by an operator of a private hydropower plant in November 2015, and the second one in March 2016, signed by a different individual. The concerns raised in both complaints are “*identical*”<sup>8</sup> to the ones raised in the Request for Inspection received by the Panel.

25. Management notes that irrigation water supply to Goght passes through a private hydropower plant, which is not transparent about the quantities of water it abstracts. Management mentions that, since the construction of the private hydropower scheme, there are serious concerns of dam safety due to reservoir overfilling and spilling practices.

26. **Water supply to Goght.** Management notes that “*the Project does not expand the irrigated area nor does it change the amount of irrigation water delivered to the target communities.*”<sup>9</sup> Management notes that the proposed Geghardalich Gravity Irrigation Scheme will change the supply method from pumps to a gravity-fed pipeline, but the amount of irrigation water will still be the same as the one supplied by pumps. Management explains that the storage volume of the Geghardalich Reservoir will increase from 2.4 million m<sup>3</sup> to 3.4 million m<sup>3</sup> to supply the 26 km, gravity-fed pipeline, which will supply a combined total of 1,448 hectares (ha) of agricultural lands, including 705 hectares in the Goght community.

27. According to Management, the Request is based on overestimated water demand, which does not correspond with the current water needs for the irrigation area of Goght nor the historic water consumption records.<sup>10</sup> In addition, Management notes that there seems to be confusion

---

<sup>7</sup> Management Response, page v.

<sup>8</sup> Management Response, paragraph 18

<sup>9</sup> Management Response, paragraph 22

<sup>10</sup> According to the Management Response, the calculated annual irrigation requirement is approximately 2.2 million m<sup>3</sup>, the negotiated contract includes a historical average of around 2.2 million m<sup>3</sup>, the actual metered water delivery in 2015 was 1.28 million m<sup>3</sup>, and the actual billed total water delivery was 0.3 million m<sup>3</sup>. Management Response, page 9.

about the capacity of the modified reservoir and the annual available amount of water the reservoir can supply. The Management Response explains that water is flowing into and out of the reservoir constantly, and the total volume of water supplied from the reservoir over the course of a year does not need to be the same as the total water volume that the reservoir can hold.

28. **Methodology to calculate water availability in the Karmir River.** Management deems the allegation of insufficient water in the Karmir River incorrect; the calculations used to determine that there is sufficient water are “*realistic and conservative*.”<sup>11</sup>

29. **Consultations.** Management states that an Environmental and Social Management Framework (ESMF) was developed for the Project, and notes that the ESMF was disclosed in-country in February 2013. A public consultation meeting with key stakeholders, including representatives of central and local government agencies, non-governmental organizations (NGOs), academia and Water Users Associations (WUAs), was held in Yerevan. Management explains that five consultation meetings were held to discuss the design of the Geghardalich irrigation scheme and its environmental and social aspects with the affected communities.

#### Management Response to the Second Request relating to the Kaghtsrashen Scheme

30. Management notes that an earlier complaint regarding the Kaghtsrashen Scheme letter was submitted to the Bank on February 3, 2016, by the same individual who submitted the Request for Inspection. Management prepared a response to the first letter and held a roundtable discussion in Yerevan on March 10, 2016, attended by civil society organization (CSO) representatives who have signed the Request.

31. **Environmental concerns.** Management notes that the design of the Kaghtsrashen scheme is based on official Armenian Hydrometeorological and Monitoring Service data, which determined that there is sufficient water in the Azat River to cover irrigation demands and environmental requirements. Management also notes that the proposed intake structure (weir) will not restrict the environmental flow. A measuring device will be introduced at the weir and Management will recommend that it be open to community oversight.

32. **Water supply.** The Management Response notes that “*the Project does not affect the irrigation water abstraction of the Garni community*.”<sup>12</sup> Management explains that the existing irrigation pumping station that supplies the beneficiary communities and the proposed weir are situated downstream of the location where irrigation water is abstracted for the Garni community; hence, “*there is no connection between the Project and Garni’s irrigation water supply*.” Management also notes that, even though the water is abstracted upstream of the proposed weir and therefore outside of the Bank project’s scope, the Bank team brokered additional investment by the Eurasian Development Bank to support the rehabilitation of the Garni canal.

---

<sup>11</sup> Management Response, page vii

<sup>12</sup> Management Response, paragraph 52



33. **Tourism related-concerns.** Management notes that the Azat Gorge is not part of the Upper Azat Valley listed as a potential UNESCO World Heritage site. Management explains that the only UNESCO World Heritage site in the surroundings of the weir is the Geghard Monastery, located more than 10 km away from the proposed weir. In relation to visual impacts, Management notes that the pipeline itself will be buried and the proposed weir will have a rather low height of maximum two meters. Management also explains that the four proposed natural monuments identified in the Azat Gorge will not be affected by the works. Touristic activities in the vicinity mainly concern a first century pagan temple in Garni, which is not located in the Gorge.

34. **Consultations.** An ESMF was developed and disclosed in-country, and a public consultation meeting with key stakeholders was held in Yerevan in February 2013. Site-specific Environmental and Social Impact Assessments (ESIAs) were also developed, disclosed and consulted. Three public consultations for the Project and the ESIA were held with the Garni community, and announcements for a final consultation of the draft ESIA were made in December 2015. Due to a road block by Garni protestors, the final consultation could not take place as planned but was then completed on January 22, 2016. Management notes that information about the Project has been disseminated widely in public areas in the Garni community, and all project information includes details of the Project's grievance redress mechanism.

35. Management also notes that a series of six focus group discussions and three in-depth interviews were held with various Garni community members during December 2015, with the aim of understanding the "*perspective of the broader Garni community.*"<sup>13</sup> Management explains that a small group of Garni residents has been "*extremely vocal;*" they "*allegedly act on behalf of a varying number of signatories,*" but the signed letters have not yet been produced. Management adds that a meeting with CSOs and Garni residents took place at the World Bank Office in Yerevan in March 2016.

36. **Governance related concerns.** Management notes that the Project will only change the mode by which the same amount of water will be abstracted. The savings in electricity will benefit the country as a whole and not any specific individual. There will also be increased transparency about water flows and usage, and there will be no change in governance.

## **E. Panel Review of the Request, the Management Response, and Eligibility Visit**

37. Panel Member Jan Mattsson and Operations Officer Birgit Kuba visited Armenia from June 17 to 21, 2016 and held meetings with the Requesters, affected members of the Goght and Garni communities, government officials of the Ministry of Finance, the Minister of International Economic Integration and Reforms, the Head of the State Water Committee and the Director of the Irrigation Project Implementation Unit. The team also met with Bank staff based in the Country Office and abroad. The Panel expresses its appreciation to all mentioned above for sharing their views and exchanging information and insights, and extends special thanks to the World Bank Country Office for assisting with logistical arrangements.

---

<sup>13</sup> Management Response, paragraph 64

38. The Panel's review is based on information presented in the Requests, the Management Response, other documentary evidence, and information gathered during the site visit. The following review covers the Panel's determination of the technical eligibility of the Requests according to the criteria set forth in the 1999 Clarification (subsection E1),<sup>14</sup> and observations on other factors supporting the Panel's recommendation (subsection E2).

### **E.1. Determination of Technical Eligibility**

39. The Panel is satisfied that both Requests meet all six technical eligibility criteria of paragraph 9 of the 1999 Clarifications. The Panel notes that its confirmation of technical eligibility, which is a set of verifiable facts focusing to a large extent on the content of the Request as articulated by the Requesters, does not involve the Panel's assessment of the substance of the claims made in the Requests.

40. Criterion (a): *"The affected party consists of any two or more persons with common interests or concerns and who are in the borrower's territory."* The first Request was submitted by members of the Goght community affected by the Geghardalich Gravity Irrigation Scheme and includes the signatures of 98 community members. The second Request was submitted by Ms. Sara Petrosyan and Ms. Arusyak Ayvazyan on their own behalf and on behalf of 531 residents of Garni village affected by the Kaghtsrashen Gravity Irrigation System. The Panel confirms that the Requesters live in the Borrower's territory and are affected by Project activities. The Panel thus considers the requirement of paragraph 9(a) as met.

41. Criterion (b): *"The request does assert in substance that a serious violation by the Bank of its operational policies and procedures has or is likely to have a material adverse effect on the requester."* The first Request raises concerns that the Project may lead to a shortage of irrigation water for the Goght community and claims that the Project's hydrological data is incorrect. It also alleges a lack of community consultation and participation in the Project. The second Request raises concerns about a lack of water for gravity irrigation, the destruction of the Azat Gorge with impacts on tourism, and issues relating to Project consultation and participation. The Panel is thus satisfied that the requirement of paragraph 9(b) is met.

42. Criterion (c): *"The request does assert that its subject matter has been brought to Management's attention and that, in the Requester's view, Management has failed to respond adequately demonstrating that it has followed or is taking steps to follow the Bank's policies and procedures."* The Panel has verified that the Requesters' concerns were brought to the Bank's attention on different occasions prior to filing both Requests. The Requesters from the Goght community submitted a complaint to the World Bank Country Office in Armenia in November 2015, and received a response from Management in December 2015, which they deemed unsatisfactory. The Requesters from the Garni community sent a letter to the World Bank Country Office in February 2015. In March 2016, a meeting took place with the Requesters in

---

<sup>14</sup> "1999 Clarification of the Board's Second Review of the Inspection Panel", April 1999 (hereinafter "the 1999 Clarifications") available at <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/1999ClarificationoftheBoard.pdf>

the Country Office where the same claims as in the Request were raised. The Management Response confirms that Management was “*aware of the concerns expressed in the two Requests prior to their submission, and has engaged in intensive discussions on these issues with Project stakeholders over the past two years.*”<sup>15</sup> The Panel is therefore satisfied that this criterion has been met.

43. Criterion (d): “*The matter is not related to procurement.*” The Panel is satisfied that the claims do not raise issues of procurement.

44. Criterion (e): “*The related loan has not been closed or substantially disbursed.*” At the time the first Request was received by the Panel, the Project was about 62 percent disbursed. At the time of receipt of the second Request, the disbursement rate was 72 percent. This criterion is therefore met.

45. Criterion (f): “*The Panel has not previously made a recommendation on the subject matter or, if it has, that the request does assert that there is new evidence or circumstances not known at the time of the prior request.*” This is the first time the Panel has received a Request on this subject matter and thus this criterion is met.

## **E.2. Panel Observations Relevant to its Recommendation**

46. In making its recommendation to the Board and in line with its Operating Procedures, the Panel considers the following: whether there is a plausible causal link between the harm alleged in the Request and the Project; whether the alleged harm and possible non-compliance by the Bank with its operational policies and procedures may be of a serious character; and whether Management has dealt appropriately with the issues, or has acknowledged non-compliance and presented a statement of remedial actions that address the concerns of the Requesters. The Panel records below its preliminary observations on the alleged harm and compliance, noting that in doing so, it is not making any definitive assessment of the Bank’s compliance with its policies and procedures, and any adverse material effect this may have caused.

47. The Panel recognizes that agriculture and rural development play a key role in Armenia’s economic diversification, job creation, and poverty reduction,<sup>16</sup> and that irrigation and water management are critical for the country’s development. The Panel understands that the World Bank has been involved in Armenia’s irrigation sector for two decades. Bank Management informed the Panel that, in this specific case, the Project team was aware of the communities’ concerns and has been intensively involved with them on the issues raised in both complaints.

48. During its eligibility visit, the Panel team visited the project areas of the Geghardalich and Kaghrashen irrigation schemes and met with various groups of stakeholders, including members of the affected Goght and Garni communities. The Panel’s field observations of the

---

<sup>15</sup> Management Response, page viii.

<sup>16</sup> The PAD explains that irrigated agriculture is crucial to the agricultural sector’s performance, since it accounts for about 80 percent of the sector contribution to GDP. PAD, page 10.

Project's potential impacts and alleged harm are described below. The first section relates to the concerns of the Goght community, the second to those of Garni.

#### Observations relating to the Geghardalich Scheme

49. Community members of Goght village informed the Panel of harm they expect to suffer as a result of the Bank-financed Project. The Requesters believe that the World Bank has not adequately assessed the actual impacts of the Project. According to them, the Project will give water to other communities at the expense of the Goght community. They claim that the Project will worsen their already difficult situation as described below. The Requesters also claim that their community has not been adequately consulted and their input has not been taken into account.

50. **Livelihoods.** The Requesters explained to the Panel team that the livelihoods of the Goght community members depend on the water. Most villagers are farmers growing apricots, cherries, tomatoes and other fruits and vegetables, and some sell their produce in Yerevan. According to them, the community has additional fields where trees could be planted, but there is not enough water available for existing plantations. The Panel team was told that the trees would need to be watered six times a year between late spring and late summer so they can produce fruit of a quality that can be sold on the market.

51. **Water supply.** The Requesters told the Panel that historically the Geghardalich reservoir was the property of the Geghard monastery. It was destroyed by an earthquake in the 17<sup>th</sup> century and was reconstructed in 1963. Since its construction it has irrigated only the arable lands of the Goght community, and the Requesters believe that their community must approve any changes to the reservoir. According to the Requesters, the reservoir currently holds 2.4 million m<sup>3</sup> and there is a verbal agreement between the community and the implementing agency that this same amount would be reserved for the Goght community. However, the Requesters claim that this amount is not enough for the 530 ha of land currently irrigated. The Project, after raising the dam height by 1.6 meters, increasing the storage volume by 1 million m<sup>3</sup> to 3.4 million m<sup>3</sup> and conducting repair works on the reservoir, plans to additionally irrigate over 700 ha of land of other communities. According to the Requesters, the Project estimates to receive the additional 1 million m<sup>3</sup> from the Karmir River through snow melt, which the Requesters claim cannot be ensured. They argue that the Project's data of the Karmir River's water flow is incorrect.

52. The Panel team was informed by different stakeholders that there is an abundance of water this year. According to Goght community members, there was much less water in the rivers in the four years before; in 2010 and 2012, the water availability was one third of this year's. The Panel team was told that the Karmir River only carries water between May 20 and June 10 and is completely dry during the rest of the year. The Requesters informed the Panel that there are also major water losses in the current system due to leakage. The Panel could also observe that the canal leading from the Karmir River to the Geghardalich reservoir is in part not covered; according to the community, they have to shovel out the snow and ice every spring so water can travel through the canal to the reservoir.

53. **Consultation and Participation.** The Requesters also claimed that the attitude of the Project team toward their community was “*not adequate*” from the beginning. According to community members, meetings were not properly announced, not making it possible for all interested people to attend. Even though those attending the meetings strongly opposed the Project, their input was not taken into account and the Project still went ahead. The Panel team was told that meetings were superficial and not meaningful. Community members also complained that the meetings in their community were not with decision-makers. The Requesters explained to the Panel team that they blocked the road to the Geghard monastery on June 3, 2016, because they had not received an adequate response to their complaints.

54. **Community Proposals.** The Requesters emphasized that they are not only concerned for their own community, but would like to find a solution that also benefits the other communities. They argue that the Project in its current form should not be implemented. They propose connecting the Gilandar River to the reservoir and constructing a second reservoir, which, together with the existing Geghardalich reservoir, would be able to hold significantly more water. The Requesters believe that this would alleviate the concerns of the affected communities. Community members told the Panel that despite earlier promises, they were informed during the visit of the Panel that the second reservoir would not be built. The Requesters explained that the Project should at least construct an overflow pipeline to the community for times when there is more water. The community expressed concern that no solution has been found to date. Due to the high altitude of the Geghardalich project area, construction work can only be conducted during the summer, which means that work would have to start soon if it is to proceed this year.

55. During the Panel’s visit, the Bank’s project team reemphasized that the Project used a conservative approach to estimate the water flows of the Karmir River, and maintains that the Project is viable. The Bank team also explained that the Project was not designed to investigate all potential irrigation changes as it is not an access-driven Project but focuses on the alleviation of electricity needs. The Project team also informed the Panel that the Bank is working with the Project Implementation Unit in finding ways to communicate highly technical information more effectively. The World Bank is also working towards opening up a national dialogue on issues of irrigation and water management.

56. The Panel understands that the construction work under the Project has been on hold since the community protest on June 3, 2016. According to a press release of the State Water Committee, dated June 23, 2016, the Committee is proposing to build an additional canal connecting the Gilanlar River with the Geghardalich reservoir. The press release states that the extra water would guarantee full supply for the Goght community for the entire irrigation season, including during dry years.

#### Observations relating to the Kaghtrashen Scheme

57. Community members of Garni village claimed that the Project will lead to the drying up of the Azat River with major impacts on the environment, agriculture and tourism. The Requesters also complained about the Project’s consultation process.

58. **Water supply.** Community members told the Panel team that in the past, their community used to supply all of Armenia with fruits, but cannot do this any longer due to a shortage of irrigation water. They explained that the water levels of the Azat River were low during the past seven or eight years. Community members organized their own measurements of the water levels, which they claim showed that there is not enough water during the summer months. According to the Requesters, the Project threatens the continued existence of the Azat River. While the Garni community receives their irrigation water from a location upstream of the Project's intervention, the community fears the Project will lead to future interventions further upstream that will directly impact their community's water supply. The community members further explained that already 1,000 ha of agricultural land in Garni lies fallow; villagers pay land tax but cannot grow fruit due to the lack of water, and people have to emigrate as a result of lack of opportunities locally.

59. **Environmental impacts.** Community members told the Panel that the Project will lead to the Azat River drying up, transforming the Gorge into a desert. This will result in an ecological imbalance, threatening wildlife and attracting more snakes to the area. They also fear a heightened threat of malaria in the region if there is more stagnant water in the Azat reservoir.

60. **Cultural heritage.** The community members emphasized the importance of Garni for tourism in Armenia. They explained that many tourists come to see the Hellenistic Garni temple and the Azat Gorge. The Requesters fear that the Project will destroy the nature and scenery around the temple, thus making Garni less attractive to tourism.

61. **Consultation and Participation.** According to the Requesters, 11 meetings took place with the community, including some with the World Bank, but they still claim that community's concerns have not been considered. The community members told the Panel team about an incident when the village square was filled with people protesting against the Project as teachers were forced by the regional government into a small meeting hall to sign a document agreeing to the Project. The community also expressed their suspicion of corruption surrounding the Project and informed the Panel of instances where community members felt intimidated or threatened.

62. During the Panel's visit, the Bank team re-emphasized that the Project will not affect the supply of irrigation water to the Garni community and will not impact the environmental flow of the Azat River. The Bank team also explained that the Project is leading to more transparency and is introducing monitoring devices accessible to the communities.

63. The Panel learned that Project implementation has been suspended since the community protest in late May 2016. According to the Requesters, construction equipment has been removed from the Gorge. The Panel was told that the community would continue blocking the road and water supply if construction was to resume.

64. According to a press release by the State Water Committee, dated June 23, 2016, the Committee is proposing to move the water collection point 5.2 kilometers downstream on the Azat River close to the Geghadir-Hatsavan pump. This will prevent construction in the

recreational areas. The Panel was told that due to the different topography in the new location, gravity will not be sufficient and pumps will need to be introduced.

### **E.3. Panel's Review**

65. The Panel welcomes the high level of commitment expressed by the Bank as well as the implementing agency to continue working closely with the community, including improvements in the way technical information is communicated, and ultimately finding a solution that is acceptable to all stakeholders.

66. The Panel also recognizes the strong commitment on the part of the Requesters from the two communities to defend their interests, as well as offering alternative solutions, some of which they claim would improve water supply to other communities as well. Unfortunately, positions at this stage appear entrenched and polarized, fueled by historical distrust.

67. On June 23, 2016, shortly after the Panel's eligibility visit to Armenia, the State Water Committee issued a press release proposing modifications to the Project, as described above in paragraphs 56 and 64. On July 5, 2016, Bank Management provided to the Panel a document titled *Update on Decision of Government of Armenia*, which is attached to this document as Annex IV. Management explains that the Government of Armenia decided to "*significantly modify*"<sup>17</sup> the design of the two irrigation schemes, which requires the Bank to reappraise them with regard to technical and economic viability and potential environmental and social impacts. The Bank would then consider whether or not the new design can be supported by the Project. Management states that "*the redesign of the two schemes as decided by the Government would address the issues of concern raised in the Request for Inspection.*"

68. With regard to the Geghardalich Scheme, the Government decided to accept one of the Requesters' proposals and include an additional subsidiary canal to supplement flows into the reservoir. Management explains that this is not needed from a technical perspective but will add an extra source of water to the reservoir and thus further reduce risks to beneficiary communities during times of drought.

69. With regard to the Kaghtsrashen Scheme, the Government decided to no longer build a new weir structure on the Azat River, but rather use an existing structure 5 km downstream. Management notes that due to the loss in elevation the scheme will continue to depend on energy to deliver irrigation water to the communities. A preliminary analysis by the Bank's team indicated that the scheme would still generate a positive economic rate of return. Management notes that the compromise design may be feasible and viable, but will remain "*inferior*" to the original design.

70. According to the Update, next steps on the Bank's side include the mobilization of consultants to the sites during July and August 2016 to confirm the team's understanding of the technical details. Management expects that all technical details will be available for the Bank's review by September/October 2016. The Bank is planning a reappraisal supervision mission for

---

<sup>17</sup> Management explains that the design changes were discussed and adopted by the village councils.

October/November 2016, which will “*include continued consultations with affected communities and stakeholders on the compromise solutions.*” Management explains that further actions may be identified to ensure the sustainability of the proposed solutions and community participation in their monitoring. Management expects that the reappraisal and restructuring could be completed by April 2017 if the Bank decides that the new designs can be supported by the Project.

71. The Panel recognizes the commitment and current efforts by the Government of Armenia and Bank Management to address the issues of concern raised by both Requests. The Panel wishes to emphasize the importance of continued meaningful consultation with the affected communities in the months ahead during the restructuring process.

## **F. Recommendation**

72. The Requesters and the Requests meet the technical eligibility criteria set forth in the Resolution that established the Inspection Panel and the 1999 Clarification. In addition, and based on the observations noted above, the Panel has established the existence of a plausible link between the harm alleged in the Requests and the Project, as required in the Panel’s Operating Procedures. At the same time, the proposed re-design provides an opportunity for the project to address the Requester’s concerns and thus avoid the potential alleged harms.

73. In light of the recent efforts by the Government of Armenia and Bank Management to restructure the Project to address the Requesters’ concerns, the Panel is deferring its recommendation as to whether or not an investigation is warranted. The Panel will reassess the situation when further developments take place and will inform the Board of its recommendation within a period not to exceed 12 months. During this period the Panel expects Management to provide the Panel with regular briefings following the appraisal of the new schemes and on developments related to the Project restructuring.



## **Annex I**

### **First Request for Inspection**



Dear Mr. Dalai

We want to inform You, that on November 24 of 2015 year to the WB Armenian office has been presented application - complaint, by the Goght community members of RA Kotayk region, against to Gegardalich reconstruction, Gegardalich gravity irrigation systems modernization and rehabilitation project, financed by the World Bank.

The application - complaint was presented to [REDACTED] the World Bank's Global Agriculture Department. [REDACTED] did not take measures to solve the problems, raised in the application - complaint, particularly, concerning to the Karmir river's water discharges and actual testing of other calculable values. Only on December 21 of 2015 year, in response, [REDACTED] presented the letter issued by director of "Water Sector Project Implementation Unit" institution, in which are presented direct links to the material we already know, and where the facts are not true.

During 19.11.2014 public hearings, the community was opposed the project, after which was not carried out hearings in Goght community, with Goght community residents, thereby, violating the rights of the population.

Therefore, we ask you:

to stop funding the program, until the actual hearing will be held with participation of the population of Goght in Goght community.

in Karmir river carry out hydrological measurements of at least one year, with the group composed of independent experts.

We expect your support, for the full and complete solution of the raised problem.

Attached is presented:

the application - complaint, signed by residents of the community Goght

the application - complaint to the World Bank Armenia office and the answer to it. <sup>1</sup>

Also I want to inform you that at first I applied to Office of the Compliance Advisor Ombudsman and [REDACTED] advised to contact Inspection Panel.

Best regards,

On behalf of Members of community Goght

[REDACTED]

<sup>1</sup> The World Bank answer was not attached to the original request but was received by the Panel subsequently

To:  
The Inspection Panel  
Rupes Kumar Dalai The World Bank,  
MSN: MC 10-1007 1818 H Street,  
NW, Washington, DC 20433, USA  
Phone: +1 202 458 5200,  
Fax: +1 202 522 0916  
Email: [ipanel@worldbank.org](mailto:ipanel@worldbank.org)  
Website: [www.inspectionpanel.org](http://www.inspectionpanel.org)

We, community of village Goght, lodge a complaint concerning the **Geghardalich gravity irrigation** project, located in Republic of Armenia, Kotayq marz, village Goght.

This complaint is made in behalf of [REDACTED] (ignore if not applicable).  
I/we live in the area known as Republic of Armenia, Kotayq marz, village Goght (show on an attached map if possible). I/we can be contacted through the following address, telephone and fax numbers, and e-mail:

[REDACTED]

I/we do not wish our identity to be disclosed (ignore if not applicable).

I/we have been, or are likely to be affected by social or environmental impacts of the project in the following way(s):

All needed information are attached.

