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| **E4152v3**  **Supply and Installation of Surface and Subsurface Facilities, Water Supply and Brine**  **Discharge Pipelines, Energy Transmission Line (ETL), Access Road, Pump Stations, Water Storage Tanks, and Cavern Leaching**  **of**  **Tuz Gölü Underground Natural Gas Storage Project** | | | | | | | | | | |
| 0 | ..-..-.. | Issued for Approval | | | B.K. / B.E. | Z.H.G. | | M.Ş. | | C.A. / H.A. |
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| C | 28-12-12 | Issued for review | | | B.K. / B.E. | Z.H.G. | | M.Ş. | |  |
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| A | 10-12-12 | Discipline internal check | | | B.K. / B.E. | Z.H.G. | | M.Ş. | |  |
| Rev.No. | Date | Description | | | Prepared | Checked | | Approved | | BOTAS |
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| **SIGNITURE** | | | | |
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| Açıklama: botas_3e_bolunecek_igdas_ozellestirilecek_h3762 | | | **BOTAŞ – PETROLEUM PIPELINE CORPORATION** | | | | | | | |
| **CINAR ENGINEERING CONSULTANCY INC.** | | | Document Title | | | | | | | |
| **TUZ GÖLÜ UNDERGROUND NATURAL GAS STORAGE PROJECT**  **ENVIRONMENTAL MANAGEMENT PLAN** | | | | | | | |
| Document No. | | | | | | Rev. No. | Total pages (without attachments ) |
| Org. Code | Doc. Type | Disc. Code | Geog. Area | Ser. No. | |  |  |
| **CNR** | **PLN** | **ENM** | **EMP** | **13/002** | | **D** | **48** |

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**LIST OF ABBREVIATION**

**EIA :** Environmental Impact Assessment

**EMP :** Environmental Management Plan

**BOTAS :** BOTAS Petroleum Pipeline Corporation

**CINAR :** Cınar Engineering and Consultancy Inc.

**ETL :** Energy Transmission Line

**MoEU :** Ministry of Environment & Urbanization

**ENAMR :** Environmental Noise Assessment and Management Regulation

**WWTP :** Wastewater Treatment Plant

**BOD :** The five-day Biochemical Oxygen Demand

**COD :** Chemical Oxygen Demand

**SS :** Suspended Solids

**SPM :** Suspended Particulate Matter

**SPL :** Sound Pressure Level

**dBA :** Decibel

# A. MITIGATION PLAN

| **Phase** | **Issue** | | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CONSTRUCTION** | | | | | | | |
| **PIPELINE and SURFACE FACILITIES**  Water Supply  Brine Discharge Natural Gas Branch Line | Excavation | * Excavation material will be re-used for trench backfilling and land restoration * Backfilling will take place at the end of each day in order to ensure that there are not open trenches that pose a safety hazard during the night. * The vegetative topsoil will be stored properly (by protecting with geotext or membrane against soil loss related to precipitation) and used for revegetation and landscaping. | | Minor | Construction Contractor | During Construction |  |
| Dust generation due to excavation, material storage, handling and transport | * Excavated material will be protected from wind and rain (e.g. using nylon covers and compaction with binding materials) * All transportation vehicles that will carry excavation material will be covered * The speed of the vehicles will be restricted with 30 km/hour on unpaved roads. * Any exposed dust prone areas (e.g. roads) will be regularly watered (particularly during hot, dry, windy weather conditions). | | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | | **Responsibility** | **Start**  **Date** | | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | | | |
|  | Solid waste generation at worksite | * Domestic solid wastes will be collected and disposed to the official Municipal Solid Waste Disposal area of the nearest municipality. * Construction wastes will be collected and disposed to the official construction dump areas of the nearest municipality. | | | Minor | Construction Contractor | During Construction |  | |