To WB Operations Officer  
Community Agricultural Resource Management and  
Competitiveness Project Manager [REDACTED]  
From the Goght community members of RA Kotayk region

#### APPLICATION - COMPLAINT

Water Sector Project Implementation Unit, within Irrigation systems modernization program, about Geghardalich gravity irrigation project:

We want to inform You, that the beneficiary community, which uses Geghardalich reservoir water for irrigation, from the reservoir exploitation to now, is Goght community.

The total irrigated area of Goght community is about 705 hectares, of which approximately 550 hectares are actually irrigated at the moment. Currently, the reservoir supplies irrigation water only to Goght community and average annual water supply from the reservoir is 2.25 million. m<sup>3</sup> (July-September), which is not enough to ensure the required water demand, at the same time it is necessary to mention, that in May- June water demand for community land irrigation is supported by the spring snowmelt water of Karmir river.

We would like to inform you, that the reservoir is completely filled, only 2 times during last six years.

In addition, with the Goght population was not carried out hearings on the project and discussions.

In the project plan, hydrological data of Karmir river, which are calculatable values and obtained from the Azat-Garni observation post data (by the transitional coefficient of the surface correlation) do not correspond to reality, particularly since the end of June to the 2-nd ten days of May of the next year, the river dries completely, and in the project during this period presented fairly large discharge, an average of about 358 l / sec.

For obtaining a realistic picture of Karmir river water resources, we are offering by the different seasons of the year to carry out simultaneous hydrological measurements on the water intake point of the canal that feeds Geghardalich reservoir and on the Azat-Garni hydrological post during 2-3 year, obtain new transitional coefficient, based on which, calculate water discharge of Karmir river.

We state that, in the Karmir river actually there is not such volume of water resources, that was presented in the project, naturally, cannot be ensured in the design

capacity of 4.4 million m<sup>3</sup> of water volume, and naturally cannot be accomplished project about gravity water supply system in surrounding communities land irrigation.

Additionally, as mentioned above, the total irrigated area of Goght community is about 705 hectares, of which approximately 550 hectares are actually irrigated at the moment, which, naturally, for about a year will grow, the amount of water allocated to the program for Goght community, after the realization of the planned project, will stay in the current amount of volume. In this case, after the realization of the project, naturally will be worsen the condition of the irrigation water supply in the beneficiary Goght community.

Taking into account all this, please stop/suspend the project implementation process, until you will not present all the questions raised by us to the full, giving clear explanations and justifications.

Goght community members: <sup>2</sup>

<sup>2</sup> 98 signatures (confidential) were removed by the Panel

## **Justifications**

1. *There is not sufficient water resources in the Karmir river, which, in the programe, are calculated an average of about 358 l/sec. for July -May, and even in that case calculated existing water for the use in Karmir river does not match with the calculated values of the reservoir inflow (p.84 of the program).*

Month	Water available for use in the Karmir river(million m <sup>3</sup> )	Water inflow to the reservoir (million m <sup>3</sup> )
July	0.222	1.563
August	0.072	1.190
September	0.172	0.354

Attached pictures are presented: appendix 1.

2. The actual annual water demand of Goght is about 4.4\* mln. m<sup>3</sup>, while in the project it is presented as 2.25 mln. m<sup>3</sup>.

*\*Basis, water use permission, [REDACTED]  
[REDACTED] for Goght community irrigation from the Karmir river, for 2007-2013; [REDACTED]*

3. We would like to inform you, that the reservoir was completely filled, only 2 times during last six years. *Appendix 3, appendix 4.*

The above mentioned is justified, also, based on the fact that the maximum capacity of the canal that fills Geghardalich reservoir is 1500 l /sec., and above the canal, water flow period, because of snowmelt lasts 15-20 days,  $20 * 86.4 * 1500 \text{ l/sec.} = 2,59 \text{ million. m}^3$ .

4. *When the dam of Geghardalich reservoir will be raised about two meters the reservoir capacity will be 3.4 million. m<sup>3</sup>, while in the program the capacity of the reservoir and outflows is presented as 4.4 million. m<sup>3</sup> (p. 46; 84 of the project ).*
5. When the reservoir will provide 370 l / sec to the neighboring communities and simultaneously 300 l /sec to the Goght community then it will be empty in 40 days. If we assume, that the reservoir will be filled with 3.4 mln.m<sup>3</sup> water, which is actually impossible with water resources of the Karmir river only, the reservoir will be empty in 59 days, namely, in this case Goght community will not have irrigation water in August and September.

## **Proposal**

1. Give priority to the construction of the reservoir and then fill the reservoir after the construction of the Gilanlar canal (about 2 km), after which, based on the statistical data of the reservoir factual fullness, come to the conclusion, concerning water pipeline construction and provision of water quantity to the surrounding communities.
2. When the fullness of Gegardalich reservoir will be 3.4 mln. m<sup>3</sup> and when at the same time will be ensured annual water demand of Goght community, which is 4.4 mln.m<sup>3</sup>, only then, from the Gegardalich reservoir, will be possible to provide water to the neighboring communities, no more than 129 l/sec.
3. In Goght community construct internal irrigation system of 7-8 km length (instead of in the program specified 1 km), in the result will reduce the amount of water losses and based on that water savings, in Goght community exceedance of irrigation water will be possible to increase up to 80%.



## ANNEX 2

avarayge daily temperature of May from 1970 to 2008

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1970-05	0.2	0.8	2.2	0.8	-0.1	-2.2	-3.8	-3.9	-3.2	-3.1	-3.1	-0.5	2.9	2.1	0.0	-2.6	-2.6	2.3	3.8	-2.0	-1.8	3.0	2.4	2.5	2.9	2.3	1.8	2.4	1.7	2.5	0.6
1971-05	-0.9	-0.6	0.4	2.0	1.0	2.7	4.4	2.8	1.7	1.4	-1.0	1.7	-0.8	-0.3	3.6	-0.8	0.1	0.2	0.8	1.2	-0.5	-0.2	-0.7	0.5	0.8	0.8	1.1	1.5	1.0	0.4	1.1
1972-05	-0.8	-3.7	-2.6	-3.4	-2.4	-3.4	4.0	-3.7	-4.3	-4.1	-4.0	-3.3	-2.2	-2.2	-2.1	-3.4	-3.0	-3.1	-2.7	-0.9	0.4	-0.2	1.1	1.1	1.6	0.7	0.8	0.0	0.7	0.1	1.8
1973-05	-7.6	-7.0	-7.3	-5.7	-3.6	-1.9	-1.0	0.2	3.7	1.1	2.4	2.6	0.9	0.7	0.0	-0.4	-2.8	-3.4	-3.7	-4.0	-5.4	-2.3	-2.4	-0.9	-1.0	0.1	3.6	5.4	2.8	-3.3	-1.6
1974-05	-6.2	-1.1	0.0	-2.0	-3.8	-2.8	-0.8	0.6	1.5	2.5	2.9	2.9	-0.1	0.5	1.2	0.0	0.7	1.2	0.5	0.6	2.6	3.6	-1.0	-0.8	2.2	3.4	0.8	-0.6	-0.4	0.0	0.8
1975-05	-5.3	-4.6	-2.9	-1.3	-2.4	-3.5	-3.4	-3.4	-2.8	-2.2	-1.2	-0.5	-0.3	-0.4	-0.6	-0.7	-1.3	-2.0	-0.5	1.1	2.9	1.8	0.0	1.1	0.5	-0.4	0.8	1.6	1.6	3.6	3.8
1976-05	-0.7	0.0	-0.7	-2.8	-0.3	-2.4	-6.3	-3.5	-3.0	-2.7	-3.4	-1.8	-1.6	-1.8	-1.5	0.7	0.5	1.7	2.5	0.6	-0.9	-0.4	-0.5	-1.2	-1.8	-1.5	-2.8	-1.8	-1.2	-2.1	0.2
1977-05	-2.1	-0.6	-0.4	-0.7	-0.6	-1.6	-2.8	-2.6	-2.8	-1.6	-1.2	-0.7	1.0	2.5	-2.0	-1.1	-0.7	-0.8	-3.6	-3.0	-1.9	-0.9	1.6	2.8	1.3	-0.1	-0.4	1.2	2.4	2.6	1.8
1978-05	-9.1	-8.2	-3.4	-0.2	-1.3	-1.9	-4.9	-4.8	-1.2	0.5	-1.7	-1.1	0.6	-1.4	0.3	1.8	2.1	1.1	0.2	-0.7	-2.9	-4.2	-2.9	-0.9	0.3	0.5	0.9	-1.6	-0.9	-2.0	1.5
1979-05	1.5	-0.1	-1.7	-2.2	-2.1	-2.8	-2.0	-1.9	-1.4	-0.5	0.6	1.0	1.4	0.3	-1.5	-2.2	-1.9	-1.1	-0.1	0.5	1.8	0.7	1.5	1.2	2.2	2.6	1.4	2.5	1.2	2.4	2.3
1980-05	-4.5	-4.3	-1.0	-1.6	-1.5	-2.5	-0.8	0.0	-1.4	-1.4	-0.5	-1.0	2.0	0.2	-1.6	-0.7	2.3	3.0	3.3	2.3	4.0	2.1	-0.7	-2.0	0.3	2.7	3.2	2.4	0.0	1.7	2.7
1981-05	-6.4	-9.1	-6.7	-5.0	-2.7	-1.7	-0.7	-0.2	1.1	-0.1	-1.7	-3.6	-2.9	-0.8	-1.4	-3.6	-5.0	-4.0	-1.9	-2.3	-1.5	-1.0	-2.1	-3.3	-1.9	0.1	-1.0	-2.2	-0.1	1.0	2.0
1982-05	-1.1	-3.3	-2.7	-3.4	-4.0	-2.1	-2.1	-1.3	-1.9	-1.2	0.5	2.7	5.1	1.8	0.5	-0.5	0.5	1.1	0.6	0.6	-1.4	-2.3	-1.8	-1.2	0.1	0.9	-0.1	1.4	1.6	5.0	2.2
1983-05	-1.3	-1.9	-1.2	-2.2	-4.0	-4.0	-2.6	-2.2	-4.9	-4.4	-2.8	-2.0	-2.5	-1.6	-0.7	-0.3	1.6	2.7	2.3	2.1	2.2	2.9	2.6	1.8	1.6	1.8	3.2	2.1	0.5	0.5	1.5
1984-05	-10.2	-8.4	-6.1	-5.4	-5.4	-5.4	-5.4	-2.0	-1.4	-1.7	-2.2	-2.2	-1.5	-2.1	-1.1	-1.7	-2.1	-0.3	-0.8	-2.6	-2.6	-1.3	-0.3	1.0	0.2	0.0	0.1	-2.4	-2.7	-1.2	0.6
1985-05	-1.5	-0.9	-3.1	-5.6	-3.2	-1.3	-1.3	0.2	0.5	0.1	2.8	3.8	4.8	4.7	4.5	3.0	2.1	1.9	1.4	-0.3	-0.1	-0.9	2.0	2.5	3.3	3.5	0.6	3.5	5.7	5.1	4.8
1986-05	-1.5	-2.0	-3.6	-4.9	-6.7	-8.2	-4.1	-1.7	-0.8	-2.1	-4.4	-3.9	-3.1	-5.4	-3.0	-3.3	-4.1	-3.4	-2.5	-0.1	2.6	0.1	-1.8	-1.3	-0.4	-2.2	-1.4	0.1	1.2	1.5	2.0
1987-05	2.6	1.0	-1.8	-2.6	-1.4	-1.6	-0.1	3.3	3.8	0.6	-0.6	-2.4	-1.8	0.1	0.4	1.1	2.2	2.0	2.0	2.4	0.9	2.0	2.3	0.4	-0.8	0.7	0.9	0.7	0.2	0.1	2.0
1988-05	-4.5	-8.8	-5.3	-4.5	-4.1	-3.6	-2.3	-2.2	-3.9	-6.3	-3.6	-4.0	-2.7	-3.1	-3.5	0.3	2.8	4.0	3.4	-0.5	-0.1	0.8	0.7	1.3	-1.6	-1.4	2.6	0.7	0.2	0.6	0.0
1989-05	1.8	2.8	-0.2	0.4	0.6	-0.3	-4.9	-4.5	-2.6	-2.1	-4.0	-3.3	-0.8	-0.3	1.0	1.0	0.1	-2.4	-1.8	0.5	1.3	4.6	5.0	5.9	6.0	4.5	3.6	1.6	2.0	3.2	1.5
1990-05	-3.9	-5.5	-8.4	-6.0	-4.6	-4.7	-7.3	-4.1	-2.5	-0.8	-0.3	-0.8	-2.1	-2.5	-1.4	-0.4	1.9	2.3	0.1	1.6	-0.1	0.9	0.9	0.5	0.2	-0.2	2.4	3.4	4.6	5.8	7.2
1991-05	1.4	-1.1	-3.9	-4.7	-2.2	0.8	0.4	-0.4	0.0	-4.7	-4.4	-3.3	-2.2	-1.1	-2.4	-0.5	-4.1	-4.3	-2.0	-0.8	-0.4	-5.1	-5.1	-2.6	-0.4	1.3	1.0	-0.4	-0.6	-2.9	-3.8
1992-05	-6.6	-8.8	-7.0	-6.3	-5.2	-3.5	-3.3	-0.8	-1.8	-2.3	-3.1	-2.4	-1.3	-0.7	-0.8	-0.6	-0.8	-1.9	-4.5	-5.0	-4.4	-5.5	-2.4	-1.2	-0.8	0.4	0.9	2.6	3.1	2.0	1.4
1993-05	-4.2	-1.5	-3.6	-3.7	-4.4	-3.1	-3.8	-3.4	-2.6	-0.9	-0.8	-0.5	-1.7	-3.3	-2.5	-1.5	-0.5	-1.3	-0.7	-1.6	-0.9	0.0	-0.5	-0.7	-0.2	-0.4	-0.3	0.3	1.1	2.8	2.7
1994-05	-3.9	-6.1	-5.8	-4.7	-4.2	-3.5	-2.8	-1.8	-1.7	-2.4	-0.6	-0.8	-3.1	-3.7	-2.4	-3.5	-2.9	-1.0	1.7	2.7	2.7	3.6	2.4	1.5	3.4	4.0	4.4	4.9	5.0	4.6	4.9
1995-05	-2.7	-3.9	-2.7	-1.3	-2.3	-1.1	-1.1	-2.9	-3.1	-2.7	-2.3	-0.5	0.9	1.5	0.7	2.7	4.6	3.3	3.8	4.1	3.2	4.1	5.8	5.6	4.7	3.4	3.3	3.4	4.0	3.8	4.5
1996-05	-1.0	0.3	2.1	0.9	-0.9	-0.6	0.5	0.8	0.9	2.1	1.9	1.7	1.2	0.9	0.4	0.4	-0.5	0.3	0.8	2.2	2.9	2.4	3.7	1.7	-1.5	-1.1	3.2	3.1	3.2	3.4	3.0
1999-05	-2.9	-1.1	-2.1	-3.8	-3.4	-0.8	0.7	-0.6	-0.6	0.5	0.6	0.7	0.2	-0.5	0.2	2.6	2.1	1.3	0.2	2.0	3.1	1.9	2.8	3.8	2.8	2.7	1.1	2.9	3.0	4.7	3.8
2000-05	-2.7	-1.4	-1.1	-1.7	0.2	0.8	-1.6	-1.5	-4.8	-6.3	-2.4	0.2	0.2	0.7	-0.5	-1.7	0.7	-1.3	-1.7	-2.4	1.1	1.3	1.9	2.6	2.7	5.0	1.3	-0.4	2.0	4.1	2.4
2001-05	0.2	-0.6	-0.6	-2.2	-2.4	-3.2	-2.1	-2.2	-2.9	-2.8	-2.6	-2.5	-0.9	0.5	0.6	-0.4	-0.6	-2.3	-1.1	-1.5	-0.8	-2.8	0.4	0.0	-3.4	-0.4	1.7	1.2	-1.1	-2.4	-0.9
2002-05	-5.1	-3.9	-3.3	-3.7	-5.9	-7.4	-6.7	-5.6	-3.8	-3.8	-3.1	-3.2	-1.7	-3.7	-1.5	-2.0	-1.1	0.2	-0.1	-1.0	-0.6	0.2	0.2	1.6	-0.9	-1.7	2.6	4.9	2.9	2.8	3.3
2003-05	-4.3	-1.8	-1.4	-1.1	0.4	-2.3	-7.4	-7.6	-4.1	0.3	1.6	2.3	2.6	2.2	1.8	1.7	1.8	3.1	1.7	2.0	2.2	3.7	1.9	2.8	1.8	4.3	3.9	1.3	1.8	1.3	0.6
2004-05	-1.8	-3.6	-2.5	-2.6	-2.3	-1.3	-1.5	-1.2	-1.1	-0.7	0.0	-0.8	0.5	-0.5	-1.7	-2.5	-3.6	-3.1	-2.8	-3.3	-3.8	-2.3	-0.6	0.9	0.1	3.8	3.7	1.9	1.0	1.1	1.2
2005-05	-0.4	-1.9	-3.0	-6.8	-6.1	-4.3	-0.3	2.0	1.8	-0.3	2.1	2.0	2.5	1.4	0.8	0.6	0.2	0.5	0.4	0.2	1.6	2.8	3.5	3.5	2.7	3.0	2.8	3.5	4.7	3.7	3.5
2006-05	-2.5	-1.1	-1.7	-1.8	-0.3	0.7	0.5	-0.1	0.1	0.0	-0.6	0.0	0.5	1.2	-1.2	0.5	0.1	1.7	1.5	1.6	2.1	2.2	2.7	2.7	2.8	4.8	3.2	1.8	1.1	2.2	4.6
2007-05	-15.5	-15.2	-15.7	-14.7	-14.6	-14.1	-13.5	-13.0	-11.4	-11.6	-12.3	-12.3	-12.1	-12.1	-10.2	-2.1	3.6	3.8	2.1	2.4	4.1	5.6	4.8	5.8	5.8	6.1	5.2	6.0	6.6	6.8	3.8
2008-05	-0.9	-2.3	-3.4	-4.1	-1.5	-1.9	-6.4	-6.0	-4.1	-4.8	-6.0	-4.6	-6.6	-6.7	-2.2	-1.2	-0.9	-0.2	0.5	0.6	1.7	1.0	3.1	6.1	7.4	4.7	1.6	1.5	0.9	-3.0	0.0
	-3.1	-3.2	-3.0	-3.2	-2.9	-2.7	-2.6	-2.1	-1.8	-1.9		-1.6	-1.1	-0.7	-0.9	-0.6	-0.2	0.0	0.1	0.0	0.4	0.6	0.8	1.2	1.2	1.6	1.7	1.6	1.6	1.7	1.9
	Average first decade -2.7										Average second decade -0.6										Average third decade 1.3										
	Average month -0.58																														

Гегард

Гохт

Geghardalich

© 2016 Google

Image © 2016 DigitalGlobe

Google earth



**Karmir river 10.06.2015**



**Karmir river 13.06.2015**





**Geghardalich reservoir 06.06.2015**



**Geghardalich reservoir 10.06.2015**





**Geghardalich reservoir 13.06.2015**



**Geghardalich reservoir 10.10.2015**





## **Annex II**



### **Second Request for Inspection**





**1. Complainant's Information**

*(This information must be provided. The identity of complainants will be kept confidential if they request so. Anonymous complaints will not be accepted.)*

Names and Titles(Dr., Mr., Ms., Mrs.)	Signatures	Positions/Organizations (If any)	Addresses	Contact numbers	E-mail addresses
Ms. Sara Petrosyans		Garni resident (on behalf of 520 residents of Garni village <sup>1</sup> )	Info removed by the Panel	Info removed by the Panel	sara@hetq.am
Ms. Arusyak Ayvazyan			Info removed by the Panel	Info removed by the Panel	arusyakayvazyan58@gmail.com


Please indicate how you prefer to be contacted (e-mail, mobile, etc.):

Do you request that identity be kept confidential?

☐ No

**2. Information on Authorized Representative (If any).**

*(If Authorized Representatives are not complainants themselves, their names will be disclosed as needed, in order to ensure transparency).*

Names and Titles	Signatures	Positions/Organizations (If any)	Addresses	Contact numbers	E-mail addresses
Ms. Sara Petrosyans		Garni resident	Info removed by the Panel	Info removed by the Panel	sara@hetq.am

**Please provide evidence of the authority to represent the complainant which must include the complainant's signature.**

<sup>1</sup> The Panel has received a total of 531 signatures from the Requesters in the Armenian version of the Request.

### 3. Project Information

Project name (and project number if known)	"Kaghtsrashen Gravity Irrigation System" project (ISEP/QCBS/SW-13/002-D)
Project location (Country, Province, City, etc.)	Garni, Kotayk region, Republic of Armenia

### 4. The Complaint

1. What harm do you believe the World Bank-financed project caused or is likely to cause to you?

For the past two years, residents of Garni and environmental activists have proved that a World Bank financed project in Armenia, has led to anti-environmental and anti-social consequences, and that the project is economically inefficient.

According to the "Kaghtsrashen Gravity Irrigation System" project, as presented by the Armenian government, a water intake facility and pipeline are scheduled to be built on the Azat River in order to deliver some 980 liters/per minute of water to the Kaghtsrashen pumping station. During public hearings, Garni residents have noted that the water level in the Azat River has been continuously dropping, so much so that gravity irrigation is no longer possible. A proposal was made to the government that monthly readings of the river's water levels be taken. Water outflow readings at the Garni measuring station began on March 22, 2015 and continued until August 16. Water levels precipitously dropped in July and August because feeder tributaries into the Azat had dried up. It was proven that when the called for 850 liters per minute of environmental outflow was maintained, the 0,98 liter per minute water level for those months, as demanded by the project, wasn't sufficient to provide self-flowing irrigation to 12 villages in Ararat Province. Thus, if the government doesn't pull out of the project, it will be achieved at the cost of the Azat River drying up. Specialists taking water level measurements, were finally convinced that just 450 l/m of water was left in the river after preserving the 850 l/m environmental discharge. This being the case, the "Kaghtsrashen Gravity Irrigation" project is risky and unsustainable.

2. Another concern of Garni residents is the fate of the Azat Gorge, regarded as a national landmark. If the irrigation project goes through, the Azat Gorge (a part of the Upper Azat Valley listed on UNESCO's World Heritage List as an 'outstanding universal value'), will be destroyed. Those who drafted the Kaghtsrashen irrigation project overlooked the unique importance of Garni in terms of enhancing tourism in Armenia. There are four natural landmarks in the Azat Gorge as recognized by Armenian Government Decision N967 (August 14, 2008). It's hard to map the borders of each because they haven't been officially mapped and measured by Armenia's Cadastre. The Project Implementation Unit (PIU) says that the

government is planning to perform such assessment in 2019-2021. The PIU claims that the Kaghtsrashen irrigation project will not harm any of these four landmarks.

3· For the past twenty years, improving the socio-economic conditions of Garni residents has been directly linked to the development of local tourism. Service organizations catering to the tourist trade have been created and living conditions in Garni have improved to a certain degree. The PIU has not assessed, as required by World Bank criteria, the true scope of the negative socio-economic impact the irrigation project will have.

(a) Why do you believe that the alleged harm results directly from the World Bank-financed project?

Substantiations regarding the above-mentioned losses/damages have been presented at all public hearings on the project, and the PIU overseeing the project has not refuted one of them. Rather than making convincing arguments to the contrary, those implementing the project have resorted to illegal means. Using administrative levers at their disposal, they have forcibly forged documents for inclusion in the overall project file, and have availed themselves of the services of criminals to intimidate and bully the more active segments of Garni residents.

Upon the August 21, 2015 order of the president of the Water Economy State Committee, a commission was formed ostensibly to, as they stated, "To carry out additional water measurements on the Azat River, including studies on water intakes and outtakes at the Azat River". The village of Garni also gets its irrigation water from the Azat River. The village's irrigation water stopped on the morning of that day. On August 21, employees of the Water Users' Association (answerable to the Vorogoum PIU) turned off the village's irrigation water and let it flow into the Azat River so that the members of the water measuring team could report adequate levels to their higher-ups. <http://hetq.am/arm/news/62524/>. Realizing the deception, residents argued with the measuring team and opened the irrigation valve, after which the river levels dropped to less than the 1,260 l/m registered five days before. This signifies that the water level in the river, after protesters raised the alarm, was only 410 l/m, and not the 980 l/m as demanded by the Kaghtsrashen Gravity Irrigation System project for August.

(b) Please include any other information that you consider relevant.

The entire project implementation process has been fraught with irregularities, both evident and concealed.

The World Bank guarantees that financing of projects is conditional, based on the results of studies evaluating their environmental and social impact and that these results must be debated by those communities involved. Garni community

residents, the target group, has consistently voiced its opposition to said project during public hearings. To garner the community's approval, by force, the government has resorted to numerous deceptions.

The PIU has not adhered to procedures specified by the World Bank for the project's implementation. The PIO, and governing bodies, knowing full well the position of residents, did not inform the public regarding public hearings, so that it could register false public opinions regarding the project within a narrow circle of supporters. On October 23, 2015, one week before the envisaged public hearing, meetings were held between project opponents and official and non-official circles, and attempts were made, by orders and threat, to prevent opponents from participating in a meeting scheduled for that day, and to create the necessary conditions for the public hearing to go as planned by opponents and to register their desired result. To create such a scenario, the Deputy Governor of Kotayk Province and the provincial chief of staff came to Garni. Local residents were quite angered and the officials weren't able to register false facts regarding the meeting.

Irritated by what had happened, residents didn't allow the next public hearing to take place in Garni. They closed the state road between Garni and Yerevan.

The Water Sector PIO State Agency organized a discussion regarding a report on the environmental and social impact of the Kaghtsrashen Gravity Irrigation System project on January 22 in Yerevan. According to a statement published in the *Republic of Armenia* daily newspaper, the discussion was to have taken place at 11 a.m. However, employees of the Water Resources PIO started the discussion at 9:30 a.m. Participating were the village mayors of the 12 impacted Ararat Province communities, along with the Garni mayor (the target community) and employees of the Water Users' Association. The discussion ended at 10:40 a.m. and was filmed by Armenian Public TV and the public affairs division of the Water Sector PIO. The World Bank's project specialist also hadn't been informed about this.

Those interested in the Kaghtsrashen Gravity Irrigation project – Garni village residents, environmental citizens and reporters showed up at 11 a.m., the time that had been declared. Bowing to their demands, the hearing organizers were forced to restart the discussion and take questions. A segment of those who had already left the auditorium, including the mayors of the beneficiary communities, and residents who accompanied them, and the Garni mayor, returned and took part in the discussion. Those in attendance again raised their concerns regarding the project, but discussion organizers were unable to provide answers. There are two news reports and two videos regarding the January 22 the discussion on the environmental and social impact study findings for the Kaghtsrashen Gravity Irrigation System project.

The expenditure procedure for the project was also far from transparent. The website of the "[Water Sector Projects Implementation Unit](#)" hadn't published the contract with the contractor regarding expenditures and only did so after our official inquiry. By that time, the contractor had already started work in the gorge.

The project case file is not complete. Absent is the Azat River water usage permit. This document should have been issued by the Ministry of Nature Protection. Work on the project was started without this permit.

## 5. Previous Efforts to Resolve the Complaint

(a) Have you raised your complaint with the grievance mechanism of the project or the grievance mechanism of the project implementing agency?

○ **Yes** If YES, please provide the following:

- When, how and with whom the issues were raised.

A) On March 18, 2015, the population of Garni (some 2,000 residents) issued an open letter to Armenian President SerzhSargsyan that was published in the internet news site [Hetq](#).

B) On February 5, 2015, residents of Garni and the heads of six NGOs forwarded a complaint to Laura Bailey, World Bank Country Manager in Armenia, and to World Bank water resources expert Winston Yu. They demanded that a new discussion on the issue be organized and that water sector specialists, physicists and geographers attend so that, finally, substantiations be provided for those proposals that have been raised in meetings for over one year.

On March 11, 2016, at the World Bank's Yerevan office, World Bank Senior Water Resources Specialist Winston Yu and other experts attended a discussion focusing on the efficacy of the Kaghtsrashen Gravity Irrigation System project and alternatives to drawing water from the Azat River. Garni residents and environmentalists substantiated their claim that there isn't sufficient water in the river, especially during the summer months, and that this prevents any gravity irrigation system from working. If the project goes ahead, the Azat River would dry up completely and the picturesque gorge itself would become a wasteland. The Azat River flows into the Azat reservoir. It was proposed that in order to reduce the costs associated with operating the pumps, alternative sources of energy be looked into. During the discussion, World Bank employees said that they would study the proposals with the government but that the final decision rests with the government.

- Please describe any response received from and/or any actions taken by the project level grievance mechanism. Please also explain why the response or actions taken are not satisfactory.

☐ **No** If NO, why not?

The Armenian government has yet to respond to the proposals made during this discussion and on April 2, 2016 work in the Azat Gorge begun, to the surprise of many. After this, Garni residents blocked the Yerevan-Garni roadway on two occasions. The second time, residents closed the road for nine hours and forced authorities to remove construction equipment from the gorge. Work has temporarily been halted but there is no official decision on the matter.

(b) How do you wish to see the complaint resolved?

Given that the Azat River empties into the Azat Reservoir, from which water is supplied to villages in the Ararat Province, it has been proposed that:

- 1 – Build a solar electric station or wind turbines and use the energy to force water from the reservoir. This would be more cost-effective and environmentally friendly given that the surplus energy, after the irrigation period, could be sold, bringing in additional benefits to the entrepreneurs involved.
- 2 – Replace the 50-year-old pump stations with modern, energy-efficient pumps designed for the current water levels.
- 3 – Build new reservoirs on that site (this is the proposal of the experts) that would store the water flowing into the Azat River and use it for irrigation.
- 4 – It is necessary to conduct 5 year measurements in the Azat River to obtain credible water flow statistics and only after to discuss the project's usefulness. (During the past ten years, the Azat Reservoir has only filled up three times)

(c) Do you have any other matters or facts (including supporting documents) that you would like to share?

The extremely low water level in the river isn't enough to irrigate the lands of one or two villages. Residents and the public believe that only the lands owned by Armenian Prime Minister Hovik Abrahamyan, located in the villages of Narek and Kaghtsrashen, will be irrigated by the gravity-fed method. Most believe that this is the only reason why the project was drafted in the first place. The prime minister owns 120 hectares in Narek and 80 in Kaghtsrashen. Hovik Abrahamyan's lands are irrigated from a separate pumping station and, since water is scarce, the concern is that the water being gravity-fed to Kaghtsrashen will merely replace his pumping station.

- Here are photos taken at the Azat River in the summer of 2015
- Links for videos of protest actions

<https://www.youtube.com/watch?v=2xXibfZh91I>

<https://www.youtube.com/watch?v=NVgY9WR716Q>

<https://www.youtube.com/watch?v=bdLjuVwwy5w>

<https://www.youtube.com/watch?v=cdd6d25UBVQ>

<https://www.youtube.com/watch?v=hkNq5fWBmZs>

<https://www.youtube.com/watch?v=-Q5Vf6U7uYM>

<http://hetq.am/arm/news/67282/>

**Name of the person who completed this form:**

**Signature:** 

**Date: 05-05-2016**





## **Annex III**

### **Management Response**



**MANAGEMENT RESPONSE TO  
REQUESTS FOR INSPECTION PANEL REVIEW OF THE  
ARMENIA: IRRIGATION SYSTEM ENHANCEMENT PROJECT (P127759)**

Management has reviewed the Requests for Inspection of the Armenia: Irrigation System Enhancement Project (P127759), received by the Inspection Panel on March 18, 2016 and May 4, 2016, and registered on April 26, 2016 and May 24, 2016, respectively (RQ16/01). Management has prepared the following response.

**June 10, 2016**



## CONTENTS

<b>Abbreviations and Acronyms .....</b>	<b>iv</b>
<b>Executive Summary .....</b>	<b>v</b>
<b>I. Introduction.....</b>	<b>1</b>
<b>II. The Requests.....</b>	<b>1</b>
<b>III. Project Background .....</b>	<b>1</b>
<b>IV. Management Response to the Request regarding the Geghardalich Scheme ....</b>	<b>4</b>
<b>V. Management Response to the Request regarding the Kaghtsrashen Scheme..</b>	<b>13</b>
<b>VI. Conclusion .....</b>	<b>19</b>

### Tables

Table 1.	Goght Community Water Demand and Supply
----------	---

### Figures

Figure 1.	Map of the Geghardalich Irrigation Scheme
Figure 2.	Map of the Existing Geghardalich-Goght Pipeline and Hydropower Operation
Figure 3.	Structure of Water Entitlements
Figure 4.	Map of the Kaghtsrashen Irrigation Scheme

### Annexes

Annex 1.	Request from Goght: Claims and Responses
Annex 2.	Request from Garni: Claims and Responses
Annex 3.	Water Balance Tables for Project
Annex 4.	Actions undertaken by the PIU to Address Garni Stakeholder Concerns

### Maps

Map 1.	IBRD 42289: Overview
Map 2.	IBRD 42310: The Geghardalich Irrigation Scheme
Map 3.	IBRD 42290: The Kaghtsrashen Irrigation Scheme
Map 4.	IBRD 42323: Location of Proposed Natural Monuments

## ABBREVIATIONS AND ACRONYMS

BP	Bank Procedures
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GPS	Global Positioning System
Ha	hectare
HPP	Hydropower Plant
IBRD	International Bank for Reconstruction and Development
IPN	Inspection Panel
kWh	Kilowatt hour
m <sup>3</sup>	Cubic meter
MCC	Millennium Challenge Corporation
MW	Megawatt
NGO	Nongovernmental Organization
O&M	Operation and Maintenance
OP	Operational Policy
PIU	Water Sector Projects Implementation Unit
SCWS	State Committee on Water Systems
UNESCO	United Nations Educational, Scientific and Cultural Organization
WSA	Water Supply Agency
WUA	Water Users Association

*All dollar amounts are U.S. dollars unless otherwise indicated.*

## EXECUTIVE SUMMARY

i. ***After having carefully reviewed the issues raised in the Requests, Management does not agree that harm alleged exists, or that it results from instances of Bank policy noncompliance.*** Management maintains that both proposed irrigation schemes have been carefully prepared and are consistent with Bank policy requirements.

### ***Background***

ii. On April 26, 2016, the Inspection Panel registered a Request for Inspection concerning the Armenia: Irrigation System Enhancement Project, financed by the Bank. A second Request for the same Project was received on May 4, 2016 from a different Requester and was registered on May 24, 2016. Both Requesters state that they represent communities affected by one component of the Project. They allege adverse impacts by schemes designed to eliminate power consumption in the irrigation systems that currently distribute water from the Azat and Karmir Rivers. They also allege that the Project may reduce the volume of water available to the affected communities, that consultations have been insufficient, that the environment and landscape would be adversely affected, and that the Bank's methodology to calculate water flows and consideration of alternatives was flawed.

iii. ***The Project was approved on May 22, 2013, with an IBRD loan for \$30 million.*** The Borrower is providing \$7.5 million. The Project supports Armenia's irrigated agriculture, which provides about 80 percent of this sector's contribution to GDP. The objectives of the Project are to (a) reduce the amount of energy used and improve the irrigation conveyance efficiency in targeted irrigation schemes, and (b) improve the availability and reliability of important sector data and information for decision makers and other stakeholders. They are achieved through three Project components, including one that aims to enhance the irrigation system through lowering the operating costs in selected irrigation systems. Both Requests pertain to this Project component.

iv. ***The relevant Project component involves removing old, unreliable, and expensive electric pumps to abstract water from the Azat River for irrigation, and introducing gravity fed pipelines in their place.*** The Bank expects significant electricity and maintenance savings of approximately \$2 million annually, as well as a reduction of 17.8 million kWh of electricity consumption. Moreover, the reliability of the irrigation service is expected to improve, thus enhancing farmers' yields. Most importantly, neither the volume of available irrigation water, nor its distribution, would be changed. The water will be merely transported by gravity, i.e., without using energy. As such, the Project does not alter or affect existing water allocations, permits, or community access to irrigation water. The Project will change only the means of transport for the water from the current pumping to gravity fed pipelines.

### ***Requests for Inspection***

v. ***A Request for Inspection was submitted by members of the Goght community regarding the Geghardalich gravity irrigation scheme. Residents of Garni submitted a second Request for Inspection regarding the Kaghtsrashen gravity irrigation scheme.*** Both schemes are financed under the same Project component. The Requests allege that (a) the Project may limit the water supply available to the communities, (b) there is insufficient water to supply the schemes, (c) consultations with Project-affected communities were insufficient, (d) the methodology used to calculate water flows and volumes is flawed, (e) the Project will impact UNESCO World Heritage sites and adversely impact tourism, and (f) the consideration of alternatives has not been transparent.

### ***Management's Response***

vi. ***Management has carefully reviewed the issues raised in both Requests and has concluded that the Requesters' rights or interests have not been, or are not likely to be, adversely affected by the Project.*** Management disagrees that the alleged potential adverse impacts cited in the Requests will result from the Bank-supported Project. Management maintains that both proposed irrigation schemes have been carefully prepared and are consistent with Bank policy requirements and international best practice.

vii. ***In Management's view, the Requests for Inspection are based on a number of incorrect assertions regarding the Project and the current situation on the ground.*** These pertain mainly to water volumes that the Azat and Karmir rivers carry; the water requirements of, and availability of irrigation water for, both communities; and assumed impacts of the Project's construction works. The Request appears also to be motivated by a general distrust towards Government processes for allocating water among competing demands.

viii. ***Management underlines that the Project's objective is to reduce energy consumption of inefficient water pumping systems by replacing them with gravity fed pipelines. The Project does not alter or affect existing water distribution, allocations, permits, or community access to irrigation water, nor does it expand the irrigated area served under the new two schemes.*** Both new irrigation schemes, using gravity, will take the same amount of water, from the same watercourses, as they do today in the pumping schemes. The opposition of some stakeholders to the Project, triggered by moving the point of out-take, illustrates the lack of trust among water users along the river and especially the weak permit enforcement under the current system. The Project seeks to strengthen the availability of information related to water flows and existing water allocations.

### ***Water supply availability***

ix. ***Management maintains that the two schemes are viable. The applied calculations demonstrate that there is sufficient water in the Azat and Karmir rivers to operate the schemes and cover environmental requirements and meet the irrigation water supply demand of the affected communities.*** Management disagrees that communities would be more affected by instances of drought or low water flows because of the Project.



Hydrological studies have determined that there is sufficient water to cover both the irrigation demands and the environmental requirements. The design of the schemes is based on the analysis of over 60 years official and quality controlled data collected by the Armenian State Hydrometeorological and Monitoring Service. This analysis is shown in Annex 3 and is also provided in the ESIA documentation.

x. ***The Project does not reduce the irrigation water supply for the Goght or Garni community, and is designed to ensure that both communities can continue to receive their allocated or permitted amounts of water.*** The Goght community's concerns that it may receive less water is based on an estimate of its water demand, which is twice the amount which it has historically received. Moreover, Management has ascertained that a private hydropower operator has control over the irrigation water supply to Goght without being transparent with the community regarding the amounts abstracted. With respect to the Garni community, it is important to note that both the current and the proposed new water abstraction points are located *downstream* of Garni's irrigation water supply; hence, there is no connection between the Project and Garni's irrigation water supply.

#### *Methodology to calculate water flows*

xi. ***Management believes that the calculations used to determine that there is sufficient water in the Karmir River supplying the reservoir that serves the Goght community are realistic and conservative.*** The approach used is based on standard hydrological methodologies, and the calculations have been made available as part of the Environmental and Social Impact Assessment (ESIA) documents. Two different methods were applied, and calculations concluded that there was sufficient water in the river to supply the reservoir so that it can deliver the annual calculated irrigation demand of 2.2 million m<sup>3</sup> irrigation water each to Goght and the beneficiary communities currently supplied by pumps (see Annex 3).

xii. ***Management also believes that the calculations used to determine that there is sufficient water in the Azat River to meet both irrigation demands in beneficiary communities and environmental flows are realistic and conservative.*** As explained above, these calculations are based on official long-term and quality controlled data and have been made available in the ESIA documents.

#### *Consultations*

xiii. ***An Environmental and Social Management Framework (ESMF) was developed for the Project, disclosed in-country, and publicly consulted upon with key stakeholders prior to Board approval (in Yerevan on February 25, 2013).*** Once the individual investments under the Project had been identified, site-specific ESIA's were developed, disclosed and consulted upon locally, including for the two schemes that are subject to the Requests for Inspection.

xiv. ***The design of both irrigation schemes and their environmental and social aspects were discussed with the affected communities in several documented consultation meetings between November 2014 and September 2015.*** These included public

consultations as required by the ESIA process, as well as additional hearings as per the Armenian Legislation on Environmental Impact Assessment, and those facilitated by the Bank (e.g., focus group discussions, civil society meetings). Management also notes the challenges to holding the consultations in the Garni community, where activists tried to block the road to stop the consultations from taking place. Meeting minutes and evidence of public information regarding planned meetings are recorded.

#### *Impact on UNESCO sites and tourism*

xv. ***The Project does not affect any UNESCO World Heritage site, nor does it impact any of the identified proposed natural monuments.*** The location of the actual UNESCO site is about 10 km away from the intake weir structure to be built on the Azat River. Works for the Project will also not affect the four proposed natural monuments in the Azat Gorge, as these proposed monuments are not located on the immediate Project site. Given that the pipeline will be underground and the weir will be only 2 m high, there will be no significant visual impact on the Azat Gorge. Moreover, tourism in the vicinity of the irrigation scheme focuses on an area away from the planned weir, and construction will be carried out outside the tourism season.

#### *Consideration of alternatives*

xvi. ***Management has carefully reviewed the Project alternatives, as well as alternative locations for the planned weir and pipelines. Given that a gravity fed system requires a specific topography, it is not possible to move the Project components indiscriminately.*** The Bank team also met with representatives from civil society organizations (including the Garni Requesters) to discuss their own project proposals. These project ideas, however, could not be considered due to their associated costs and energy use; this was explained to those present. Management, however, assisted the Government to obtain financing from the Eurasian Development Bank (EDB) for some rehabilitation works that had been proposed by the communities but were outside the Project's scope.

#### *Conclusion*

xvii. ***Management recognizes the various concerns regarding water availability and supply, and continues to make efforts to support the Government in reaching out to stakeholders and affected communities to better explain these complex issues and seek their input.*** Management was aware of the concerns expressed in the two Requests prior to their submission, and has engaged in intensive discussions on these issues with Project stakeholders over the past two years. The Bank team has made significant efforts to address stakeholders' concerns, using publicly available information, including during the ESIA consultations and additional meetings, as well as during joint monitoring visits with community members.

xviii. ***Management notes that many of the concerns expressed in the Requests are based on inaccurate information and incorrect assumptions. Management also notes that the governance structure for irrigation water distribution and supply in the Project***

*area is heavily influenced by informal arrangements that are not in line with the governing laws.* Management recognizes that these arrangements may not be transparent, and may allow some stakeholders to benefit at the expense of others, and as such, may contribute to the opposition to the Project by some stakeholders. Management also notes that a key objective of the Project is to support transparency about water use and community monitoring, and this does not appear to be welcomed by some stakeholders.

xix. Following citizens' protests in late May 2016, the Government has announced that it will re-examine the proposed Kaghtsrashen Scheme to consider possible compromise solutions. Management currently awaits a formal communication from the Government on how it wishes to proceed with this scheme, pending which the associated works have been put on hold. Management notes that local officials have expressed that the Geghardalich scheme has equally been put on hold in response to citizens' protests in Goght in early June. However, the Government of Armenia has not confirmed this to the Bank in regard to Goght. Management remains committed to work with the Government of Armenia on improving the country's irrigation infrastructure through the Project, based on the Government's final decision regarding the two schemes. Management notes that while compromise solutions for both schemes could be technically feasible, they would be inferior to the current design and significantly diminish the potential energy savings.



## I. INTRODUCTION

1. On April 26, 2016, the Inspection Panel registered a Request for Inspection, IPN Request RQ16/01, concerning the Armenia: Irrigation System Enhancement Project (P127759) financed by the International Bank for Reconstruction and Development (the Bank). A second Request for the same Project was registered on May 24, 2016 and will be addressed together with the first (hereafter referred to as “the Requests”).

2. **Structure of the Text.** The document contains the following sections: a description of the Requests; Project background; descriptions of the pumping schemes, current and proposed, and Management’s response. Annexes 1 and 2 present the Requesters’ claims, together with Management’s detailed responses, in table format. Annex 3 contains water balance tables for the Project, and Annex 4 details actions by the Water Sector Projects Implementation Unit (PIU) to address stakeholder concerns.

## II. THE REQUESTS

3. The **first Request for Inspection** was submitted by the Goght community members of the Kotayk region of Armenia, who have requested that their identities remain confidential. The Request pertains to the Geghardalich gravity irrigation scheme, which is supported under Component 1 of the Project. The Request alleges that (a) the Project may result in insufficient irrigation water to meet demands of the Goght community, (b) there has been insufficient consultation with the Goght community, and (c) the methodology used to calculate proxy flows for the Karmir River is flawed. The Request also puts forward a proposal for the Project to repair and build new community infrastructure, outside of the Project scope. No further materials were received by Management in support of the Request.

4. The **second Request for Inspection** was submitted by a resident of Garni, Kotayk region, on their own behalf and on behalf of 520 other residents of the same village. It pertains to the Kaghtsrashen gravity irrigation scheme, which is also supported under Component 1 of the Project. This Request alleges that (a) there is insufficient water to supply the scheme, (b) the Project will impact UNESCO World Heritage sites and adversely impact tourism, (c) there have been irregularities with the consultations, and (d) the consideration of alternatives has not been transparent.

5. The Requests will be addressed in separate sections due to the site-specific nature of their concerns.

## III. PROJECT BACKGROUND

6. **Country Context.** Over the past two decades, the performance of the Armenian economy ranged from a real GDP contraction of 42 percent, following the collapse of the former Soviet Union, to sustained annual growth rates always over 10 percent between

2001 and 2008. The advent of the global financial crisis in 2008 combined with reduction in remittances and the drop in external demand for metallic minerals led to a contraction in the economy in the order of 14 percent in 2009. The country was severely affected by the global financial crisis of 2008-09. Following several years of recovery, the economy returned to its pre-crisis levels by 2013.

7. **Sectoral Context.** Armenia's long-term development vision is articulated in the Armenia Development Strategy 2025, which is built around four pillars: creating jobs, developing human capital, strengthening the social protection system, and modernizing public administration and governance. Agriculture and rural development (ARD) plays a key role in economic diversification, job creation, and poverty reduction. Irrigated agriculture is crucial to the agricultural sector's performance, since it accounts for about 80 percent of the sector contribution to GDP. The irrigated area is currently about 140,000 ha. Increased reliability of water supply and more timely delivery, in part due to the introduction of water users associations (WUAs), has allowed for a significant shift of cropping patterns towards higher added value crops and, ultimately, to the growth of the agricultural GDP.

8. **The 2002 Water Code establishes the legal provisions for water use permitting (across all users, e.g., irrigation, municipal, hydropower, rural, industry) and regulates water abstraction directly from rivers. Users that are supplied by other means (i.e., who do not directly abstract the water) do not require a permit.<sup>1</sup>** The permitting process is the main regulatory tool of the Government to allocate water to various uses. The application process includes, inter alia, a review of all other current uses (including ecosystems and protected areas) within the basin context and an assessment of overall water resource availability. A detailed review of this permitting process was undertaken by the World Bank in the report, “*Toward Integrated Water Resources Management in Armenia.*”

9. **Project Status.** The Project was approved on May 22, 2013 with an IBRD loan for \$30 million. Total Project cost is \$37.5 million; the Borrower is providing the balance of funds. To date, \$21.5 million have been disbursed and implementation is on schedule. The PIU, under the State Committee on Water Systems (SCWS), is the implementing agency. The Project is scheduled to close in June 2017.

10. **Project Objectives.** The objectives of the Project for Armenia are to (a) reduce the amount of energy used and improve the irrigation conveyance efficiency in targeted irrigation schemes, and (b) improve the availability and reliability of important sector data and information for decision makers and other stakeholders. ***The Project’s objective thus is to eliminate the energy consumption of inefficient water pumping systems by replacing them with gravity fed pipelines; the Project does not alter or affect existing water allocations, permits, or community access to irrigation water.***

11. The objectives will be achieved through the following interventions: (a) conversion of pump-based irrigation to gravity irrigation; (b) the rehabilitation of

---

<sup>1</sup> This is why the Goght community, which receives water through a pipeline, does so on the basis of **contracted** amounts. The Garni WUA, which extracts water directly from the river, holds a **permit** to do so.

selected outlet canals receiving high-cost water from pumping stations that cannot be converted and that have already been rehabilitated under an earlier Millennium Challenge Corporation (MCC) program; and (c) the provision of updated and reliable data that are critical for irrigation water management, such as the amount of financial resources needed for operation and maintenance (O&M) and emergency management systems, performance indicators to measure the operational effectiveness of water institutions, and the installation of monitoring devices to measure the amount of water entering the irrigation system and being delivered to the WUAs in real time.

12. ***Project Components.*** There are three components to the Project. The first component of the Project (\$33.1 million) is irrigation system enhancement. This component aims at lowering the O&M needs of the conveyance section in selected irrigation schemes. This component has two subcomponents: conversion of pump-based irrigation to gravity irrigation; and upgrading of outlet and other canals conveying pumped water. The second component of the Project (\$1.7 million) is management information. This component has two subcomponents: technical investigations; and supervisory control and data acquisition system installation. The third component of the Project (\$2.7 million) is Project management and WUA support.