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|  | Wastewater generation at worksite | * Domestic wastewater will be collected and sent to the package wastewater treatment plant. * No industrial wastewater will be generated. * Various wash down waters (only including suspended solids, oil and grease) will be collected via a separate line and sent to the package wastewater treatment plant. * Any hydro test water (containing suspended solids and any coarse material will be discharged to the nearest water body after settling. * Waste/residual oils from oil change of the machinery and vehicles will be stored onsite separately and given to a firm licensed by MoEU (Refer to Annex for the discharge standards given in Water Pollution Control Regulation). | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | |
|  | Noise and vibration due to site preparation and construction activities | * No explosives to be used unless required during the construction activities. Local residents will be informed of any use of explosives at least “5” days before intended use. * The activities that generate noise will be limited with the hours 07:00 am - 07:00 pm. * Noiseless activities will be performed after 07:00 pm and on official holidays with taken the necessary precautions. * Employees will be provided with special helmets, earphones or ear plugs against noise. * The maximum noise levels that workers can be subjected to will not be exceeded during the construction activities[[1]](#footnote-1) | Minor | Construction Contractor | During Construction |  |
|  | Transportation | No access roads will be constructed unless necessary and approved by BOTAŞ. The existing roads will be used to the greatest extent. | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | |
|  | Impacts on flora (due to site clearance) | * In the event that the species protected as per the BERN Conventionand the “Vulnerable” species according to Turkish Red Data Book as are found, they will be managed in strict accordance with the Bern Convention specifications. * The seeds of these species shall be taken and moved to the similar habitats or protected ex-situ in botanic gardens (under the inspection of Monitoring Company, see Section C) and greenhouses under the control of universities. These species, found in the vicinity of the site, shall be clearly marked and in no way be collected, chopped and taken off their roots. * Transplanted plants will be carried immediately next to the construction corridor (RoW, ETL, access roads, etc.) in order to prevent genetic pollution. * Construction activities will be limited to the construction corridor. | Minor | Construction Contractor | During Construction |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | |
|  | Impacts on fauna  (disturbance during the construction activities) | * Decisions of Central Hunting Commission shall be complied with. *(refer to the Annex)* * Construction activities will be limited to the construction corridor*.* * Any rare and endangered species will be managed in accordance with the national or international regulations and treaty requirements * Construction activities will take place during periods when no migratory bird flight are occurring (Since the migratory bird flights occur between March and July, the construction activities of 15 km section of brine discharge pipeline will be carried out during the remaining months of the year. * A fauna expert shall be employed by the Construction Contractor to monitor construction activities. The expert will recommend, as appropriate, and discuss with the Monitoring Company on any mitigation, which may be necessary to bring any observed impacts to acceptable levels. Implementation of any recommended mitigation would only proceed after mutual agreement is reached between Monitoring Company, the Construction Contractor and the Construction Contractor fauna expert. * Details are presented in Annexes | | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | |
|  | Health and safety risks | * Warning signs will be placed in the field against possible work accidents/dangerous conditions * The workers will be equipped with necessary safety equipments (e.g. shatter proof work glasses, protective work shoes, etc.) in accordance with Worker Health and Occupational Safety Act (Official Gazette dated 30.06.2012 and numbered 28339). * The area will be fenced and entrances to and exits from the construction site will be either guarded or locked. * Fencing will include hazard warning signs to alert the public, especially children, of the danger of any open trenches. | Minor | Construction Contractor | During Construction |  |
|  |  | * An emergency response plan will be developed and necessary training will be given. (Just before the construction activity starts. During the detailed design, it will be prepared by Contractor and will be approved by BOTAŞ) |  |  |  |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | |
|  | Handling & usage of explosive/hazardous and toxic materials | * Any explosive material will be kept in locked containers and appropriately labeled. * Fuels to be used by the work machines will be purchased from companies with valid operating permits * If storage is required, then fuels or hazardous liquids will be stored in tanks situated on impermeable (e.g. concrete) surfaces with bund to contain any leaks. * Warning signs will be placed on the storage tanks, etc. | Minor | Construction Contractor | During Construction |  |
|  | Drainage (for surface facilities) | The drainage system will be formed at the base level of the buildings and combined with the grid canals and manholes to be formed in the construction area | Minor | Construction Contractor | During Construction |  |
|  | Impacts on Cultural and Natural Assets | * A cultural expert will monitor the construction activities continuously * Turkish procedures will be followed in case [archaeological remains](http://tureng.com/search/archaeological%20remains) are found by chance (i.e. cease activities, consult with museum authority and protection in situ as required) | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | |
| **ENERGY TRANS MISSION LINE (ETL), ACCESS ROADS, AND**  **PUMP STATION,**  **WATER STORAGE TANK AREAS** | Excavation | * Excavation material will be re-used for trench backfilling and land restoration * Backfilling will take place at the end of each day in order to ensure that there are no open trenches that pose a safety hazard during the night. * The vegetative topsoil will be stored properly (by protecting with nylon covers against soil loss related to precipitation) and used for renegotiation and landscaping. | Minor | Construction Contractor | | During Construction |  |
|  | Dust generation due to excavation, material storage, handling and transport | * Excavated material will be protected from wind and rain (e.g. using nylon covers and compaction with binding materials) * All transportation vehicles that will carry excavation material will be covered * The speed of the vehicles will be restricted to 30 km/hour on unpaved roads. * Any exposed dust prone areas (e.g. roads) will be regularly watered (particularly during hot, dry, windy weather conditions). | Minor | Construction Contractor | | During Construction |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | |
|  | Impacts on flora (due to site clearance) | * During the pylon construction-on the works of excavation, surface soil will be stripped structure remains intact and stored to near to the electricity pylon. * In the event that the species protected as per the BERN Convention and the “Vulnerable” species according to Turkish Red Data Book are found, they will be managed in strict accordance with the Bern Convention specifications. * The seeds of these species shall be taken and moved to the similar habitats or protected ex-situ in botanic gardens (under the inspection of Monitoring Company, see Section C) and greenhouses under the control of universities. These species, found in the vicinity of the site, shall be clearly marked and in no way be collected, chopped and taken off their roots. * Transplanted plants will be carried immediately next to the construction corridor (RoW, ETL, access roads, etc.) in order to prevent genetic pollution. * Construction activities will be limited to the construction corridor. | Minor  Minor | Construction Contractor  Construction Contractor  BOTAŞ | During Construction  During Construction  During Operation |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | |
|  | Impacts on fauna  (disturbance during the construction activities) | * Decisions of Central Hunting Commission shall be complied with. (refer to the Annex) * Construction activities will be limited to the construction corridor. * Any rare and endangered species will be managed in accordance with the national or international regulations and treaty requirements * Construction activities will take place during periods when no migratory bird flight are occurring (Since the migratory bird flights occur between March and July, the construction activities of 15 km section of brine discharge pipeline will be carried out during the remaining months of the year) | Minor | Construction Contractor | During Construction |  |