#### IV. MANAGEMENT RESPONSE TO THE REQUEST REGARDING THE GEGHARDALICH SCHEME

13. *The current Geghardalich Pump Irrigation Scheme* (see Figure 1) is operated with pumps, which abstract water from the Azat River and Azat Reservoir to Geghadir, Hatzavan, and Voghjaberd communities.<sup>2</sup> These pumps are unreliable and expensive. They currently consume about 7.8 million kWh of electricity annually, resulting in costs for operation and maintenance of about \$0.9 million per year. The pumping stations are physically deteriorated and experience frequent disruptions in energy supply. The associated pipelines pass over unstable terrain resulting in frequent breaks and leakage. This unreliability of irrigation services also results in sub-optimal agricultural production and yields.

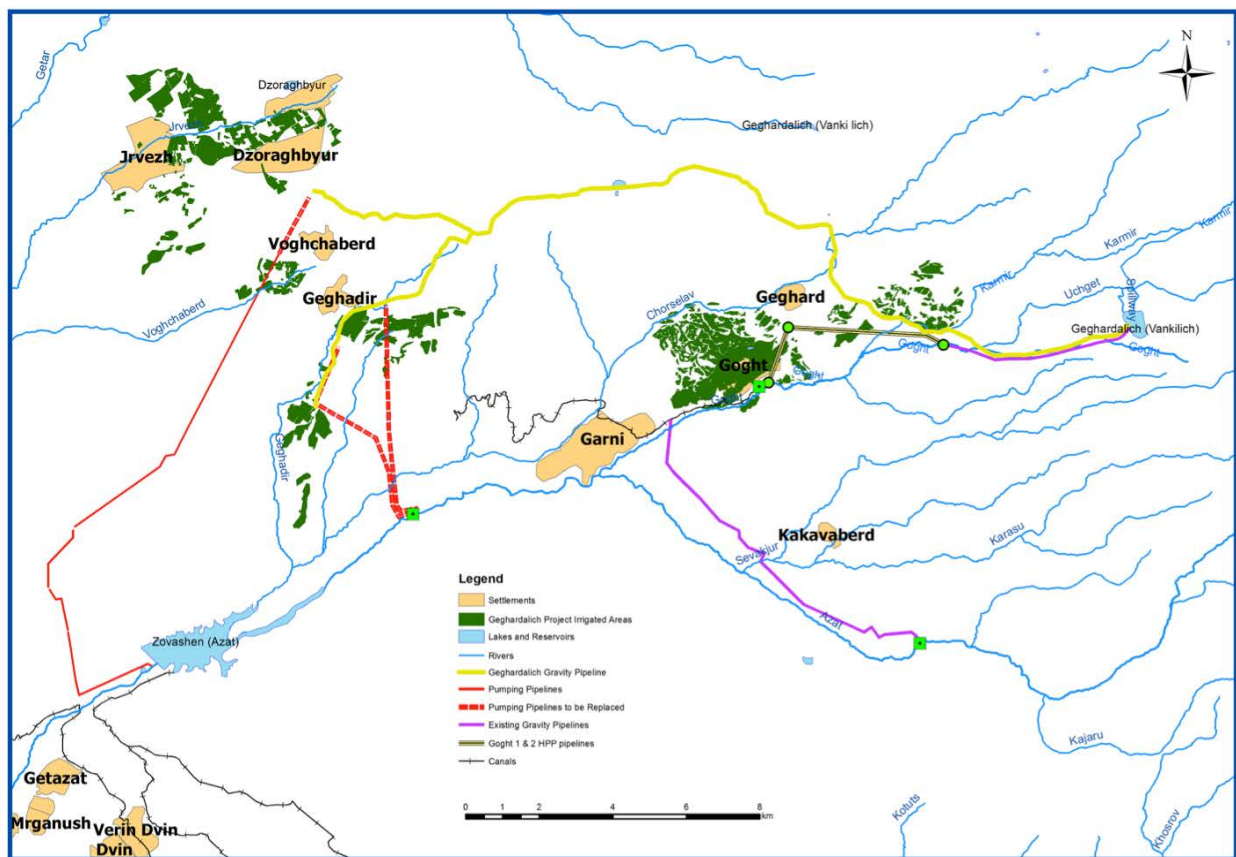


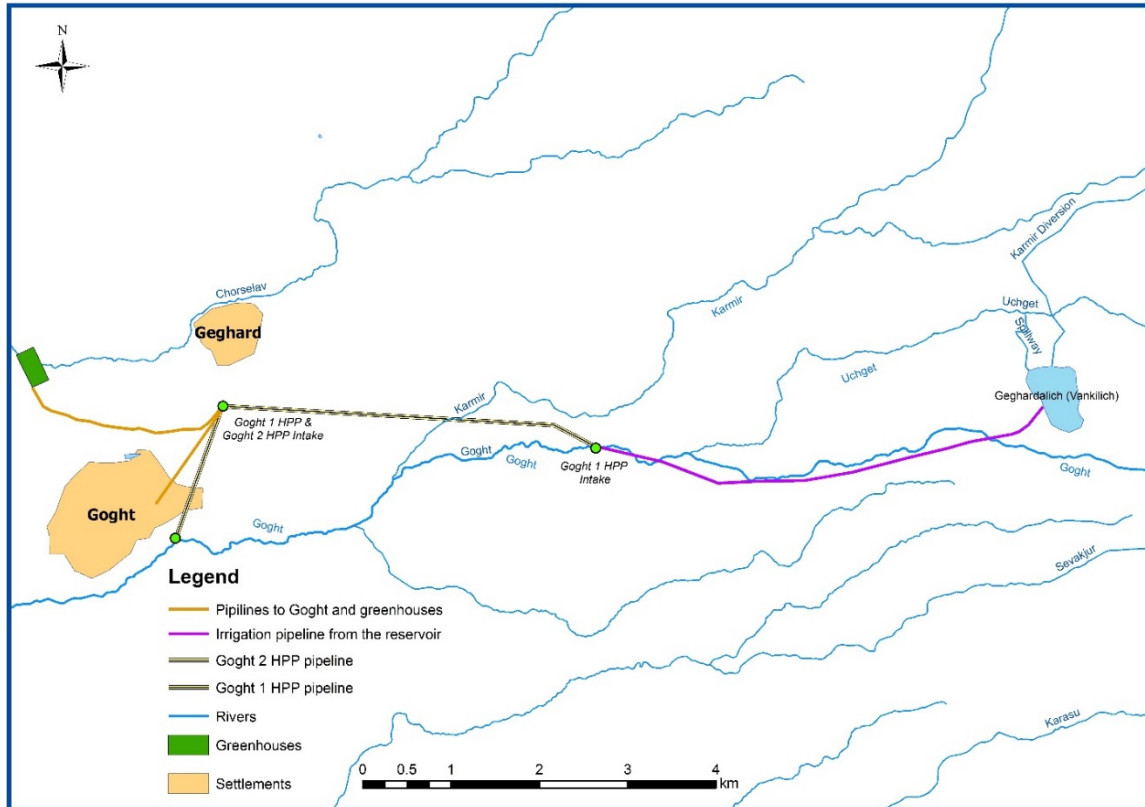
Figure 1: Map of the Geghardalich Irrigation Scheme (red: existing pumping lines, yellow: proposed gravity pipeline)

14. *The proposed Geghardalich Gravity Irrigation Scheme supported by the Project will supply the same communities with the same amount of irrigation water currently supplied through pumps.* The scheme will change the supply method to a gravity fed pipeline and abandon the pumps. This will require increasing the storage volume of the

<sup>2</sup> As well as supplies for the Jirvezh National Park (188.3 ha)<sup>2</sup> and the Jirvezh-Dzoraghbyur Gardener's Association (260 ha).



Geghardalich Reservoir (from 2.4 million m<sup>3</sup> to 3.4 million m<sup>3</sup>) to supply the 26-km gravity fed pipeline while continuing the current irrigation water supply to the Goght community. The augmented Geghardalich Reservoir will be able to supply a combined total of 1,448 hectares (ha) of agricultural lands, which comprises 705 ha in the Goght community and 743 ha in the Geghadir, Hatzavan, and Voghjaberd communities.<sup>3</sup> It should be noted that the additional water that will be captured through the augmentation of the reservoir volume is currently going downstream to be pumped by communities. The calculated downstream impact of filling the reservoir will be negligible. To date, construction contracts have been awarded and works have just begun.



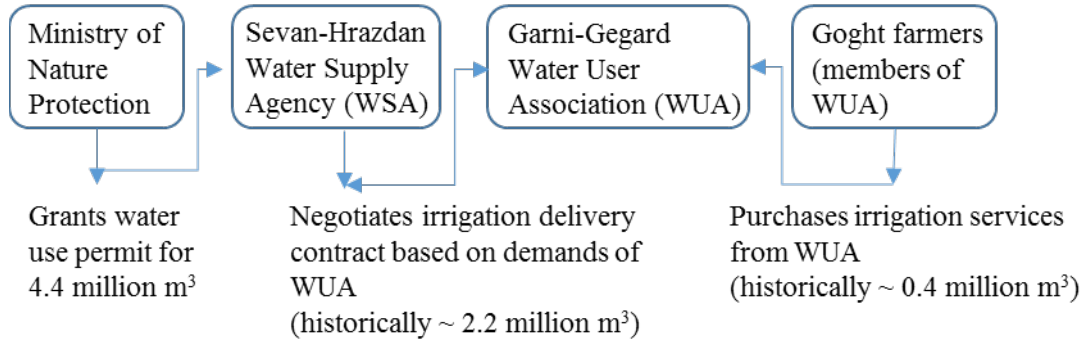
**Figure 2: Map of the Existing Geghardalich-Goght Pipeline and Hydropower Operation**

15. The *Geghardalich Reservoir* currently supplies the Goght community<sup>4</sup> with irrigation water through a 7 km long pipeline (Geghardalich – Goght Pipeline). The reservoir is operated by the *Sevan-Hrazdan Water Supply Agency (WSA)* and is replenished through a canal that diverts water from the Karmir River. The WSA holds a permit (from the Ministry of Nature Protection) to abstract from the Karmir River up to 4.4 million m<sup>3</sup> of water annually for the operation of the reservoir. The WSA then supplies water to the

<sup>3</sup> As well as supplies for the Jrvezh National Park (188.3 ha) and the Jrvezh-Dzoraghbyur Gardener's Association (260 ha).

<sup>4</sup> Population in 2014: 2,055 in 2014; The Goght community area covers 650-700 ha of irrigable areas as of 2014. The community belongs to the Garni-Geghard WUA.

Garni-Geghard WUA (which includes the Goght community) based on water volumes that are negotiated every year. Under emergency situations, should the Geghardalich Reservoir be overfilled, excess water exits through the emergency spillway into the Uchget River, which eventually joins the Goght River upstream of a private hydropower plant (HPP). The structure of water supply entitlements is given below in Figure 3.



**Figure 3. Structure of Water Entitlements**

16. ***Irrigation water supply to Goght passes through a private HPP, which abstracts water without transparency about the quantities.*** The HPP consists of two turbines (HPP1 and HPP2) with a total capacity of about 4.3 MW. The operator has a permit for HPP1 to use water from the Goght River (up to a maximum of 8.95 million m<sup>3</sup> annually) limited to the months of April-July. The HPP operator has a second permit to abstract water from the irrigation pipeline to supply HPP2 (up to a maximum of 6.84 million m<sup>3</sup>) which is also only valid during April-July. Given that a diversion point is located on the operator's property, the HPP operator retains full control over diverting the water in the pipeline to any of three locations: (a) the Goght community irrigation scheme, (b) the HPP operator's own commercial greenhouses, and (c) the HPP's second turbine (HPP2) from which the water is returned back to the Goght River. The distribution of water to any of the three locations currently is based on informal discussions between the private HPP operator and the Garni-Geghard WUA. While the existing permits oblige the operator to install measurement devices at the point of abstraction, no such meters have been installed to date, which de facto deprives the WUA of the means to verify how much water is being delivered to it. The Project has sponsored the installation of a meter at the delivery point, which since 2015 has allowed the community to record the amount of water delivered to it.



**Photo 1: Private HPP operator at 3-way diversion point**

17. ***Dam safety concerns.*** It should also be noted that since the construction of the private hydropower scheme on the Goght River (in 2010), the Geghardalich Reservoir has been overfilled in 2010, 2011, 2012, and 2014, and as a result the water spilled over the spillway and supplied water, via the Uchget River, to the HPPs. From a dam safety perspective, this practice is highly risky and should be prohibited since the dam has been designed to sustain water loading up to the full supply level, and not for operation of the spillways over a prolonged period. This is in violation of both existing norms on dam operation and national legal requirements. Such prolonged operation under higher water levels could jeopardize the dam's safety. Since the augmentation of the Geghardalich Reservoir is part of the Project the issue was raised with the Government<sup>5</sup> and Management is exploring corrective actions with the PIU and Government to ensure that the dam operator fully complies with the requirements of the Operation and Maintenance Plan in line with Bank policy.<sup>6</sup> Moreover, the chair of the Dam Safety Panel will be visiting the site to continue these discussions and seek solutions.

18. ***Earlier Complaint Letters:*** Two earlier complaint letters were submitted to the Bank regarding this scheme. The concerns raised in those letters are identical to the ones raised in this Request. The first letter was received on November 24, 2015 and was delivered directly to the Bank office in Yerevan by the private hydropower operator. A response was provided by the PIU and Bank team. Many of these issues were also raised during the Environmental and Social Impact Assessment (ESIA) consultations and were responded to. A second complaint was submitted through the World Bank External and Corporate Relations office in Washington, DC, on March 5, 2016, signed by a different individual, with the same concerns.

---

<sup>5</sup> The issue of the overfilling of the reservoir and improper use of the spillway was first documented in the independent Dam Safety Panel's report of January 8, 2015. This was then communicated directly to the Deputy Prime Minister (following the October 2015 supervision mission) in a letter dated December 14, 2015 (on record).

<sup>6</sup> E.g., introduction of battery powered piezometers, improvements to the Karmir River diversion, introduction of automated monitoring at the Karmir offtake, etc.

19. Management notes that local officials have expressed that the Geghardalich scheme has been put on hold in response to citizens' protests in Goght in early June. However, the Government of Armenia has not confirmed this to the Bank.

20. ***Management responds to specific allegations raised in the first Request below. The Requesters' claims, accompanied by Management's detailed responses, are provided in Annex 1.***

**(a) Alleged risk of insufficient water supply to Goght**

21. *The Request alleges that the Goght community's water demand is 4.4 million m<sup>3</sup> annually and that this cannot be supplied under the proposed gravity scheme, which will also supply additional communities from the reservoir.*

22. ***Management considers this allegation incorrect. The Geghardalich Gravity Irrigation Scheme envisages increasing the storage volume of the Geghardalich Reservoir from 2.4 million m<sup>3</sup> to 3.4 million m<sup>3</sup> to ensure water availability to irrigate a total of 1,448 ha of agricultural lands across all the targeted communities.*** This area includes the 705 ha of irrigable lands in the Goght community, of which only 550 ha are currently irrigated through the existing Geghardalich-Goght pipeline, and 743 ha of agricultural lands in the Geghadir, Hatzavan, and Voghjaberd communities through the construction of the new 26 km pipeline. It should be noted that the same water which currently goes downstream to the point where it is pumped to the target communities would be captured in the augmented reservoir and then transported by gravity to the same communities. The Project does not expand the irrigated area nor does it change the amount of irrigation water delivered to the target communities.

23. ***The Request's allegation that the proposed augmented capacity of the reservoir is not sufficient to supply water to Goght and an additional community is based on an overestimate of water demand that corresponds neither to the water requirement for the irrigation area of Goght nor to historic water consumption records. The Goght community also does not hold a permit or entitlement to receive 4.4 million m<sup>3</sup> of water annually.*** It is the WSA managing the Geghardalich Reservoir that holds a permit (granted by the Ministry of Nature Protection) to abstract up to 4.4 million m<sup>3</sup> from the Karmir River. The community's estimated water demand has been calculated<sup>7</sup> to be around 2.2 million m<sup>3</sup>, based on 705 ha of irrigable lands and typical crop water requirements (for vegetables and orchards). Moreover, historical measurements (and negotiated contracts between the WSA and WUA) show supplies from the reservoir into the Geghardalich – Goght pipeline of around 2.2 million m<sup>3</sup> on average. In 2015, a new measurement device was also placed at the delivery point to the Goght irrigated area and showed that 1.28 million m<sup>3</sup> was delivered for that year. The difference of 0.9 million m<sup>3</sup> is due to a combination of losses from the system and water diversions by the HPP operator. Finally, the actual billed amount of delivered water (to farmers in the Goght community) is again lower than both measurements (0.3 million m<sup>3</sup>). In summary, a demand of 4.4 million m<sup>3</sup>

---

<sup>7</sup> Calculation are performed by the PIU and endorsed by the Bank team.

is not supported physically, historically, nor agronomically. See Table 1 below and Figure 3 above.

**Table 1: Goght Community Irrigation Water Demand and Supply**

<b>Water demand/supply records</b>	<b>Annual water volumes</b>
<b><u>Calculated irrigation requirement</u></b> based on 705 ha (1/3 vegetables, 2/3 orchards – based on WUA data)	Approximately 2.2 million m <sup>3</sup>
<b><u>Negotiated contract</u></b> for irrigation deliveries between WSA and WUA every year, based on estimated consumption by WUA	Historical average around 2.2 million m <sup>3</sup>
<b><u>Actual metered water delivery in 2015</u></b> (New measurement device installed in 2015 to measure actual deliveries to WUA)	1.28 million m <sup>3</sup>
<b><u>Actual billed total water delivery</u></b> for irrigation water to WUA members (for the 2015 irrigation season)	0.3 million m <sup>3</sup>

24. ***The amount of irrigation water that is delivered to the Goght community (through the Garni-Geghard WUA) is negotiated and agreed with the WSA annually through a contract that provides a monthly irrigation delivery schedule for the season.*** These annual contracts are on record and cover that year’s irrigation season. There is no indication that the community has ever requested a water allocation above the historic delivered amounts. Absent any significant population growth and/or expansion of the irrigation area, it is not conceivable that the future water demand should be twice the historic values.

25. ***While there is no technical justification for additional water demand by the Goght community, Management notes that the HPP would benefit from an increased water flow through its scheme.*** During the ESIA consultation process, the HPP operator had specifically requested that the new pipeline be routed through the HPP operator’s facility. The Bank team reviewed this option with the PIU (the “Southern Route”) and considered it inferior to the current plan given the land acquisition and security issues that would arise.<sup>8</sup>

26. ***The Request also confuses the capacity of the modified reservoir with the annual available amount of water that such a modified reservoir can supply.*** This appears to be the basis of the allegation in the Request that the augmented capacity of the reservoir would not be sufficient to supply both communities. It is important to understand that water is flowing into and out of the reservoir constantly. Hence, the total volume of water supplied

<sup>8</sup> This was later discussed in a meeting chaired by the Deputy Prime Minister (see section (c) on public consultations, below). The proposal also was documented in the Aide Memoire from the March 2015 supervision mission.

from the reservoir (i.e., the outflows) over the course of a year does not need to be equivalent to the total volume of water that the reservoir can hold at a single point in time. Annex 3 shows the overall water balance for the reservoir and its inflows and outflows. Note that the outflows are such that they meet the irrigation demands of both communities.

27. A parallel Project, financed by the Eurasian Development Bank (EDB), will repair a 1-km section of the existing Geghardalich-Goght pipeline. These works are based on proposals made by the community. This is the section of the pipeline most in need of rehabilitation due to significant losses of around 40 percent, and its repair will likely result in significant water savings. In Management's view these savings will further reduce the required outflow from the reservoir. ***However, the viability of the gravity scheme does not depend on these potential water savings but is calculated on the basis of the current situation.***

**(b) Methodology to Calculate Water Availability in the Karmir River**

28. *The Request alleges that the calculated hydrological data for the Karmir River are not realistic and that there is not sufficient water in the Karmir River to supply the required water volumes to the reservoir.*

29. ***Management considers this allegation incorrect. Based on a conservative and robust approach, the conclusion (of the Government and supported by the Bank team) is that there is sufficient water in the Karmir River to meet the total irrigation demands for the Goght community and the other targeted communities.*** For assessing the feasibility of the Geghardalich scheme, proxy flows for the Karmir River have been modelled as there are no long-term historical data records for this specific river. This was undertaken by the authors of the Geghardalich design – “Hayjrnakhagits Institute” CJSC (ArmWaterDesign), and previously, for the MCC Program, by the “Haygyughshinnakhagits Institute” CJSC (ArmVillageDesign). In both cases, an analogue method was used, which is standard in the field of hydrology.<sup>9</sup> ArmWaterDesign used the official Azat-Garni hydrological observation station, taking the series of observations for the last 60 years, while the other group used the data from the official Gegharot-Aragats hydrological station. According to the first method, the annual estimated flow of the Karmir River with 75 percent water availability (i.e., 25 percent of the time the amount will be lower) amounted to 13.57 million m<sup>3</sup>, and according to the second method it amounted to 20.5 million m<sup>3</sup>. The calculations for the actual design and to determine overall viability of the Geghardalich scheme were based on the more conservative (smaller) value of 13.57 million m<sup>3</sup>.

30. ***These designs and analysis are all based on 75 percent probability years (in contrast to using an average year).***<sup>10</sup> ***This is standard in the fields of hydrology and water resource engineering.*** What this means is that given the natural variation in water flows observed, the engineers have designed a system that is conservative in the amount of water assumed available each month and each year. The conclusion is that even using the more

<sup>9</sup> See ESIA document – pages 18-23 in the English version; additional information is also given in the hydrology section of the detailed design documentation.

<sup>10</sup> Seventy-five percent probability years means those hydrological years that occur once every four years. This is more conservative in approach than using hydrological years that occur once every two years.

conservative smaller amount, there is sufficient water in the Karmir River to meet the total irrigation demands not only of the Goght community but also of the other communities targeted.

**(c) Public Consultations**

31. *The Request alleges that there have been no discussions and “hearings” with the Goght community on the Project.*

32. *An Environmental and Social Management Framework (ESMF) was developed for the Project, which was disclosed in-country, and a public consultation meeting with key stakeholders<sup>11</sup> was held in Yerevan on February 25, 2013.* Once the individual investments under the Project had been identified, site-specific ESIA's were developed, disclosed and consulted upon, including for the Geghardalich irrigation scheme.

33. *The design of the Geghardalich irrigation scheme and its environmental and social aspects were extensively discussed with the affected communities in five documented consultation meetings.* A first meeting was held in Goght on **November 19, 2014** to discuss with the participants the preliminary design of the scheme. Representatives of the Goght community disagreed with the proposed alignment of the water pipeline and requested to re-route it so that it would pass closer to cultivated plots and allow people to use storm water for irrigation in the period when water is not supplied from the reservoir. This was later demonstrated to not be a superior alternative.<sup>12</sup>

34. A second meeting, to consult with stakeholders on the environmental and social aspects of the Project design according to national procedures for conducting environmental assessment and expert review of the proposed investment, was held **on January 27, 2015**. The Goght Mayor and community representatives were in attendance. Issues were raised concerning the irrigated area and the consequent irrigation demand requirement.

35. The draft final design of the Geghardalich scheme was discussed in Yerevan at a third meeting on **February 25, 2015**. The design was accepted by the meeting participants, although concerns were raised about secondary and on-farm irrigation infrastructure, which are issues beyond the scope of the Project. It was noted that activities under another upcoming project – Irrigation System Modernization project financed by the EDB – are likely to address these concerns. The community was informed about this.

36. In a fourth meeting, held in Yerevan on **April 16, 2015**, the representative of the State body which carried out an expert environmental review of the Project (under the Ministry of Nature Protection) informed the participants about the Government review process for the Project documents, the public feedback received, and the proposed positive conclusion. Participants, including the Goght community leader, agreed to the decisions of

---

<sup>11</sup> Including Representatives of central and local government agencies, academia, NGOs and WUAs.

<sup>12</sup> See Aide Memoire from March 2015.

the second phase of the expert review, which included permission to proceed with construction, and a set of prescribed precautionary/mitigation actions.

37. The ESIA of the finalized design was carried out according to the requirements of the Bank's OP/BP 4.01. A fifth meeting was then held by the PIU in Hatzavan to discuss the draft ESIA report on **September 9, 2015**. The Goght community leader spoke about concerns the community had regarding the Project design, but confirmed that the design consultant had provided assurances that the proposed reconstruction of the scheme would not result in a water shortage for the Goght community. The leader confirmed public support of the Goght community for the proposed design.

38. Following discussions with the Government in December 2015, the Deputy Prime Minister convened a meeting with the Chairman of SCWS, PIU Director, PIU Engineer and Environmental Specialists, as well as the Designer (Director of the HayWaterDesign Institute) and two people representing the Goght community, including the HPP operator. During that meeting the Designer explained the problems associated with the alternative southern route, including the passage through the multiple private land plots requiring resettlement and compensation, possibility of water being stolen along the route, etc. Management understands that participants to this meeting were in agreement.

39. Minutes from public consultations that took place on February 25, 2015, and on September 9, 2015, are included in the ESIA report.<sup>13</sup> Minutes from other consultations in the Goght community are also on file.