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| **Phase** | **Issue** | | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | | | |
|  | Impacts on fauna  (disturbance during the construction activities) | | * A fauna expert shall be employed by the Construction Contractor to monitor construction activities. The expert will recommend, as appropriate, and discuss with the Monitoring Company any mitigation, which may be necessary to bring any observed impacts to acceptable levels. Implementation of any recommended mitigation would only proceed after mutual agreement is reached between Monitoring Company, the Construction Contractor and the Construction Contractor’s fauna expert. | Minor | Construction Contractor | | During Construction |  |
|  | Waste generation | | * Domestic solid wastes will be collected and disposed to the Municipal Solid Waste Disposal area of Sultanhanı Municipality. * On ETL route, solid waste is generated due to maintenance and repair works within the TEDAS. Identified damaged materials during the maintenance will be replaced with a new one. Old goods will be stock at storages and then be sold as scrap to the licensed companies. | Minor | Construction Contractor | | During Construction |  |
| **Phase** | **Issue** | | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | | **Start**  **Date** | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | | | |
| **DRILLING ACTIVITIES** | Oily Waste Waters | | * A wastewater pool with an impermeable lining using geo–membrane will be constructed and an oil trap will be placed in the channel entering to the pool in order to separate oil and petroleum from the wastewater. After oil and grease removal, oily residue will be given to a firm licensed by MoEU; remaining water will be used for watering green areas after the analysis were performed. | Minor | Construction Contractor | | During Drilling Activities |  |
|  | Impacts on Groundwater due to leakage of drilling mud fluids | | * Casing will be cemented until reaching the impermeable formation along the drilling section. The drilling operations will be carried out inside this casing. Only water based bentonite clay drilling muds containing no toxic materials will be used. | Minor | Construction Contractor | | During Drilling Activities |  |
|  | Formation Wastes and Drilling Muds | | * Mud pits (lined) will be opened for the temporary storage of the formation wastes and drilling mud and later they will be removed from the area by a firm licensed by MoEU after solidification (drying). * The drilling area and the surrounding of the mud pit will be surrounded with a wire mesh fence and entrance will be locked. Warning signs will be placed at the entrance. | Minor | Construction Contractor | | During Drilling Activities |  |
| **Phase** | | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | | |
| **LEACHING OPERATIONS** | | Sludge from brine settling tanks | * The solid particles (>200 μm) will be collected in settling tanks. The sludge will be removed manually every 15 days and collected with mobile containers and disposed to the approved areas by the regulations. | Minor | Construction Contractor | During  Leaching Operations | |  |
|  | | Impacts of brine discharge on lake water quality | * Discharge location is in unproductive/arid area in terms of ecological characteristics and agricultural activities and no salt production activities exist from the Lake (based on the official maps and field surveys) * It is estimated that the discharge plume will remain within the boundaries of the unproductive area for the complete duration of the leaching operation. The plume will be monitored to assure these estimates are valid. | Minor | Construction Contractor | During  Leaching Operations | |  |
|  | | Impacts of brine discharge on lake surface | * Tuz Gölü which is under the threat of drying up with severe evaporation is envisaged to be positively affected with the discharge of the brine water. Moreover, the brine water will not be directly discharged into Tuz Gölü. In this context, there is no negative impact that will be expected on the lake surface. | Minor | Construction Contractor | During  Leaching Operations | |  |
| **Phase** | | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | | **End**  **Date** |
| **CONSTRUCTION** | | | | | | | | |
|  | | Impacts on the area of discharge point at arid zone of Tuz Gölü | * Because of the fact that discharge location is in unproductive/arid area in terms of ecological characteristics and agricultural activities and the characteristics of the brine water from the leaching activities is the same as that of the receiving water quality (in terms of anion and cation), no negative impact is expected to occur on the current quality of arid zone by the brine discharge water. * It is estimated that the discharge plume will remain within the boundaries of the arid area during the whole leaching operation. The plume and arid area surface will be monitored by soil and water experts to assure these estimates are valid. | Minor | Construction Contractor | During  Leaching Operations | |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **OPERATION** | | | | | | |
|  | Noise  (Pump and Compressors, etc.) | * Installation of silencers to the entry and exit of the cooling fans * Procurement of low sound emanating backup motor, pump and compressors * Limitation of truck transportation merely with hours of daylight if required * Noise levels will be in accordance with Turkish standards (refer to Annex) |  | BOTAŞ | During Operation |  |
| Fire | A fire protection system will be available at site (Fire detectors sensitive to heat, smoke and flame, non-automatic fire extinguishing systems will be available in the site against fire as well) |  | BOTAŞ | During Operation |  |