#### **(d) Water Allocation Management**

40. ***Water use permitting<sup>14</sup> is the key tool and legal basis for allocation of water resources among different users in the country.*** An assessment of this permitting system as well as recommendations for its strengthening is provided in *Toward Integrated Water Resources Management in Armenia* (World Bank, 2015). A key aspect to enforce compliance with the permits is the introduction of monitoring devices, which the Project is supporting. This is also critical to confirm actual deliveries purchased by users. Moreover, a transparent monitoring system can help to ensure that during times of low water availability, all communities would equally share the deficits.

41. ***The overall availability of water is not affected by the Project and the Project does not change the water allocation for the communities.*** The Project changes only the method and location of abstraction of the same volume of water from the same river. A drought situation could occur with or without the Project. In the “without project” situation, the community could be confronted with water scarcity. In such cases of low flow or drought conditions, the Government could impose restrictions on water abstraction on any and all users in order to ensure a minimum supply to all communities along the river or for the environmental flow.<sup>15</sup>

---

<sup>13</sup> Report can be found here: [http://piu.am/attachfiles/3525348\\_241075\\_3.pdf](http://piu.am/attachfiles/3525348_241075_3.pdf)

<sup>14</sup> Established under the 2002 Water Code.

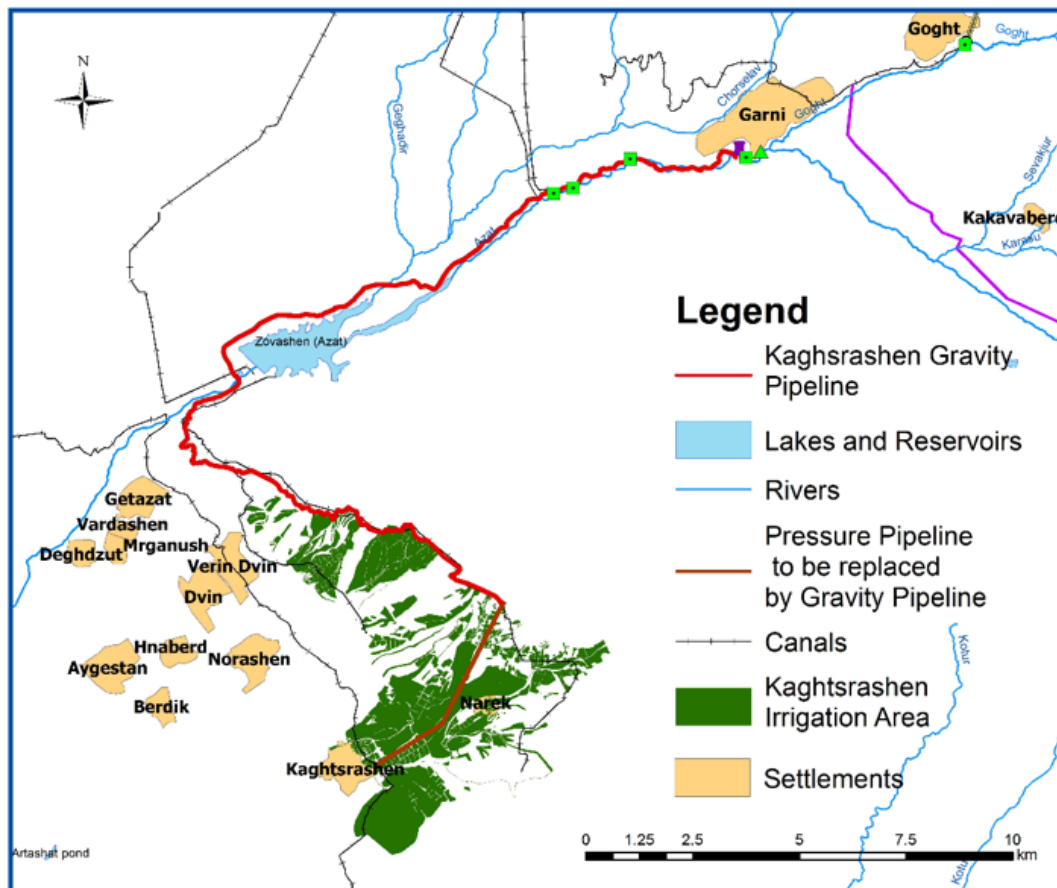
<sup>15</sup> The legal basis is given in Article 92 of the Water Code (2002).



42. *Moreover, no single community has preference over another when it comes to operation of public infrastructure.* The Goght community exists within a larger basin context (with other users in the basin) and thus what water they receive (now or in future, and with or without the Project) is not solely determined by this reservoir. The Geghardalich Reservoir is off-line storage and as such the Government can (with or without the Project) reduce community allocations to balance against other users in the system per the Water Code.

## V. MANAGEMENT RESPONSE TO THE REQUEST REGARDING THE KAGHTSRASHEN SCHEME

43. The *current Kaghtsrashen irrigation scheme* (see Figure 4) supplies 1,232 ha of irrigated land by pumps, which abstract water from a canal that is fed from the existing Azat Reservoir. Water losses from this feeder canal are quite high (40-50 percent) and the pumps suffer from the same poor conditions as those for the Geghardalich scheme, leading to similar sub-optimal agricultural production and yields. The pumps consume about 10 million kWh of electricity, costing, together with their operation and maintenance, approximately \$1 million annually.



**Figure 4: Map of the Kaghtsrashen Irrigation Scheme**  
(red: proposed gravity pipeline)

44. ***The proposed Kaghtsrashen Gravity Irrigation Scheme*** supported by the Project will deliver the same amount of irrigation water through a 27.5 km long gravity fed pipeline to the same areas currently served by the Kaghtsrashen pump station. This will allow the pumps to be abandoned. To achieve this, the scheme will build an intake structure on the Azat River (a weir approx. 2 m tall, and max. 20 m wide) close to Garni where the topography provides for irrigation via gravity. The pump station can then be retired. The pipeline (diameter size: 0.8 - 1 m) will be buried in most sections<sup>16</sup> and as such very minor visual impacts after construction are expected. The construction area will be fully restored as per the contract obligations. To date, three contracts have been awarded for these works and construction has just begun.

45. ***Earlier Complaint Letter.*** An earlier complaint letter was submitted to the Bank regarding this scheme. The main author of that letter is the same individual who has submitted this Request for Inspection. The concerns raised in the letter are identical to the ones raised in this Request. The letter was received on February 3, 2016 and a response prepared by the Bank team was sent on February 19, 2016. In addition, on March 10, 2016, a roundtable discussion was organized at the World Bank Yerevan Office with the civil society organization representatives who had signed the letter. This meeting was filmed and minutes were prepared.

46. Following citizens' protests in late May and early June 2016, the Government has announced that it will re-examine the proposed schemes to consider possible compromise solutions. Management notes that while such compromise solutions could be technically feasible and economically viable, they would be inferior to the current design and significantly diminish the potential energy savings. Management currently awaits a formal communication from the Government on how it wishes to proceed with the two schemes. Pending this, the associated works have been put on hold.

47. ***Management responds to specific allegations raised in the second Request below. The Requesters' claims, accompanied by Management's detailed responses, are provided in Annex 2.***

**(a) Environmental concerns**

48. *The Request alleges that there is insufficient water in the Azat River to ensure the environmental flow under the proposed scheme, which would result in the river "drying up."*

49. ***Hydrological studies have determined that there is sufficient water to cover both irrigation demands and environmental requirements.***<sup>17</sup> The design of the Kaghtsrashen scheme is based on official Armenian State Hydrometeorological and Monitoring Service data. Upstream of the proposed weir location is an official station with over 60 years of data. Based on this data, it can be determined that there is sufficient water to meet demand.

---

<sup>16</sup> Only 370 m of the 27 km long pipeline will remain unburied.

<sup>17</sup> Analysis provided in the design documentation and the ESIA reports.

This analysis is shown in Annex 3 (both for the average and 75 percent year) and is also provided in the ESIA documentation.

50. ***The weir will not restrict the environmental flow.*** Contrary to the assertion in the Request, the environmental flow requirement of 850 l/sec will not be restricted by the proposed weir. The weir design places the environmental flow outlet below the irrigation intakes, which will make it physically impossible to abstract any water before this environmental flow is secured. This design reflects Armenian legislation, which prioritizes the environmental flow over all other uses, including irrigation demands. A measuring device will also be introduced at the weir to ensure compliance and Management will recommend that it be open to community oversight.

**(b) Water supply to Garni**

51. *The Request alleges that there is insufficient water available to allow for environmental flow and irrigation demands.*

52. ***The Project does not affect the irrigation water abstraction of the Garni community.*** Both the existing irrigation pumping station supplying the beneficiary communities, as well as the proposed weir, are downstream of the location where irrigation water supplies are abstracted for the Garni community (see Map 3 and Figure 4).

53. ***Management understands that the Garni WUA is strongly concerned that water monitoring introduced by the Project will result in more effective enforcement of water abstraction in line with the existing permits.*** This is because the WUA is at present abstracting water well beyond its permit. According to the permit issued on November 16, 2013, the WUA may withdraw **310 l/sec** of water from the Azat River to supply irrigation water to Garni community. The inspection of August 21, 2015 (and previous measurement dates) showed that the Garni WUA had in fact abstracted **600 l/sec**, almost twice the permit amount. Corrective action was temporarily taken to release more water downstream. This discovery fuelled fears of some community members that the SCWS would reduce these abstractions to be in line with the provided permits. This was confirmed later during the November 2015 supervision mission and discussions with the village council members (described in the November 2015 Aide Memoire). It should be noted that the permitted amounts are granted with the downstream environmental flow requirements in consideration.

54. ***Concerns regarding Garni irrigation water availability were raised with the Bank team, although this concern is not related to the Project since that water is abstracted upstream of the proposed weir.*** However, following discussions with the Mayor of Garni, the Village Council, and the head of the WUA, in an effort to help, the Bank team brokered additional investment to support the rehabilitation of the Garni canal, which delivers water to the Garni irrigated areas. This canal is currently operating at very low efficiency and its repair will greatly enhance the overall water availability to the Garni community. This investment is included in the Irrigation System Modernization Project financed by the EDB.

(c) **Tourism-related concerns**

55. *The Request alleges that the Azat Gorge was part of a UNESCO World Heritage site and that the Project-related works would “destroy” the gorge.*

56. *The Azat Gorge is not part of the “Upper Azat Valley” which is listed as a potential UNESCO World Heritage site.* The only UNESCO World Heritage site in the neighborhood of these works is the Geghard Monastery.<sup>18</sup> This is well over 10 km away from the proposed location of the weir. Part of the confusion may stem from the fact that the UNESCO site is titled “Monastery of Geghard and the Upper Azat Valley.” There is no indication in the UNESCO documents that the entire upper Azat Valley is intended to be protected and designated as a heritage site. The buffer zone (as noted by UNESCO) delineating the protected area around the monastery is 40 ha. Moreover, this monastery is near the Chorsolev River, which does not actually meet with the Azat River (where the Project is located) until the Azat Reservoir, i.e., it is not in the immediate vicinity of the Azat Gorge, where the works are proposed.

57. *Management disagrees that there would be significant visual impacts on the Azat Gorge, as alleged in the Request.* The pipeline itself will be buried in the ground and will not create any visual impacts as the areas will be restored after construction works have been completed. The proposed weir will create a moderate visual impact in line with its rather low height (max 2m height).

58. *The four proposed natural monuments identified in the Azat Gorge<sup>19</sup> will not be affected by the works for the Kaghtsrashen scheme.* The potential impacts on the proposed four natural monuments in the Azat Gorge were assessed by a team of topographers and environmental specialists, with support from the Engineering Geodesy Sub-Department of the Armenian National University of Architecture and Construction, on February 21, 2016. The Basalt Organ (Stone Symphony) is 1.3 km upstream of the location of the Kaghtsrashen weir and will not be affected by the works. The three other proposed monuments were located within the orchards and farmlands belonging to Garni inhabitants, and on the right slope of the gorge, about 150-200 m from the planned pipeline of the Kaghtsrashen scheme. *As such, none of these natural resources will be affected by the works (see Map 4).*

59. *The touristic activities in the vicinity mainly relate to the first century pagan temple in Garni, which is located at a higher altitude up in the village, not in the gorge.* Tourism in the gorge itself is fairly limited. However, as an extra measure of precaution, construction of the weir will not take place during the main tourism period of June through August.

60. *Management agrees that there may be opportunities to enhance the touristic potential of the region.* The Bank recently negotiated with the Government of Armenia a

---

<sup>18</sup> <http://whc.unesco.org/en/list/960>

<sup>19</sup> As specified in a letter by the Armenian Ministry of Nature Protection dated November 15, 2015.

local economy and infrastructure development project that will, among other things, support tourism development in the area.

**(d) Concerns about the consultations**

61. *The Request alleges that Project implementers have not followed appropriate Bank requirements for consultations.*

62. An ESMF was developed for the Project, which was disclosed in-country, and a public consultation meeting with key stakeholders was held in Yerevan on February 25, 2013.<sup>20</sup> Once the individual investments under the Project had been identified, site-specific ESIAAs were developed, disclosed and consulted upon, including for the Kaghtsrashen irrigation scheme.

63. *Public consultations for the Project and the ESIA were held for the Garni community on November 5, 2014, December 10, 2014, and February 18, 2015. Announcements were made for a final consultation on the ESIA draft report on December 21, 2015.* This final consultation could not take place since protestors blocked the road to the venue in Garni. The final public consultation on the ESIA was completed on January 22, 2016. In an effort to keep community members from being hindered again from participating in the consultations by protestors, two rounds of discussions were held, allowing anyone who wanted to speak an opportunity to do so. The ESIA report on Kaghtsrashen has been placed on the PIU website at <http://piu.am/safeguards.asp>; printed copies were shared with the local government bodies of all the affected communities in November 2015 and December 2015. In addition to the public consultation meetings, information about the Project has been disseminated widely in public areas of the Garni community through posters, brochures, and a booklet of frequently asked questions. All of these materials include details on the Project grievance redress mechanism. This is extensively detailed in the Aide Memoire of March 2016.

64. *Management notes that a small group of individuals has been extremely vocal on these issues. Management also notes that these individuals allegedly act on behalf of a varying number of signatories, yet such letters with signatures have not been produced.* To better understand the perspective of the broader Garni community, a series of six focus group discussions (FGDs) and 3 in-depth interviews were held with various Garni community members during the month of December 2015. The FGDs included all landowners of plots along the gorge in proximity to prospective construction, dedicated discussions with farmers from the Garni WUA selected at random, and Garni residents (non-farmers), also selected at random. The purpose of these discussions was to (a) give additional opportunity to a diverse range of Garni residents to voice any potential concerns with the Project, and (b) complement the awareness raising efforts on environmental and social commitments of the Project. During the FGDs questions and concerns of participants were able to be addressed directly and holistically, in a calmer and more constructive environment as compared to that of public consultations (although the FGDs were not a substitute for public consultations). FGDs have demonstrated that the objections to the

---

<sup>20</sup> See footnote 11.

Project expressed by some community members are not representative of the broader community. The attitudes of most participants became positive once clarifications were provided (including with respect to contractual requirements for compensation in the event of damages to one's land for those residents in the construction area).

65. ***A meeting with CSOs and Garni residents was organized at the World Bank office in Yerevan in March 2016.*** This meeting followed up on a complaint letter submitted to the World Bank Armenia Country Manager in February 2016, to which a written response was also sent. During this meeting, the Bank team took the opportunity to discuss two specific concerns expressed by the community and CSOs: (a) a question as to which public consultation the World Bank would consider as the official one for the purpose of the Kaghtsrashen scheme ESIA (the response was that the World Bank takes all public consultations in account; minutes from all have been attached to the ESIA document disclosed online); and (b) proposals for three alternative projects to the Kaghtsrashen gravity scheme (constructing a solar energy station, replacing and modernizing pumps, and constructing new reservoirs in the area). The technical viability and cost of each of these alternative project proposals was discussed during this meeting. The Bank team explained why these proposals are not superior to the current plan. Detailed minutes and a video recording of this meeting are on file.

66. ***A complete list of efforts to improve public information on, and respond to citizens' and CSOs' concerns with regard to the Kaghtsrashen gravity scheme is included in Annex 4.***

67. Management understands from the Notice of Registration that the Requesters allege that *"community members were intimidated, forced to attend public meetings on the Project and told not to complain,"* although this concern was not raised in the Request for Inspection. These are serious allegations that also have never been brought to the Bank's attention and the Bank consultants who have participated as observers in some of the public consultations have not witnessed such incidents of intimidation or coercion to participate in consultation meetings. Management notes that on at least one occasion, recorded on video, Requesters led a group of people blocking the road to the public consultation venue to stop community members from participating in the consultations.

**(e) Governance related concerns**

68. ***The Request also alleges that the Project was motivated to supply lands owned by the Prime Minister with irrigation water.***

69. Management notes that the Project was prepared in 2012-2013, under a previous government, when the current Prime Minister was not in power. Secondly, as previously noted, the Project will change only the mode by which the same amount of water will be abstracted. The savings in electricity that the Project will generate will not benefit any individual but the country as a whole.

## VI. CONCLUSION

70. *Management has carefully reviewed the issues raised in both Requests and has concluded that the Requesters' rights or interests have not been, or are not likely to be, adversely affected by the Project. Management disagrees that the alleged potential adverse impacts cited in the Requests will result from the Bank-supported Project.*

71. *In Management's view, the Requests for Inspection are based on a number of incorrect assertions regarding the Project and its motivation.* This pertains mainly to water volumes that the Azat and Karmir rivers carry, the availability of irrigation water to both communities, assumed impacts of the Project's construction works. There is also a general distrust towards Government application of the existing legal mechanisms for allocation of water.

72. *Management recognizes the various concerns regarding water availability and supply and continues to make efforts to reach out to stakeholders and affected communities to better explain these complex issues and seek their input. However, after having carefully reviewed the issues raised in the Requests, Management does not agree with the alleged instances of Bank policy non-compliance leading to harm.*

73. *Management maintains that both proposed schemes have been carefully prepared consistent with Bank policy requirements and that the available data are sufficiently robust to ensure that the schemes do not adversely affect water availability for the communities.*

74. *Management was aware of the concerns expressed in the two Requests prior to their submission and has engaged in intensive discussions on these issues with Project stakeholders over the past two years.* The Bank team has made significant efforts to address stakeholders' concerns, using publicly available information, including during the ESIA consultations and additional meetings, as well as joint water measurement visits with interested community members. Management will continue these efforts. The Bank team has made significant efforts to listen to stakeholder concerns, and to address these. Making information on the Project available to all interested stakeholders has been a particular focus, along with conducting extensive consultations (including during the ESIA's) and additional meetings.

75. *Management underlines that, as noted earlier, the Project's objective is to reduce energy consumption of inefficient water pumping systems by replacing them with gravity fed pipelines. The Project does not alter or affect existing water allocations, permits or community access to irrigation water. Both new irrigation schemes, using gravity, will take the same amount of water, from the same watercourses, as they do today in the pumping schemes.* The opposition of some stakeholders to the Project, triggered simply by moving the point of outtake, shows the lack of trust among water users along the river and especially the weak permit enforcement under the current system. The Project seeks to strengthen the availability of information related to water flows and allocation.

76. ***Management also notes that the governance structure for irrigation water distribution and supply in the Project area is heavily influenced by informal arrangements and illegal practices.*** In Management's view these arrangements may allow some stakeholders to benefit at the expense of others, and in Management's view may contribute to the opposition to the Project by some stakeholders. Management notes in particular that the Project seeks to bring transparency about water use and community monitoring and this does not appear to be welcomed by some stakeholders. Such informal arrangements include the below:

- ***Goght.*** Management notes that the HPP operator retains full control over the irrigation water delivery pipe. This does not allow for any transparency regarding water distribution and its use for competing and mutually exclusive demands for either irrigation or power generation. Hence, the community has no means of verifying how much of the measured outflow from the reservoir is actually delivered to the WUA for irrigation, and how much is diverted by the HPP operator either to supply greenhouses or the second HPP turbine, both of which are owned by the operator. Equally noteworthy is the highly risky practice of overfilling the reservoir to augment water supplies through the spillway to the Goght River, which exclusively benefitted the HPP operation.
- ***Garni.*** The Project's efforts to promote transparency in water distribution and supply (e.g., introduction of water monitoring devices) have not been welcomed by all communities. In Garni this is likely linked to the abstraction of water above the permitted volumes by WUAs. Management notes that the hardware to monitor and measure water abstraction by a WUA near Garni community was stolen. The Project undertook joint water measurement exercises with community members to address community concerns and provide evidence for its responses to these concerns. ***During the last community measurement activity on August 21, 2015, this monitoring exercise was disrupted by some Garni community members and could not take place due to physical and verbal threats made towards the participants (including the PIU team).***

77. ***Actions. Management carefully reviewed the issues raised in the two requests and was not able to identify instances of policy noncompliance. The actions proposed below, therefore, are not intended to achieve policy compliance, but are rather additional efforts to address stakeholder concerns and improve Project implementation.***

- Given the general mistrust of water flow data, especially at critical control locations (e.g., weir, Karmir diversion), the Bank team is asking that the PIU install additional real-time measurement devices (to supplement the Project program of equipment) at these locations.
- A more active information-sharing campaign will be pursued to make this information more easily accessible to the public and to involve communities more closely in the self-monitoring of flows.



**ANNEX 1**  
**REQUEST FROM GOGHT: CLAIMS AND RESPONSES**


No.	Claim	Response												
1.	We want to inform you, that the beneficiary community, which uses Geghardalich reservoir water for irrigation, from the reservoir exploitation to now, is Goght community. The total irrigated area of Goght community is about 705 hectares, of which approximately 550 hectares are actually irrigated at the moment. Currently, the reservoir supplies irrigation water only to Goght community and <b>average annual water supply from the reservoir is 2.25 million m3 (July-September), which is not enough to ensure the required water demand.</b> At the same time it is necessary to mention, that in May-June water demand for community land irrigation is supported by the spring snowmelt water of Karmir River. The actual annual water demand of Goght is about 4.4* min. m3 while in the project it is presented as 2.25 min. m3	<p><b><i>Management notes at the outset that the Project will not alter or affect existing water allocations.</i></b></p> <p><b><i>In Management’s view the cited water demand cannot be substantiated, by either irrigation demands based on crop water requirements or historic consumption data.</i></b></p> <p>The annual irrigation requirement that is used in the ESIA is based on an irrigable area of 705 ha. This area is confirmed through a satellite-based analysis that demonstrates that this is the maximum possible area to be irrigated. Based on the current cropping pattern, approximately 3,190 cubic meters of water per hectare is sufficient. This translates into a total annual irrigation demand of 2.2 million m³ This amount is assessed to be an adequate irrigation requirement for the Goght community for two additional reasons.</p> <p><b>First</b>, based on the WUA revenues and water bills paid by irrigation users in the Goght community, the water users of the Goght community have actually used an amount far below 2.25 million m³. Please see the data below showing the actual purchased amount of water by Goght:</p> <table><tr><td>Year</td><td>2011</td><td>2012</td><td>2013</td><td>2014</td><td>2015</td></tr><tr><td>Water delivery (mln m³)</td><td>0.440</td><td>0.330</td><td>0.397</td><td>0.405</td><td>0.299</td></tr></table> <p>Moreover, based on a recently installed measurement device at the irrigation offtake (from the outlet of turbine 1 at the small HPP), the actual measured delivered irrigation water to the WUA in 2015 was 1.28 million m³.</p> <p><b>Second</b>, based on contractual agreements made between the Garni-Geghard WUA and the Sevan-Hrazdan WSA (Geghardalich dam operator) for irrigation waters (on file), the community has never stated that 4.4 million m³ is needed. Copies of the agreements (on file) of the requested and agreed WUA irrigation supply indicate this.</p>	Year	2011	2012	2013	2014	2015	Water delivery (mln m³)	0.440	0.330	0.397	0.405	0.299
Year	2011	2012	2013	2014	2015									
Water delivery (mln m³)	0.440	0.330	0.397	0.405	0.299									
2.	We would like to inform you, that the reservoir is <b>completely filled, only 2 times during last six years.</b> Appendix 3, appendix 4.	The Request argues that there is not sufficient water to fill the reservoir adequately. However, according to Sevan-Hrazdan WSA, the reservoir was completely (and even over-) filled in 2010, 2011, 2012, and 2014. <b><i>Moreover, it should be noted that just because a reservoir is not completely filled does not necessarily indicate a lack of water availability.</i></b> For instance, additional water may not need to be diverted to the reservoir due to a lack of demand for irrigation water.												


No.	Claim	Response
3.	In addition, with the Goght population was <b>not carried out hearings</b> on the project and discussions.	<p>An ESMF was developed for the Project, which was disclosed in-country, and a public consultation meeting with key stakeholders was held in Yerevan on February 25, 2013. Once the individual investments under the Project had been identified, site-specific ESIA's were developed, disclosed and consulted upon, including for the Geghardalich irrigation scheme.</p> <p><i><b>The design of the Geghardalich irrigation scheme and its environmental and social aspects were extensively discussed with the affected communities in five consultation meetings.</b></i></p> <p>A first meeting was held in Goght on <b>November 19, 2014</b> to acquaint the participants with the preliminary design of the scheme. Representatives of the Goght community disagreed with the proposed alignment of the water pipeline and requested to re-route it so that it would pass closer to cultivated plots and allow people to use storm water for irrigation in the period when water is not supplied from the reservoir. This was later demonstrated to not be a superior alternative (see Aide Memoire from March 2015).</p> <p>A second meeting, to consult with stakeholders on the environmental and social aspects of the Project design according to national procedures for conducting environmental assessment and expert review of the proposed investment, was held <b>on January 27, 2015</b>.</p> <p>The draft final design of the Geghardalich scheme was discussed in Yerevan at a third meeting on <b>February 25, 2015</b>. The design was accepted by the meeting participants, although concerns were raised about secondary and on-farm irrigation infrastructure, which are issues beyond the scope of the Project. It was noted that activities under another upcoming project, the Irrigation System Modernization project financed by the EDB, are likely to address these concerns. The community was informed about this.</p> <p>In a fourth meeting, held in Yerevan on <b>April 16, 2015</b>, the representative of the State body which carried out an expert environmental review of the Project (under the Ministry of Nature Protection) informed the participants about the Government review process for the Project documents, the public feedback received, and the proposed positive conclusion. Participants, including the Goght community leader, agreed to the decisions of the second phase of the expert review, which included</p>

No.	Claim	Response
		<p>permission to proceed with construction, and a set of prescribed precautionary/mitigation actions.</p> <p>The ESIA of the finalized design was carried out according to the requirements of the Bank's OP/BP 4.01. A fifth meeting was then held by the PIU in Hatzavan to discuss the draft ESIA report on <b>September 9, 2015</b>. The Goght community leader again spoke about concerns the community had regarding the Project design, but confirmed that the design consultant had provided assurances that the proposed reconstruction of the scheme would not result in a water shortage for the Goght community. The Goght community leader confirmed support of the Goght community for the proposed design.</p> <p>Following discussions with the Government in December 2015, the Deputy Prime Minister convened a meeting with the Chairman of SCWS, PIU Director, Engineer and Environmental Specialist, as well as the Designer (Director of the HayWaterDesign Institute) and two people representing the Goght community, including the HPP operator. During that meeting the Designer explained the problems associated with the alternative southern route, including the passage through the multiple private land plots requiring resettlement and compensation, possibility of water being stolen along the route, etc. Management understands that participants to this meeting were in agreement.</p> <p>Minutes from public consultations that took place on February 25, 2015, and on September 9, 2015, are included in the ESIA report and may be found here: <a href="http://piu.am/attachfiles/3525348_241075_3.pdf">http://piu.am/attachfiles/3525348_241075_3.pdf</a>. Minutes from other consultations in the Goght community, are also on file.</p>
4.	<p>In the project plan, hydrological data of Karmir River, which are calculable values and obtained from the Azat-Garni observation post data (by the transitional coefficient of the surface correlation) do not correspond to reality, particularly since the end of June to the 2nd ten days of May of the next year, the river dries completely, and in the project during this period presented fairly large discharge, an average of about 358 l / sec.</p> <p><i><b>There is not sufficient water resources in the Karmir River, which, in the program, are calculated an average of about 358 l/sec. for July -May, and even in that case calculated existing water for the use in Karmir River</b></i></p>	<p><b><i>The table provided in the Request is incorrect.</i></b></p> <p>The figures in the last column represent the irrigation water demand for 1,448 ha (which includes the irrigation demand for the 705 hectares from the Goght community). The relevant tables are given in the ESIA document (pages 49 and 50 – English version). The water available for use in the Karmir River (July-August) should be considered <b>in addition</b> to those supplies available as storage in the preceding months (April-June). The “outflow from the reservoir” figures are of particular interest (<b>see table in Annex 2</b>). From these tables, it is clear that there would be sufficient water to meet the yearly total irrigation demand.</p>

No.	Claim	Response												
	<p><i>does not match with the calculated values of the reservoir inflow (p.84 of the program).</i></p> <table border="1" data-bbox="277 327 764 667"> <thead> <tr> <th data-bbox="277 327 418 510">Month</th><th data-bbox="418 327 597 510">Water available for use in the Karmir River (million m3)</th><th data-bbox="597 327 764 510">Water inflow to the reservoir (million m3)</th></tr> </thead> <tbody> <tr> <td data-bbox="277 510 418 562">July</td><td data-bbox="418 510 597 562">0.222</td><td data-bbox="597 510 764 562">1.563</td></tr> <tr> <td data-bbox="277 562 418 615">August</td><td data-bbox="418 562 597 615">0.072</td><td data-bbox="597 562 764 615">1.190</td></tr> <tr> <td data-bbox="277 615 418 667">September</td><td data-bbox="418 615 597 667">0.172</td><td data-bbox="597 615 764 667">0.354</td></tr> </tbody> </table>	Month	Water available for use in the Karmir River (million m3)	Water inflow to the reservoir (million m3)	July	0.222	1.563	August	0.072	1.190	September	0.172	0.354	<p>Moreover, in 2015, a round of actual water measurement was conducted (representatives of the Goght community were also invited) on the Karmir River and an amount of 2,650 l/sec was recorded on June 5, 2015 (contrary to the Request, which states that the Karmir River is completely dry until mid-May).</p>
Month	Water available for use in the Karmir River (million m3)	Water inflow to the reservoir (million m3)												
July	0.222	1.563												
August	0.072	1.190												
September	0.172	0.354												
5.	<p>For obtaining a realistic picture of Karmir River water resources, <b>we are offering by the different seasons of the year to carry out simultaneous hydrological measurements</b> on the water intake point of the canal that feeds Geghardalich reservoir and on the Azat-Garni hydrological post during 2-3 year, obtain new transitional coefficient, based on which, calculate water discharge of Karmir River.</p>	<p><b><i>Management welcomes the idea to undertake additional hydrological measurements.</i></b> The Bank team and the PIU are exploring the possibility of installing a real-time measurement device on the Karmir River.</p> <p>For the purpose of assessing the feasibility of the Geghardalich scheme, proxy flows for the Karmir River have been modelled as there are no long-term historical data records for this specific river. This was undertaken by the authors of the Geghardalich design – “Hayrnakhagits Institute” CJSC (ArmWaterDesign), and previously, for the MCC Program, by the “Haygyughshinnakhagits Institute” CJSC (ArmVillageDesign). In both cases an analogue method was used, which is standard in the field of hydrology (see ESIA document – pages 18-23 in the English version). ArmWaterDesign used the official Azat-Garni hydrological observation station, taking the series of observations for the last 60 years, while the other group used the data from the official Gegharot-Aragats hydrological station. According to the first method, the annual estimated flow of Karmir River with 75 percent water availability (i.e., 25 percent of the time the amount will be lower) amounted to 13.57 million m<sup>3</sup>, and according to the second method it amounted to 20.5 million m<sup>3</sup>. The calculations for the actual design and to determine overall viability of the Geghardalich schemes were based on the more conservative (smaller) value of 13.57 million m<sup>3</sup>.</p> <p>These designs and analysis are all based on 75 percent probability years (in contrast to using an average year). This is standard in the fields of hydrology and water resource engineering. What this means is that given the natural variation in water flows observed, the engineers have designed a system that is conservative in the amount of water assumed available each month and each year.</p>												

No.	Claim	Response
		The conclusion is that even using the more conservative smaller amount there is sufficient water in the Karmir River to meet the total irrigation demands not only of the Goght community but of the three other communities targeted (including the Gardener's Association and National Park).
6.	We state that, in the Karmir River actually there is not such <b>volume of water resources that was presented in the project naturally, cannot be ensured in the design capacity of 4.4 million m3 of water volume</b> , and naturally cannot be accomplished project about gravity water supply system in surrounding communities land irrigation.	See clarification in Item 5 above.
7.	Additionally, as mentioned above, the total irrigated area of Goght community is about 705 hectares, of which approximately 550 hectares are actually irrigated at the moment, which, naturally, for about a year will grow, the amount of water allocated to the program for Goght community, after the realization of the planned project, will stay in the current amount of volume. In this case, after the realization of the project, naturally will be worsen the condition of the irrigation water supply in the beneficiary Goght community.	<p><b><i>The design of the Project fully takes into account the historical irrigation demand and is based on the irrigable area of 705 ha.</i></b> The Requester confirms that only 550 is irrigated.</p> <p>By increasing the storage of the reservoir, from an overall water management perspective, greater flexibility is introduced. Nonetheless, during extreme drought years, all communities in the country are likely to suffer water shortages, which is not related to the Project. Those who get supplies from reservoirs, however, may be better protected in comparison.</p>
8.	Taking into account all this, please <b>stop/suspend the project implementation process</b> , until you will not present all the questions raised by us to the full, giving clear explanations and justifications.	Many of these issues were discussed during the ESIA public consultation process and were adequately responded to. Note also that a Project level grievance redress mechanism is in place should concerns arise during implementation of the Project.
9.	The above mentioned is justified, also, based on the fact that the maximum capacity of the canal that fills Geghardalich reservoir is 1500 l/sec., and above the canal, water flow period, because of snowmelt lasts 15-20 days, $20 * 86.4 * 1500 \text{ l/sec.} = 2,59 \text{ million m}^3$ .	<p><b><i>This is not correct.</i></b></p> <p>The snowmelt season is typically April-June and is longer than 20 days (based on both information from a specialist in the Armenia Hydromet department and a former Soviet Union study on the Karmir River from 1973). Moreover, the Karmir is not fed from snowmelt alone but also receives contributions from groundwater.</p> <p>Based on the proxy flows from the Karmir River, and after incorporating the upstream demands and environmental flow requirements, the total available flow from the Karmir during this period (April-June), when the reservoir would be filling, is calculated to be between 4.74 and 5.35 million m<sup>3</sup> (depending on how the 75 percent probability is applied – yearly versus monthly, as</p>

No.	Claim	Response
		described in Item 5). Thus, there is sufficient water availability.
10.	<p>4. <i>When the dam of Geghardalich reservoir will be raised about two meters the reservoir capacity will be 3.4 million m<sup>3</sup> while in the program the capacity of the reservoir and outflows is presented as 4.4 million. m<sup>3</sup> (p. 46; 84 of the project).</i></p>	<p><b><i>The comparison of the capacity of the modified reservoir (3.4 million m<sup>3</sup>) with the annual available amount of water that such a modified reservoir can supply is incorrect. The operation of the reservoir is dynamic.</i></b> As such, the total capacity of the reservoir does not need to be equivalent to the total required demand. Water is flowing into and out of the reservoir constantly and as a result, the total volume of water supplied from the reservoir (i.e., the outflows) over the course of a year need not be equivalent to the total volume of water that the reservoir can hold at a single point in time. Please see the tables in the ESIA document (pages 49 and 50 – English version). These tables demonstrate how the inflows, storage and outflows work to meet the total required irrigation demand of 4.4 million m<sup>3</sup> for a 75 percent probability year. See also Annex 3.</p> <div data-bbox="808 892 1274 1081" style="text-align: center;">  <p>Inflow – Outflow = Change in Storage</p> </div>
11.	<p>When the reservoir will provide 370 l/sec to the neighboring communities and simultaneously 300 l/sec to the Goght community then it will be empty in 40 days. If we assume that the reservoir will be filled with 3.4 mln.m<sup>3</sup> water, which is actually impossible with water resources of the Karmir River only, the reservoir will be empty in 59 days, namely, in this case Goght community will not have irrigation water in August and September.</p>	<p><b><i>It is not correct that the reservoir will be empty within 40 days of initiating irrigation deliveries.</i></b> The relevant tables to examine are given in the ESIA document (pages 49 and 50 – English version). The reservoir would be drawn down to its dead storage by the end of the irrigation season at the end of September. <b>See table in Annex 3.</b></p> <p>On the matter of whether there are sufficient water resources in Karmir River, please see Item 5 above.</p>
12.	<p><b><i>Proposals</i></b></p> <p><b>Give priority to the construction of the reservoir</b> and then fill the reservoir after the construction of the Gilanlar canal (about 2 km), after which, based on the statistical data of the reservoir factual fullness, come to the conclusion, concerning water pipeline construction and provision of water quantity to the surrounding communities.</p>	<p>This can be explored with the Government. The PIU plans to also meet with Goght community members to discuss this option further. Preliminary technical analysis suggests that this could be a possible complementary investment.</p>

No.	Claim	Response
13.	When the fullness of Geghardalich reservoir will be 3.4 mln. m <sup>3</sup> and when at the same time will be ensured annual water demand of Goght community, which is 4.4 mln.m <sup>3</sup> , only then, from the Geghardalich reservoir, will be possible to provide water to the neighboring communities, no more than 129 l/sec.	See Item 1 above. <b><i>The stated water demand of 4.4 million m<sup>3</sup> for the Goght community is not based on any historic data or needs that would be consistent with the irrigated area.</i></b> It appears to be derived from the permit that the WSA holds and which allows the WSA to abstract up to 4.4 million m <sup>3</sup> annually for the Geghardalich Reservoir. There is no legal basis for the assertion that this right is passed on to a single community that is supplied by the WSA to the exclusion of others.
14.	In Goght community contract internal irrigation system of 7-8 km length (instead of in the program specified 1 km), in the result will reduce the amount of water losses and based on that water savings, in Goght community exceedance of irrigation water will be possible to increase up to 80 percent.	<p><b><i>The rehabilitation of the Goght pipeline is provided under an EDB-financed project (Irrigation System Modernization Project).</i></b> Under that project, some priority sections, with a total length of 1.0 km, which require urgent intervention, have been proposed for rehabilitation. The most deteriorated sections were presented by Garni-Geghard WUA. The Goght pipeline is located within the service area of that WUA. Below are some photos. No other sections were deemed to require rehabilitation.</p> 

No.	Claim	Response
		



**ANNEX 2.**  
**REQUEST FROM GARNI: CLAIMS AND RESPONSES**

No.	Claim	Response
1.	<p>For the past two years, residents of Garni and environmental activists have proved that a World Bank financed project in Armenia, has led to anti-environmental and anti-social consequences, and that the project is economically inefficient.</p> <p>According to the “Kaghtsrashen Gravity Irrigation System” project, as presented by the Armenian government, a water intake facility and pipeline are scheduled to be built on the Azat River in order to deliver some 980 liters/per minute of water to the Kaghtsrashen pumping station. During public hearings, Garni residents have noted that the water level in the Azat River has been continuously dropping, so much so that gravity irrigation is no longer possible. A proposal was made to the government that monthly readings of the river’s water levels be taken. Water outflow readings at the Garni measuring station began on March 22, 2015 and continued until August 16. Water levels precipitously dropped in July and August because feeder tributaries into the Azat had dried up. It was proven that when the called for 850 liters per minute of environmental outflow was maintained, the 0,98 liter per minute water level for those months, as demanded by the project, wasn’t sufficient to provide self-flowing irrigation to 12 villages in Ararat Province. Thus, if the government doesn’t pull out of the project, it will be achieved at the cost of the Azat River drying up. Specialists taking water level measurements, were finally convinced that just 450 l/m of water was left in the river after preserving the 850 l/m environmental discharge. This being the case, the “Kaghtsrashen Gravity Irrigation” project is risky and unsustainable.</p>	<p><b><i>Management is not aware of any submission made by the Requesters that would provide fact-based support to the assertions regarding the Project’s feasibility, economic viability or alleged environmental and social impacts.</i></b></p> <p>The engagement with a small group of activists over the last two years is described in detail in the Aide Memoires from March 2015, November, 2015 and March 2016 (on file). The PIU, with the close support of the Bank, has responded proactively in several ways (see Annex 4). In summary, the PIU and the Bank team have made concerted efforts to explain the technical aspects to individual community members and to correct misinformation that may exist.</p> <p><b><i>It is important to keep in mind that the Garni community abstracts its irrigation water supplies <u>upstream</u> of the location of the proposed weir.</i></b></p> <p><b><i>The technical feasibility of the Kaghtsrashen gravity scheme does not depend on the water levels in the Azat Reservoir, but on the topography of the land.</i></b> In the spring of 2015, questions were raised whether this scheme was feasible and whether an alternative location could be determined (specifically, whether the weir could be moved downstream several hundred meters). The PIU (and the Bank team) reviewed this and from the technical perspective determined this was not possible. To demonstrate the elevation differences and confirm that water could be delivered by gravity, on April 21, 2015, Garni residents were invited to the design consultant offices to review the topography maps. Also, on June 3, 2015 a field trip was organized to follow the path of the entire proposed pipeline and take elevation measurements on site using GPS equipment, to demonstrate the impossibility of moving the weir further downstream.</p> <p><b><i>Hydrological studies have determined that there is sufficient water to cover both the irrigation demands and the environmental requirements. The design of the Kaghtsrashen scheme is based on official Armenian State Hydrometeorological and Monitoring Service (<a href="http://www.meteo.am">www.meteo.am</a>) data. Upstream of the proposed weir location is an official station with over 60 years of data.</i></b> This data goes through an official quality assurance process to ensure its accuracy. Based on this data, it can be determined that there is sufficient water to meet</p>

No.	Claim	Response																																										
		<p>demand. This analysis is shown in Annex 3 and is also provided in the ESIA documentation.</p> <p>The Bank team notes that in March 2015, a few inhabitants of Garni questioned the validity and accuracy of this data. Some inhabitants of Garni were not aware that there was an official hydrological post in the Azat Gorge, and implied that the water balance was prepared based on theoretical calculations. In response to these concerns and in order to build trust in the official Government hydrological data, the PIU organized a series of community demonstration measurements of water level and flow with participation of these residents of Garni community. These flow measurements were reported on the PIU website.</p> <p>Over a dozen demonstration measurements were made at the Azat-Garni hydrological post between March and August 2015. The main objective of the measurement exercises was to show the representatives of Garni community how the hydrological measurements are conducted, at what frequency and how reliable the data recorded in the Azat-Garni hydrological post are. This data is the basis for the calculations done for the Kaghtsrashen Gravity Irrigation Scheme. The table below summarizes the demonstration measurement dates and values.</p> <table data-bbox="836 1129 1463 1591"> <tr> <th>Measure- ment no</th><th>Date</th><th>Measured discharge, m<sup>3</sup>/sec</th></tr> <tr><td>1</td><td>March 22, 2015</td><td>2.92</td></tr> <tr><td>2</td><td>April 12, 2015</td><td>7.53</td></tr> <tr><td>3</td><td>April 26, 2015</td><td>7.36</td></tr> <tr><td>4</td><td>May 4, 2015</td><td>5.70</td></tr> <tr><td>5</td><td>May 10, 2015</td><td>7.63</td></tr> <tr><td>6</td><td>May 24, 2015</td><td>14.3</td></tr> <tr><td>7</td><td>June 9, 2015</td><td>8.43</td></tr> <tr><td>8</td><td>June 20, 2015</td><td>2.55</td></tr> <tr><td>9</td><td>July 5, 2015</td><td>2.05</td></tr> <tr><td>10</td><td>July 23, 2015</td><td>1.54</td></tr> <tr><td>11</td><td>August 5, 2015</td><td>1.53</td></tr> <tr><td>12</td><td>August 16, 2015</td><td>1.30</td></tr> <tr><td>13</td><td>August 21, 2015</td><td>1.26</td></tr> </table> <p>It should be highlighted that during the last measurement activity on August 21, 2015, members of the monitoring team (including the PIU hydrologist) were threatened (both physically and verbally) by Garni community members and as such, did not complete these joint events. The confrontation was fuelled in part by parallel measurements taken by the PIU upstream at the Garni WUA abstraction point to check compliance with its</p>	Measure- ment no	Date	Measured discharge, m <sup>3</sup> /sec	1	March 22, 2015	2.92	2	April 12, 2015	7.53	3	April 26, 2015	7.36	4	May 4, 2015	5.70	5	May 10, 2015	7.63	6	May 24, 2015	14.3	7	June 9, 2015	8.43	8	June 20, 2015	2.55	9	July 5, 2015	2.05	10	July 23, 2015	1.54	11	August 5, 2015	1.53	12	August 16, 2015	1.30	13	August 21, 2015	1.26
Measure- ment no	Date	Measured discharge, m <sup>3</sup> /sec																																										
1	March 22, 2015	2.92																																										
2	April 12, 2015	7.53																																										
3	April 26, 2015	7.36																																										
4	May 4, 2015	5.70																																										
5	May 10, 2015	7.63																																										
6	May 24, 2015	14.3																																										
7	June 9, 2015	8.43																																										
8	June 20, 2015	2.55																																										
9	July 5, 2015	2.05																																										
10	July 23, 2015	1.54																																										
11	August 5, 2015	1.53																																										
12	August 16, 2015	1.30																																										
13	August 21, 2015	1.26																																										

No.	Claim	Response
		<p>water use permit conditions, issued by the Ministry of Nature Protection. According to the permit issued on November 16, 2013, the WUA may withdraw 310 l/sec of water from Azat River to supply irrigation water to Garni community. The inspection of August 21, 2015 (and previous measurement dates) showed that the Garni WUA had in fact abstracted 600 l/sec, almost twice the permit amount. Corrective action was temporarily taken to release more water downstream. This discovery fuelled fears of these community members that the SCWS would reduce these abstractions to be in line with the provided permits. This was confirmed later during the November 2015 supervision mission and discussions with the village council members (described in the November 2015 Aide Memoire). Some community members interpreted this as an attempt by the Government to artificially inflate the flow numbers downstream at the Azat-Garni monitoring location. Note that the measurements continue to be collected as this is part of the regular Armenian State Hydrometeorological and Monitoring Service program.</p> <p>The Bank team also noted that it discussed this matter with the head of the Garni WUA. The Bank team proposed that if indeed the demand for irrigation was greater, perhaps the permit could be “regularized.” <i><b>The WUA expressed its concern with the possibility of having to pay more for more water.</b></i></p> <p><i><b>The weir will not restrict the environmental flow.</b></i> Contrary to the assertion in the Request, the environmental flow requirement of 850 l/sec will not be restricted by the proposed weir. The weir design places the environmental flow outlet below the irrigation intakes, which will make it physically impossible to abstract any water before this environmental flow is secured. This design reflects Armenian legislation, which prioritizes the environmental flow over all other uses. A measuring device will also be introduced at the weir to ensure compliance and Management will recommend that it be open to community oversight.</p> <p>This monitoring device, placed just after the head structure, will show how much water is left in the river at all times and the data will be posted on-line. Installation of the device will provide the opportunity for any Garni inhabitant to check the water remaining in the river, and thus the compliance with the environmental flow requirements at any time.</p>
2.	Another concern of Garni residents is the fate of the Azat Gorge, regarded as a national landmark. If the irrigation project goes through, the Azat Gorge	<p><i><b>The Azat Gorge is <u>not</u> part of the “Upper Azat Valley” which is listed as a UNESCO World Heritage site.</b></i> The UNESCO World Heritage site in the vicinity of these</p>

No.	Claim	Response																				
	<p>(a part of the Upper Azat Valley listed on UNESCO’s World Heritage List as an ‘outstanding universal value’), will be destroyed. Those who drafted the Kaghtsrashen irrigation project overlooked the unique importance of Garni in terms of enhancing tourism in Armenia. There are four natural landmarks in the Azat Gorge as recognized by Armenian Government Decision N967 (August 14, 2008). It’s hard to map the borders of each because they haven’t been officially mapped and measured by Armenia’s Cadastre. The Project Implementation Unit (PIU) says that the government is planning to perform such assessment in 2019-2021. The PIU claims that the Kaghtsrashen irrigation project will not harm any of these four landmarks.</p>	<p>works is the Geghard Monastery<sup>21</sup> which is well over 10 km away from the proposed location of the weir. Part of the confusion may stem from the fact that the UNESCO site is titled “Monastery of Geghard and the Upper Azat Valley.” There is no indication in the UNESCO documents that the entire upper Azat Valley is intended to be protected and designated as a heritage site. The buffer zone (as noted by UNESCO) delineating the protected area around the monastery is 40 ha. Moreover, this monastery is near the Chorselev River, which does not actually meet with the Azat River (where the Project is located) until the Azat Reservoir, i.e., it is not in the immediate vicinity of the Azat Gorge, where the works are proposed.</p> <p>The Government decision on the four proposed natural monuments (<a href="http://www.arlis.am/DocumentView.aspx?DocID=61505">http://www.arlis.am/DocumentView.aspx?DocID=61505</a>) simply approves a long list of natural monuments, and then assigns the Ministry of Finance to allocate a budget to the Ministry of Nature Protection for defining the exact boundaries of these natural monuments.</p> <p>The PIU received a letter (on file) from the Ministry of Nature Protection, which clarified that these 4 proposed monuments are of a geological type, approved as the Annex of the Government Decision No 967-N. It further states that the exact boundaries, size of the territories, protection zones and protection regimes are not defined yet, and will be defined in 2019-2021. The Ministry also stated that the Kaghtsrashen scheme should follow the relevant laws on “Specially Protected Natural Areas”. Given that the geographic coordinates of the four proposed natural monuments are known, these can be mapped (See Map 4).</p> <table><tr><th>No</th><th>Proposed natural monument’s name</th><th>Coordinates according to the Ministry of Nature Protection of the RA</th><th>Coordinates according to the Arm-WGS84 system</th></tr><tr><td>1.</td><td>Basalt Organ - Columnar Basalt</td><td>X44,7433 Y40,1127</td><td>X 4442152.897 Y 478115.098</td></tr><tr><td>2.</td><td>Anonymous cave in columnar basalts</td><td>X44,7230 Y40,1099</td><td>X 4441847.181 Y 476383.455</td></tr><tr><td>3.</td><td>Anonymous slope erosion</td><td>X44,6819 Y40,1045</td><td>X 4441259.295 Y 472877.189</td></tr><tr><td>4.</td><td>Anonymous lava folds</td><td>X44,7321 Y40,1109</td><td>X 4441955.843 Y 477159.641</td></tr></table>	No	Proposed natural monument’s name	Coordinates according to the Ministry of Nature Protection of the RA	Coordinates according to the Arm-WGS84 system	1.	Basalt Organ - Columnar Basalt	X44,7433 Y40,1127	X 4442152.897 Y 478115.098	2.	Anonymous cave in columnar basalts	X44,7230 Y40,1099	X 4441847.181 Y 476383.455	3.	Anonymous slope erosion	X44,6819 Y40,1045	X 4441259.295 Y 472877.189	4.	Anonymous lava folds	X44,7321 Y40,1109	X 4441955.843 Y 477159.641
No	Proposed natural monument’s name	Coordinates according to the Ministry of Nature Protection of the RA	Coordinates according to the Arm-WGS84 system																			
1.	Basalt Organ - Columnar Basalt	X44,7433 Y40,1127	X 4442152.897 Y 478115.098																			
2.	Anonymous cave in columnar basalts	X44,7230 Y40,1099	X 4441847.181 Y 476383.455																			
3.	Anonymous slope erosion	X44,6819 Y40,1045	X 4441259.295 Y 472877.189																			
4.	Anonymous lava folds	X44,7321 Y40,1109	X 4441955.843 Y 477159.641																			

<sup>21</sup> <http://whc.unesco.org/en/list/960>

No.	Claim	Response
		<p>In order to evaluate the potential impacts on these proposed four natural monuments registered in the Azat Gorge, the topographer of the PIU and the environmental specialist of the PIU, in cooperation with the Engineering Geodesy Sub-Department of the Armenian National University of Architecture and Construction (which provided the professional topographical instrument) conducted field studies on February 21, 2016.</p> <p>Of the four proposed natural monuments registered in the gorge, only the Basalt Organ (Stone Symphony) is actually located <u>in</u> the gorge (No.1). However, it is 1.3 km upstream of the location of the Kaghtsrashen weir and will not be affected by the works. The three other proposed monuments were located within the orchards and farm lands belonging to Garni inhabitants and on the right slope of the gorge, about 150-200 m away from the planned pipeline of Kaghtsrashen scheme (No.3). As such, none of the four proposed natural monuments will be affected by the works.</p>
3.	<p>For the past twenty years, improving the socio-economic conditions of Garni residents has been directly linked to the development of local tourism. Service organizations catering to the tourist trade have been created and living conditions in Garni have improved to a certain degree. The PIU has not assessed, as required by World Bank criteria, the true scope of the negative socio-economic impact the irrigation project will have.</p>	<p>The touristic activities in the vicinity mainly relate to the first century pagan temple in Garni. This temple is located at a higher altitude up in the village and is not in the gorge. In the gorge, tourists may see the Basalt Organ (Stone Symphony), and a nearby medieval bridge.</p> <p>However, as an extra measure of precaution, construction will not take place during the main tourism period of June through August.</p> <p><b><i>Management agrees that there may be opportunities to enhance the touristic potential of the region.</i></b> The Bank recently negotiated with the Government of Armenia a local economy and infrastructure development project that will, among other things, support tourism development in the area.</p>
4.	<p>Substantiations regarding the above-mentioned losses/damages have been presented at all public hearings on the project, and the PIU overseeing the project has not refuted one of them. Rather than making convincing arguments to the contrary, those implementing the project have resorted to illegal means. Using administrative levers at their disposal, they have forcibly forged documents for inclusion in the overall project file, and have availed themselves of the services of criminals to intimidate and bully the more active segments of Garni residents.</p> <p>Upon the August 21, 2015 order of the president of the Water Economy State Committee, a</p>	<p>The events of August 21, 2015 are described in Item 1. Subsequent to these measurements being taken, the water meter was stolen.</p>

No.	Claim	Response
	<p>commission was formed ostensibly to, as they stated, “To carry out additional water measurements on the Azat River, including studies on water intakes and outtakes at the Azat River”. The village of Garni also gets its irrigation water from the Azat River. The village’s irrigation water stopped on the morning of that day. On August 21, employees of the Water Users’ Association (answerable to the Vorogoum PIU) turned off the village’s irrigation water and let it flow into the Azat River so that the members of the water measuring team could report adequate levels to their higher-ups. <a href="http://hetq.am/arm/news/62524/">http://hetq.am/arm/news/62524/</a>. Realizing the deception, residents argued with the measuring team and opened the irrigation valve, after which the river levels dropped to less than the 1,260 l/m registered five days before. This signifies that the water level in the river, after protesters raised the alarm, was only 410 l/m, and not the 980 l/m as demanded by the Kaghtsrashen Gravity Irrigation System project for August.</p>	
5.	<p>The entire project implementation process has been fraught with irregularities, both evident and concealed.</p> <p>The World Bank guarantees that financing of projects is conditional, based on the results of studies evaluating their environmental and social impact and that these results must be debated by those communities involved. Garni community residents, the target group, has consistently voiced its opposition to said project during public hearings. To garner the community’s approval, by force, the government has resorted to numerous deceptions.</p> <p>The PIU has not adhered to procedures specified by the World Bank for the project’s implementation. The PIO, and governing bodies, knowing full well the position of residents, did not inform the public regarding public hearings, so that it could register false public opinions regarding the project within a narrow circle of supporters. On October 23, 2015, one week before the envisaged public hearing, meetings were held between project opponents and official and non-official circles, and attempts were made, by orders and threat, to prevent opponents from participating in a meeting scheduled for that day, and to create the necessary conditions for the public hearing to go as planned by opponents and to register their desired result. To create such a scenario, the Deputy</p>	<p>An ESMF was developed for the Project, which was disclosed in-country, and a public consultation meeting with key stakeholders was held in Yerevan on February 25, 2013. Once the individual investments under the Project had been identified, site-specific ESIAs were developed, disclosed and consulted upon, including for the Geghardalich irrigation scheme.</p> <p>Public consultations for the Project and the ESIA were held for the Garni community on November 5, 2014, December 10, 2014, and February 18, 2015.</p> <p>Announcements were made for a final consultation on the ESIA draft report on December 21, 2015. The final consultation could not take place since protestors blocked the road to the venue in Garni. The final public consultation on the ESIA was completed on January 22, 2016. In an effort to keep community members from being hindered again from participating in the consultations by protestors, two rounds of discussions were held, thus allowing anyone who wanted to speak an opportunity to do so. The ESIA report on Kaghtsrashen has been placed on the PIU website at <a href="http://piu.am/safeguards.asp">http://piu.am/safeguards.asp</a>; printed copies were shared with the local government bodies of all the affected communities in November 2015 and December 2015. In addition to the public consultation meetings, information about the Project has been disseminated widely in public areas of the Garni community through posters, brochures, and a booklet of frequently asked questions. All of these</p>

No.	Claim	Response
	<p>Governor of Kotayk Province and the provincial chief of staff came to Garni. Local residents were quite angered and the officials weren't able to register false facts regarding the meeting. Irritated by what had happened, residents didn't allow the next public hearing to take place in Garni. They closed the state road between Garni and Yerevan.</p> <p>The Water Sector PIO State Agency organized a discussion regarding a report on the environmental and social impact of the Kaghtsrashen Gravity Irrigation System project on January 22 in Yerevan. According to a statement published in the <i>Republic of Armenia</i> daily newspaper, the discussion was to have taken place at 11 a.m. However, employees of the Water Resources PIO started the discussion at 9:30 a.m. Participating were the village mayors of the 12 impacted Ararat Province communities, along with the Garni mayor (the target community) and employees of the Water Users' Association. The discussion ended at 10:40 a.m. and was filmed by Armenian Public TV and the public affairs division of the Water Sector PIO. The World Bank's project specialist also hadn't been informed about this.</p> <p>Those interested in the Kaghtsrashen Gravity Irrigation project – Garni village residents, environmental citizens and reporters showed up at 11 a.m., the time that had been declared. Bowing to their demands, the hearing organizers were forced to restart the discussion and take questions. A segment of those who had already left the auditorium, including the mayors of the beneficiary communities, and residents who accompanied them, and the Garni mayor, returned and took part in the discussion. Those in attendance again raised their concerns regarding the project, but discussion organizers were unable to provide answers. There are two news reports and two videos regarding the January 22 the discussion on the environmental and social impact study findings for the Kaghtsrashen Gravity Irrigation System project.</p>	<p>materials include details on the Project grievance redress mechanism. This is described extensively in the Aide Memoire from March 2016.</p> <p>Management notes that a handful of individuals has been extremely vocal on these issues. To better understand the perspective of the broader Garni community, a series of six FGDs and 3 in-depth interviews were held with various Garni community members during the month of December 2015. The FGDs included all landowners of plots along the gorge in proximity to prospective construction, dedicated discussions with farmers from the Garni WUA selected at random, and Garni residents (non-farmers), also selected at random. The purpose of these discussions was to (a) give additional opportunity to a diverse range of Garni residents to voice any potential concerns with the Project, and (b) complement the awareness raising efforts on environmental and social commitments of the Project. During the FGDs questions and concerns of participants were able to be addressed directly and holistically, in a calmer and more constructive environment as compared to that of public consultations (although the FGDs were not a substitute for public consultations). FGDs have demonstrated that the negative attitudes to the Project expressed by some community members, are not representative of the broader community. The attitudes of most participants became positive once clarifications were provided (including with respect to contractual requirements for compensation in the event of damages to one's land for those residents in the construction area).</p> <p><b><i>A meeting with CSOs and Garni residents was organized at the World Bank office in Yerevan in March 2016.</i></b></p> <p>This meeting followed up on a complaint letter submitted to the World Bank Armenia Country Manager in February 2016, to which a written response was also sent. During this meeting, the Bank team took the opportunity to discuss two specific concerns expressed by the community and CSOs: (a) a question as to which public consultation the World Bank would consider as the official one for the purpose of the Kaghtsrashen scheme ESIA (the response was that the World Bank takes all public consultations in account; minutes from all have been attached to the ESIA document disclosed online); and (b) proposals for three alternatives to the Kaghtsrashen gravity scheme (constructing a solar energy station, replacing and modernizing pumps, and constructing new reservoirs in the area). The technical viability and cost of each of these alternatives was</p>

No.	Claim	Response
		<p>discussed during this meeting. The Bank team explained why these alternatives are not superior to the current plan. The minutes and video recording of this meeting are on file.</p> <p><b><i>A complete list of efforts to improve public information on, and respond to citizen's concerns with regard to, the Kaghtsrashen gravity scheme is included in Annex 4.</i></b></p> <p>Management understands from the Notice of Registration that the Requesters allege that “community members were intimidated, forced to attend public meetings on the Project and told not to complain.” These are serious allegations that have never been brought to the Bank’s attention and Bank consultants who have participated as observers in some of the public consultations have not witnessed such incidents of intimidation or coercion to participate in consultation meetings. Management notes that on at least one occasion, recorded on video, Requesters led a group of people blocking the road to the public consultations venue to stop community members from participating.</p>
6.	<p>The expenditure procedure for the project was also far from transparent. The website of the “<u>Water Sector Projects Implementation Unit</u>” hadn’t published the contract with the contractor regarding expenditures and only did so after our official inquiry. By theta time, the contractor had already started work in the gorge.</p>	<p>This has since been corrected and the contract is now published.</p>
7.	<p>The project case file is not complete. Absent is the Azat River water usage permit. This document should have been issued by the Ministry of Nature Protection. Work on the project was started without this permit.</p>	<p>The Ministry of Nature Protection will be issuing the permit in the coming weeks. This permit is required to be issued before the gravity scheme may be <b><i>operated</i></b>.</p>
8.	<p><b>Previous Efforts to Resolve the Complaint</b></p> <p>A) On March 18, 2015, the population of Garni (some 2,000 residents) issued an open letter to Armenian President SerzhSargsyan that was published in the internet news site <u>Hetq</u>.</p> <p>B) On February 5, 2015, residents of Garni and the heads of six NGOs forwarded a complaint to Laura Bailey, World Bank Country Manager in Armenia, and to World Bank water resources expert Winston Yu. They demanded that a new discussion on the issue be organized and that water sector specialists, physicists and geographers attend so that, finally, substantiations be provided for those proposals that have been raised in meetings for over one year.</p>	<p><b><i>Management was not able to obtain the referenced letter which allegedly includes 2,000 signatures to the President. Though the letter is frequently referred to by the Requesters, it could never be shared and Management was not able to obtain it despite inquiries.</i></b></p> <p>Over the last two years, the PIU has made great efforts to address many concerns (raised specifically by the person who submitted the Request). Specific actions are listed in Annex 4</p> <p>The Bank team and PIU met with representatives from several civil society organizations – including the Requester, journalist from Heqt, the coordinator of the Pan-Armenian Environmental Front, the head of Ecolur nongovernmental organization (NGO), and the Human Rights Center NGO – following a letter submitted to the Bank. Four members from Garni community were also in</p>



No.	Claim	Response
	<p>On March 11, 2016, at the World Bank's Yerevan office, World Bank Senior Water Resources Specialist Winston Yu and other experts attended a discussion focusing on the efficacy of the Kaghtsrashen Gravity Irrigation System project and alternatives to drawing water from the Azat River. Garni residents and environmentalists substantiated their claim that there isn't sufficient water in the river, especially during the summer months, and that this prevents any gravity irrigation system from working. If the project goes ahead, the Azat River would dry up completely and the picturesque gorge itself would become a wasteland. The Azat River flows into the Azat reservoir. It was proposed that in order to reduce the costs associated with operating the pumps, alternative sources of energy be looked into. During the discussion, World Bank employees said that they would study the proposals with the government but that the final decision rests with the government.</p> <p>The Armenian government has yet to respond to the proposals made during this discussion and on April 2, 2016 work in the Azat Gorge begun, to the surprise of many. After this, Garni residents blocked the Yerevan-Garni roadway on two occasions. The second time, residents closed the road for nine hours and forced authorities to remove construction equipment from the gorge. Work has temporarily been halted but there is no official decision on the matter.</p>	<p>attendance. The focus of the conversation initially was on the contents of the letter, i.e., an explanation of the Bank's perspective on the January 22 public ESIA consultations and three proposed alternative projects (reservoir storage, new pumps, solar pumps) to the Kaghtsrashen scheme. The Bank team explained that the main principle of the public consultations is to give an opportunity to anyone to provide feedback on the draft ESIA. From this perspective, the Bank team considers that ample opportunity has been given, and additional feedback may continue using the Project grievance redress mechanism. Regarding the three alternatives to the Project brought up by CSOs, the Bank team discussed each. Building new storage is a very expensive option (current estimates for Yevghard reservoir are almost \$300 million for 90 million m<sup>3</sup>) and can be problematic from the environmental and social perspectives. New pumps face the problem of (a) requiring more energy than is currently being utilized to meet the requirements for 1200 ha, (b) interrupted supplies, and (c) inability to address water losses (in terms of both evaporation and the poor condition of infrastructure). Moreover, replacement of pumps does not solve the Government problem of reducing dependency of the agriculture sector on energy. Finally, solar pumps would be an expensive option considering that over 3 MW would be required to generate almost 200 m of head. Several other topics came up during this discussion (e.g., distrust of data, concerns that the current PM has irrigated lands in the beneficiary community, questions on how the investment was selected), including broader water and governance concerns beyond the scope of the Project. The Bank team proposed that a national "dialogue" on water be convened/revived as a forum to discuss these broader issues with Government, CSOs, and donor participation; this proposal was met with support. The full minutes of this meeting are on file (including a video of the entire exchange).</p> <p>Finally, the Bank team made clear during this meeting that this is a Government implemented Project and as such, provided that the proper procedures have been undertaken and are satisfactory to the Bank, the Bank grants its "no objection" to the Government to move forward. The Bank team also clarified to the group that the proposals put forward are not technically or economically superior to the current proposed Kaghtsrashen scheme for the development objectives as stated. There was no agreement that the Bank would study the proposals further.</p>

No.	Claim	Response
9.	<p>Given that the Azat River empties into the Azat Reservoir, from which water is supplied to villages in the Ararat Province, it has been proposed that:</p> <p>1 – Build a solar electric station or wind turbines and use the energy to force water from the reservoir. This would be more cost-effective and environmentally friendly given that the surplus energy, after the irrigation period, could be sold, bringing in additional benefits to the entrepreneurs involved.</p> <p>2 – Replace the 50-year-old pump stations with modern, energy-efficient pumps designed for the current water levels.</p> <p>3 – Build new reservoirs on that site (this is the proposal of the experts) that would store the water flowing into the Azat River and use it for irrigation.</p> <p>4 – It is necessary to conduct 5 year measurements in the Azat River to obtain credible water flow statistics and only after to discuss the project’s usefulness. (During the past ten years, the Azat Reservoir has only filled up three times)</p>	<p>See Item 8 above. Each of these proposals was discussed.</p>
10.	<p>The extremely low water level in the river isn’t enough to irrigate the lands of one or two villages. Residents and the public believe that only the lands owned by Armenian Prime Minister Hovik Abrahamyan, located in the villages of Narek and Kaghtsrashen, will be irrigated by the gravity-fed method. Most believe that this is the only reason why the project was drafted in the first place. The prime minister owns 120 hectares in Narek and 80 in Kaghtsrashen. Hovik Abrahamyan’s lands are irrigated from a separate pumping station and, since water is scarce, the concern is that the water being gravity-fed to Kaghtsrashen will merely replace his pumping station.</p>	<p>Management notes that the Project was prepared in 2012-2013, under a previous government, when the current Prime Minister was not in power. Secondly, as previously noted, the Project will change only the mode by which the same amount of water will be abstracted. The savings in electricity that the Project will generate will not benefit any individual but the country as a whole.</p> <p>Following citizens’ protests in late May and early June 2016, the Government has announced that it will re-examine the proposed schemes to consider possible compromise solutions. Management notes that alternatives have been reviewed in the past, and while such compromise solutions could be technically feasible and economically viable, they would be inferior to the current design and significantly diminish the potential energy savings.. Management currently awaits a formal communication from the Government on how it wishes to proceed with the two schemes. Pending this, the associated works have been put on hold.</p>

**ANNEX 3:  
WATER BALANCE TABLES**

**Table A3.1 – Water Balance for the Geghardalich Project**

*After the Project*

Month	Karmir River flow	Water use above the canal		Environmental flow	Calculated flow at the derivation canal point	Inflow from the small rivers of Geghardalich watershed	(1) Flow available for use from Karmir	(2) Irrigation water demand for 1448 ha	(3) Inflow to reservoir	(4) Outflow from the reservoir	(5) Reservoir volume at the end of the month
		Irrigation	Drinking-communal								
January	0.80	0.00	0.158	0.15	0.492	0.00	0.492	0.000	0.00	0.00	0.06 <sup>22</sup>
February	0.70	0.00	0.158	0.15	0.392	0.00	0.392	0.000	0.00	0.00	0.06
March	0.86	0.00	0.158	0.15	0.552	0.01	0.562	0.000	0.01	0.00	0.07
April	1.42	0.00	0.158	0.15	1.112	0.08	1.192	0.000	1.19	0.00	1.262
May	2.68	0.30	0.158	0.15	2.072	0.15	2.222	0.119	2.22	0.12	3.365
June	1.94	0.40	0.158	0.15	1.232	0.10	1.332	1.208	0.88	1.21	3.037
July	1.04	0.60	0.158	0.15	0.132	0.09	0.222	1.563	0.09	1.56	1.564
August	0.86	0.50	0.158	0.15	0.052	0.02	0.072	1.190	0.02	1.19	0.394
September	0.83	0.37	0.158	0.15	0.152	0.02	0.172	0.354	0.02	0.35	0.060
October	0.83	0.23	0.158	0.15	0.292	0.00	0.292	0.000	0.00	0.00	0.060
November	0.78	0.00	0.158	0.15	0.472	0.00	0.472	0.000	0.00	0.00	0.060
December	0.83	0.00	0.158	0.15	0.522	0.00	0.522	0.000	0.00	0.00	0.060
<b>Annual</b>	<b>13.57</b>	<b>2.40</b>	<b>1.896</b>	<b>1.80</b>	<b>7.474</b>	<b>0.47</b>	<b>7.944</b>	<b>4.434</b>	<b>4.434</b>	<b>4.434</b>	

(1) This is the flow available from the Karmir River after environmental flow and other uses have been accounted for

(2) This represents the total demand covering 1448 ha and the irrigation requirement of 4.4 million m<sup>3</sup>

(3) and (4) represent the inflow and outflow from the reservoir respectively.

(5) The reservoir volume for month (t) = reservoir volume for month (t-1) + inflow to reservoir (t) – outflow to reservoir (t)

*The main point is that the outflows of the reservoir (4) are sufficient to meet the irrigation demands (2)*

<sup>22</sup>) Inactive or “dead” storage of the reservoir.

**Table A3.2 - Water Balance for the Kaghtsrashen Scheme**  
(Water-economic balance of Azat River sub-basin for 50 percent probability of occurrence, mln m<sup>3</sup>)

Months	Calculated flow at confluence of two rivers	Drinking water abstraction by Yerevan Djur	Unpermitted irrigation of 60 ha	Actual flow at the head structure	Other irrigation uses downstream of the head structure	Environmental flow	Withdrawal by Geghardir-Hatzavan pump station	Available for use	Kaghtsrashen scheme irrigation water demand	Covering the demand		Remaining in the river, including the environmental flow
										From river	Deficit	
Jan	10.33	4.10	0.00	6.23	0.00	2.23	0.00	4.00	0.00	0.00	0.00	6.23
Feb	10.30	4.10	0.00	6.20	0.00	2.23	0.00	3.97	0.00	0.00	0.00	6.20
Mar	10.43	4.10	0.00	6.33	0.00	2.23	0.00	4.09	0.00	0.00	0.00	6.33
Apr	26.50	4.10	0.00	22.40	0.00	2.23	0.03	20.14	1.10	1.10	0.00	21.27
May	29.05	4.10	0.00	24.95	0.00	2.23	0.03	22.69	1.66	1.66	0.00	23.26
Jun	28.21	4.10	0.08	24.03	0.02	2.23	0.03	21.74	2.26	2.26	0.00	21.72
Jul	11.02	4.10	0.13	6.80	0.03	2.23	0.03	4.50	2.55	2.55	0.00	4.19
Aug	8.99	4.10	0.13	4.77	0.03	2.23	0.03	2.47	2.47	2.47	0.00	2.23
Sep	9.27	4.10	0.06	5.11	0.02	2.23	0.03	2.83	1.34	1.34	0.00	3.72
Oct	9.20	4.10	0.00	5.10	0.00	2.23	0.03	2.84	0.60	0.60	0.00	4.47
Nov	10.54	4.10	0.00	6.44	0.00	2.23	0.00	4.21	0.00	0.00	0.00	6.44
Dec	9.73	4.10	0.00	5.63	0.00	2.23	0.00	3.40	0.00	0.00	0.00	5.63
<b>Annual</b>	<b>173.58</b>	<b>49.20</b>	<b>0.40</b>	<b>123.99</b>	<b>0.10</b>	<b>26.81</b>	<b>0.21</b>	<b>96.87</b>	<b>11.98</b>	<b>11.98</b>	<b>0.00</b>	<b>111.70</b>

(Water-economic balance of Azat River sub-basin for 75 percent probability of occurrence, mln m<sup>3</sup>)

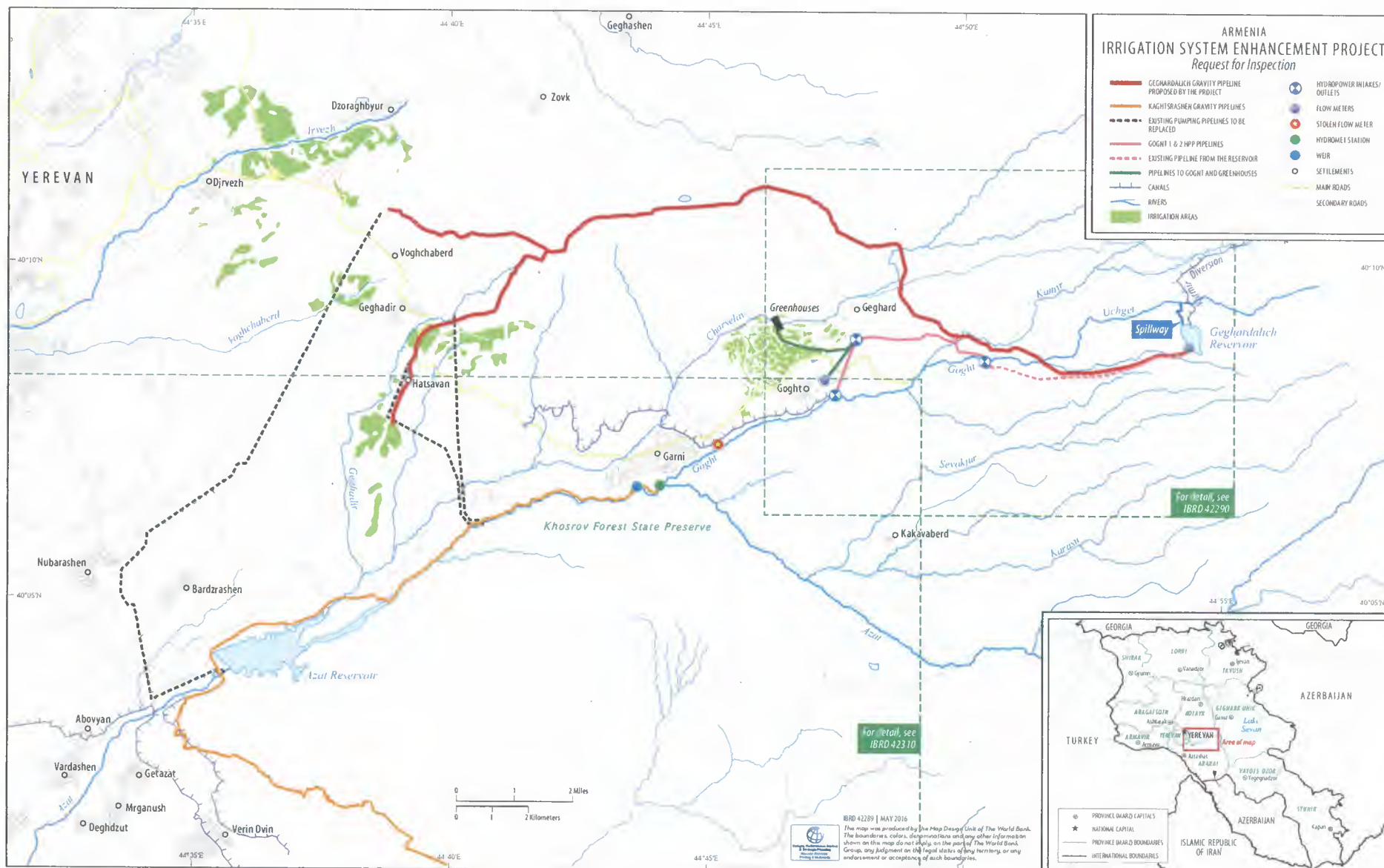
Months	Calculated flow at confluence of two rivers	Drinking water abstraction by Yerevan Djur	Unpermitted irrigation of 60 ha	Actual flow at the head structure	Other irrigation uses downstream of the head structure	Environmental flow	Withdrawal by Geghardir-Hatzavan pump station	Available for use	Kaghtsrashen scheme irrigation water demand	Covering the demand		Remaining in the river, including the environmental flow
										From river	Deficit	
Jan	10.02	4.10	0.00	5.92	0.00	2.23	0.00	3.69	0.00	0.00	0.00	5.92
Feb	10.36	4.10	0.00	6.26	0.00	2.23	0.00	4.03	0.00	0.00	0.00	6.26
Mar	10.13	4.10	0.00	6.03	0.00	2.23	0.00	3.80	0.00	0.00	0.00	6.03
Apr	12.90	4.10	0.00	8.80	0.00	2.23	0.03	6.54	1.10	1.10	0.00	7.67
May	33.46	4.10	0.00	29.36	0.00	2.23	0.03	27.10	1.66	1.66	0.00	27.68
Jun	25.54	4.10	0.08	21.36	0.02	2.23	0.03	19.07	2.26	2.26	0.00	19.04
Jul	9.32	4.10	0.11	5.11	0.03	2.23	0.02	2.83	2.29	2.29	0.00	2.78
Aug	8.20	4.10	0.11	3.99	0.03	2.23	0.02	1.71	1.97	1.71	<b>0.26*</b>	2.23
Sep	7.79	4.10	0.06	3.63	0.02	2.23	0.03	1.35	1.34	1.34	0.00	2.24
Oct	7.85	4.10	0.00	3.75	0.00	2.23	0.03	1.49	0.60	0.60	0.00	3.12
Nov	7.65	4.10	0.00	3.55	0.00	2.23	0.00	1.32	0.00	0.00	0.00	3.55
Dec	9.24	4.10	0.00	5.14	0.00	2.23	0.00	2.91	0.00	0.00	0.00	5.14
<b>Annual</b>	<b>152.46</b>	<b>49.20</b>	<b>0.36</b>	<b>102.91</b>	<b>0.09</b>	<b>26.81</b>	<b>0.19</b>	<b>75.82</b>	<b>11.22</b>	10.96	0.26	91.66

\* In the case of a 75 percent year, the environmental flow requirement will be met first before serving the irrigated areas

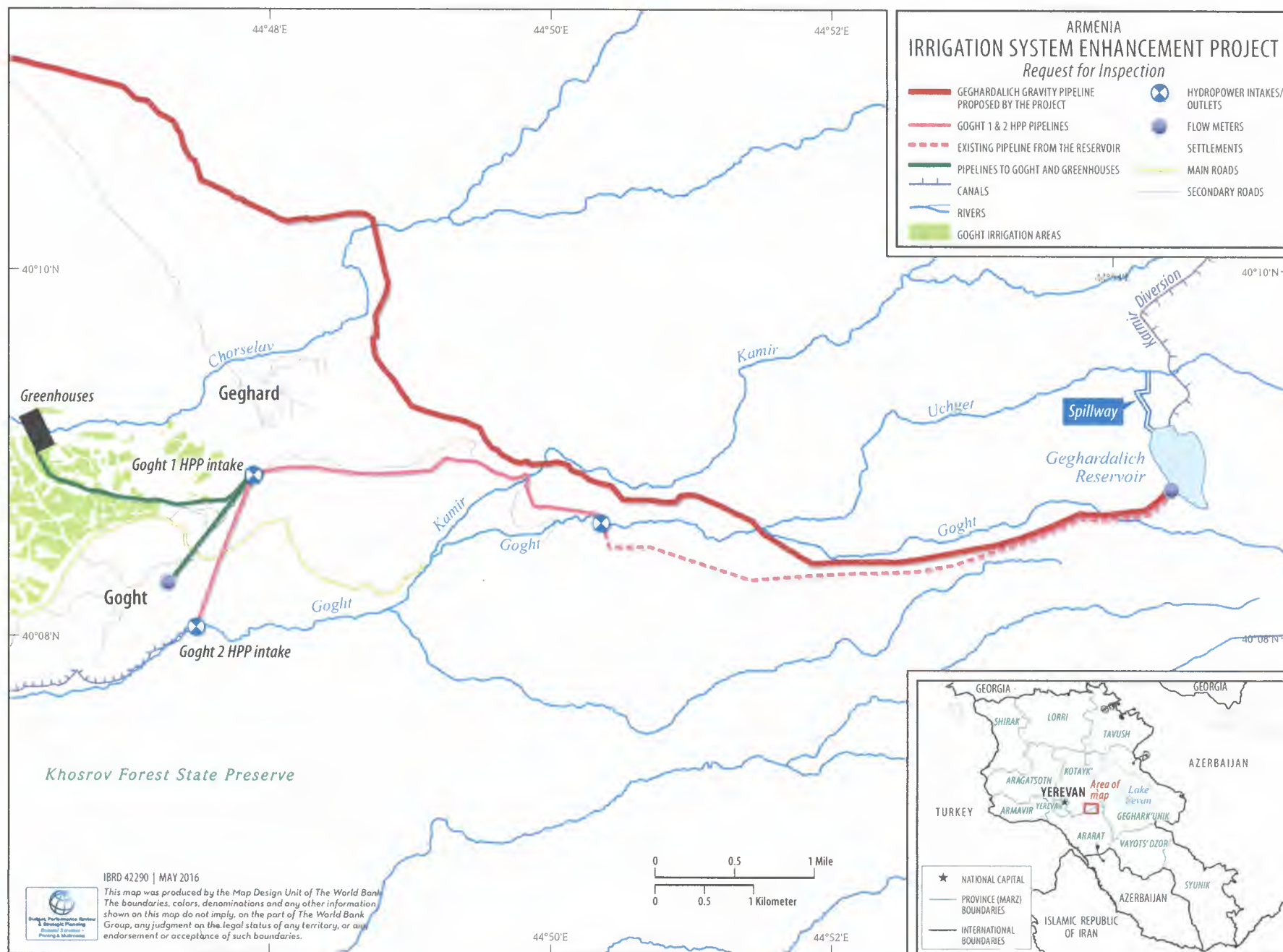
**ANNEX 4. ACTIVITIES UNDERTAKEN BY PIU  
TO ADDRESS GARNI STAKEHOLDER CONCERNS**

<b>Concern of the community</b>	<b>Measure undertaken by the PIU</b>	<b>Date</b>
Water availability issue in Garni (e.g., Garni WUA required to take less irrigation water per its permit to maintain flows to the Kaghtsrashen scheme)	Rehabilitation of the Garni canal will be taken up under the EDB irrigation project. This will enhance the availability to Garni which is upstream of the Kaghtsrashen scheme.	Ongoing
Lack of trust in hydrological measurement and calculations	Over a dozen demonstration measurements at Azat-Garni hydrological post, just upstream of the headwater structure, with participation of Garni residents. Data is on the PIU website. <i>When the measurement device is installed at the weir, there is the plan to disseminate water level measurements.</i>	March-August 2015
Mistrust in the defined environmental flow and lack of knowledge on the environmental flow methodology	Interview of the author of the environmental flow methodology in Armenia provided to Requester (journalist from Garni community and one of the main activists involved)	April 9, 2015
Inadequate quality of water in Azat River for irrigation purposes	Water quality sampling and analysis of 63 parameters by the Environmental Impact Monitoring Centre of the Ministry of Nature Protection of Armenia at the weir with participation of Garni residents	June 9, 2015
Inappropriate location of the weir and proposal to move it downstream	Meeting with participation of the Garni community residents at the office of the Consultant to show the impossibility of moving the weir downstream	April 21, 2015
	Field trip through the entire route of the future pipeline with GPS measurements of the altitudes to show the impossibility of moving the weir downstream	June 3, 2015
Possible negative impact on the nature of the Azat Gorge	Several proposals have been discussed with PIU to enhance the nature of the Azat Gorge. These include the possibility of (a) regular clean-up activities in the gorge, (b) tree planting downstream of the weir, and (c) making three small pavilions near the weir structure for the residents of Garni. The Bank team is in discussion with the PIU (and the Mayor) on what may be done, noting that there is a Bank project in the gorge whereby the road will be repaired.	Ongoing
Maintaining and enforcing the environmental flow requirement (and as a priority over irrigation)	The design of the weir is such that the outlets for the environmental flow are set lower than the outlets for the irrigation offtakes. This design is also a reflection of Armenian	Ongoing

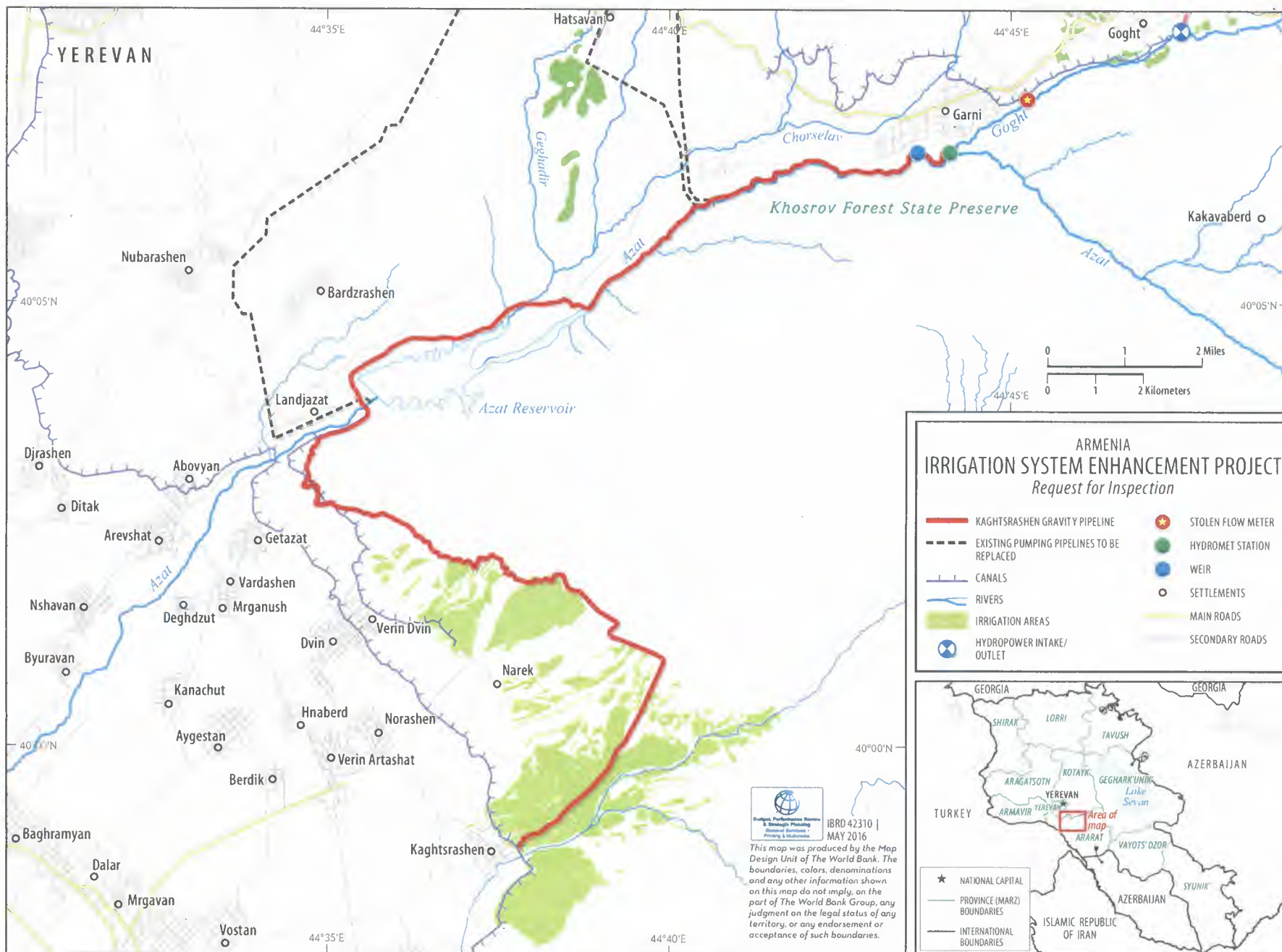
Concern of the community	Measure undertaken by the PIU	Date
	legislation, which prioritizes the environmental flow over other uses. Monitoring will be introduced at the weir to ensure compliance and community oversight	
Concerns over impact on tourism during construction and with reduced environmental flows	PIU will continue to examine potential amenities that can be provided to enhance the aesthetic aspects along the river. Engineering solutions were discussed as well, including the possibility to introduce a monument or cultural asset at the weir to enhance the public features of the weir to attract people.	Ongoing
Concern over four nearby proposed natural monuments	PIU sent a letter to the Minister of Ministry of Nature Protection to get clarification on this. These are yet to be formalized and the survey work will not begin till 2019. However, the Ministry has given its clearance on the environmental assessments for this sub-project. The larger Stone Symphony site is upstream, over 1 km away. There are no anticipated impacts on any of these.	Completed
Competition over water resources amongst WUAs	The SCWS will need to work with the State Environment Inspectorate to review the illegal over-abstraction to make a decision on the remedy	Ongoing
Additional proposals put forward in lieu of the gravity irrigation scheme (e.g., dam, new pumps, solar pumps)	Analysis prepared by PIU to demonstrate why a gravity scheme is superior to alternative proposals	Discussed at CSO meeting March 2016

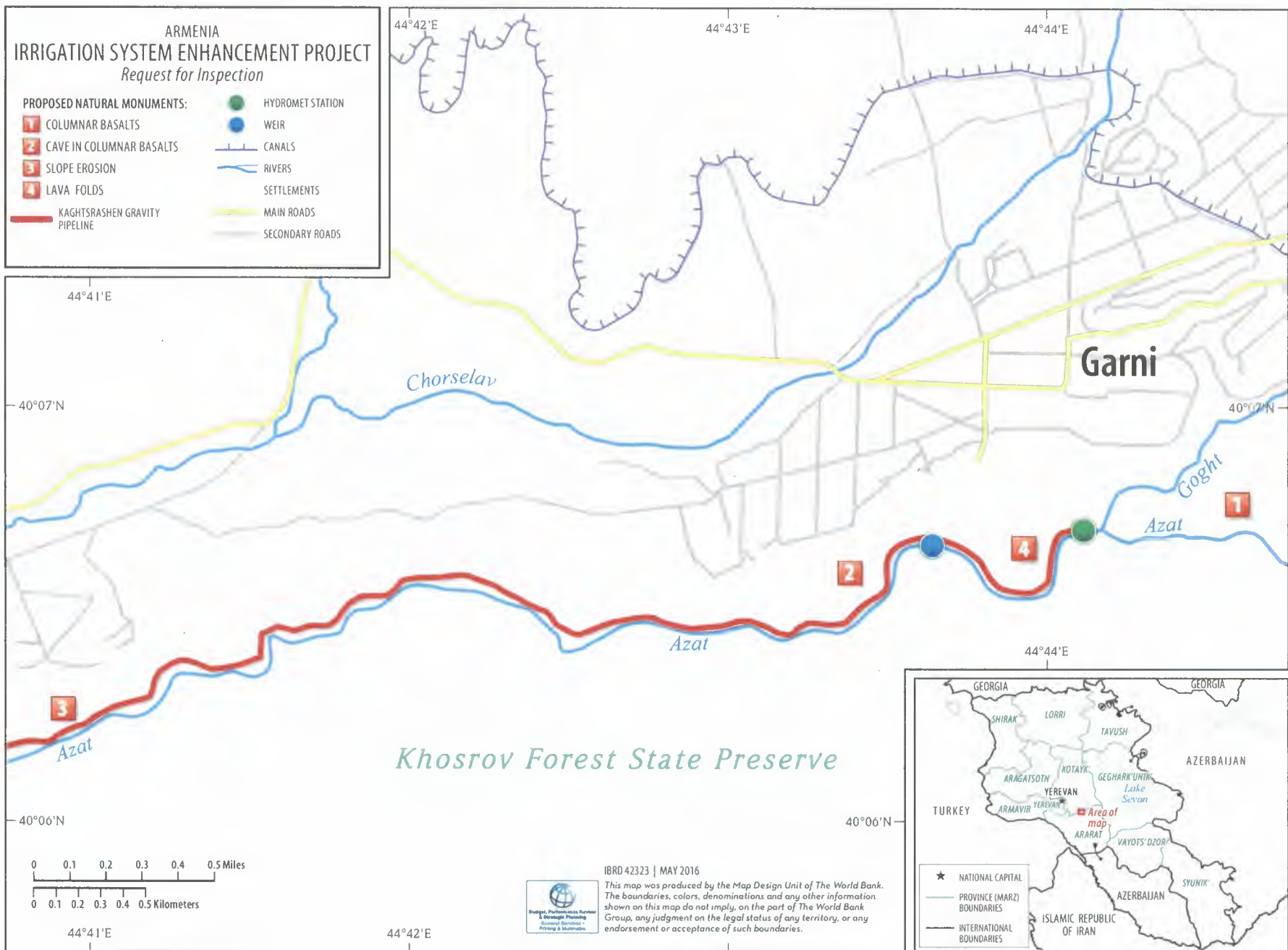












## **Annex IV**

### **Management Update on Decision of Government of Armenia**



## **Armenia Irrigation System Enhancement Project Update on Decision of Government of Armenia**

### **Background**

1. ***Bank Management has been informed by the Government of Armenia that it has decided to significantly modify the design of the two schemes that are the subject of the Request for Inspection.*** Given the nature of the proposed design changes, the Bank will need to reappraise the two schemes in question with regard to technical and economic viability, as well as potential environmental and social impacts that may result from the design changes. Based on that reappraisal, the Bank will need to decide whether the new design could be supported by the project. The new design would in any event require a project restructuring.

2. Following a visit by the Prime Minister to the Garni community on May 21, 2016, all works (which were only in the initial phases) were temporarily suspended. The Government explored potential compromises to the Kaghtsrashen and Geghardlich schemes that would address the concerns raised by the communities. Compromises have been identified for each scheme after discussions with members of both communities, and a press release by the Government was issued on June 23, 2016.<sup>1</sup> Civil works have resumed only on those sections of the two sub-projects where there were no controversies.

3. Management notes that the redesign of the two schemes as decided by the Government would address the issues of concern raised in the Request for Inspection. Management also notes that although the Bank team had looked at similar proposed design changes during project preparation, it was not appropriate to examine them as “alternatives” as they would not have fulfilled the project’s original purpose of energy-free irrigation.

### ***Kaghtsrashen Scheme***

4. After deliberation with community leaders on the Kaghtsrashen scheme, the Government has decided to no longer build a new weir structure in the Azat River to divert irrigation water via gravity. As a compromise, an existing weir structure that is 5 km downstream of the original proposed location will be used. However, due to the loss in elevation at the new proposed offtake site, new pumps will need to be introduced at this location to provide the required irrigation pressure to make the scheme function. Thus, the scheme continues to depend on energy to deliver irrigation water to the beneficiary communities. The energy consumed will likely be less than under the no-project scenario, and preliminary analysis by the team indicates that the scheme could still generate a positive economic rate of return.<sup>2</sup> This is due to the estimated agriculture benefits, which remains unchanged, in addition to the cost savings realized by not building a weir. Detailed

---

<sup>1</sup> The proposed design changes were sent to the regional municipality of Kotayk, and the Garni and Gogt communities, where it was discussed and adopted by the village councils. Meetings were organized with activists from both communities after the press release was issued; in particular, visits and discussions were held with the activists of the Gogt community on site at the Gegardlich reservoir area. The relevant specialists of the PIU and design consultant, the governor of Gogt, a group of activists, and the responsible officer for the Gegardlich Reservoir from Sevan-Hrazdan WSA were present at the meeting.

<sup>2</sup> Based on preliminary assessments this compromise solution would use around 4 million kWh annually.

documentation for the new pumps to be added is under preparation. Meanwhile, works have resumed on the remainder of the irrigation pipeline, which is not the subject of any controversy, and which would operate independently of the intake structure location and technology.

5. It is important to note that this compromise solution for the project design represents a significant change to the scheme, which originally aimed to remove energy usage in the delivery of irrigation waters to farmers altogether. Management notes that while such compromise design may still be feasible and viable, it will remain inferior to the original design. However, Management notes the Government's desire to address the alleged impacts by not building the proposed weir (e.g., environmental concerns, water supply to Garni, and tourism).

### ***Geghardlich Scheme***

6. For the Geghardlich scheme, the Government decided to include an additional subsidiary canal (Gilanlar) to supplement flows into the Geghardlich reservoir. This was originally proposed by the Requesters. This subsidiary canal would capture seasonal runoff from a nearby gully and divert it to the reservoir. Though not needed from the technical perspective, since the water availability is sufficient to cover the demands of both communities, this additional canal will add an extra source of water to the reservoir and thus further reduce the risks associated with drought periods to all beneficiaries of the dam. Management notes that the subsidiary canal represents additional infrastructure, the potential environmental and social impacts of which will need to be reviewed as part of the EA. Works have resumed on the remainder of the scheme where there have been no controversies.

### **Next Steps**

7. ***The above changes to the two schemes result in a different sub-project design than originally appraised by the Bank.*** As such, the schemes need to be reappraised; if it is determined that they can be supported under the project, from a technical, economic, environmental and social point of view, the project will need to be restructured. For the Kaghtsrashen scheme, the energy saving targets for the project will need to be updated, given that the original targets can no longer be met. Moreover, the procurement of pumps (which previously were not part of the design) will need to be added and tendered. For the Geghardlich scheme, detailed drawings and analysis for the proposed new Gilanlar canal are under preparation and will need to be reviewed by the Bank, including an update of the EA to cover the potential environmental and social impacts of the canal and its construction.

8. Over the next few months (July/August 2016), consultants will be mobilized to the sites to confirm the team's preliminary understanding of the technical details. A variety of information will need to be collected during this period and analyzed (e.g., land cadaster, detailed pump rating and cost information, hydrologic information). Bank Management expects that by September/October 2016, all technical details will be prepared and available for Bank review. A supervision mission planned for October/November 2016 will then undertake the reappraisal of these new schemes, which will be documented. This reappraisal will also include continued consultations with affected communities and stakeholders on the compromise solutions. Further actions may also be identified during the mission to ensure the sustainability of these solutions and

July 5, 2016

community participation in their monitoring. Finally, the results of this mission may lay the foundation for a project restructuring to be processed by the team. Official correspondence from the Government would be required to initiate the restructuring process. Overall, Management expects that the reappraisal and restructuring could be completed by April 2017, assuming the Bank decides that these new designs can be supported under the project.