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| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **OPERATION** | | | | | | |
|  | Accidents and Sabotage | * Parameters such as pressure, temperature and flow rate will be monitored continuously at certain (at well head locations and at line valves.) locations on the line and the caverns, abnormal conditions (i.e. sudden pressure drop) will be reported to the authorities * Line valves sensitive to sudden pressure drops will shut down automatically. |  | BOTAŞ | During Operation |  |
| Health and Safety | Education on;   * Site security * Environmental protection * First aid * Fire fighting * Health and occupational safety * Risk assessment   will be given to the personnel employed. |  | BOTAŞ | During Operation |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **OPERATION** | | | | | | |
|  | Leakage and explosion (pipeline) | In case of leakage of natural gas in closed areas (possibility of ignition and explosion of the accumulated gas cloud), the area will be immediately ventilated in accordance with best international practice (e.g. ventilation fans, sparkles motors) |  | BOTAŞ | During Operation |  | |
|  | Emergency Cases | BOTAŞ, will inform the relevant governorships, municipalities, etc. prior to the commencement of gas storage and send to them the emergency response plans (*refer to EIA Report, Section 8.2.2)* |  | BOTAŞ | During Operation |  | |
|  | Waste generation | * Domestic solid wastes will be collected and disposed to the Municipal Solid Waste Disposal area of Sultanhanı Municipality. * Domestic wastewater will be collected and sent to the package wastewater treatment plant. The discharge water will be used for watering green areas. |  | BOTAŞ | During Operation |  | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **DECOMMISSIONING** | | | | | | |
|  | Site Restoration | * All surface facilities will be disassembled. * All used areas will be cleaned of obstructions posing danger * The caverns, from which all of the stored gas is drawn, will be left being filled with water. Against any crashing possibility, the caverns will be closed in filled condition and the entrance of them will be filled with tapping material and concreted * The left pipelines will be filled and sealed. * All pits, arcs and other surface hollows that are created as the result of disassembly of the surface facilities will be filled (refer to EIA Report Section 6). |  | BOTAŞ | During Decommissioning |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Issue** | **Mitigating**  **Measure** | **Cost of Mitigation**  **(If Substantial)** | **Responsibility** | **Start**  **Date** | **End**  **Date** |
| **DECOMMISSIONING** | | | | | | |
| . | Site Restoration | Recapping of caverns/wells, as defined in article 12(c) of the Petroleum Law, is mandatory as decreed by article 27 of the Regulation Related to Petroleum Exploration on Land and Control of Pollution Resulting from Production Activities (issued on December 28, 1995 by the Petroleum Affairs General Directorate). Based on this regulation, the recapping report related to injection wells, will be presented to Petroleum Affairs General Directorate for approval. |  | BOTAŞ | During Decommissioning  (within 60 days following the re-capping operation). |  |
|  | Rehabilitation Studies | In case of the termination of the activities, the recreational studies will be commenced at the project site immediately after the filling up and leveling of the site within the scope of a landscape program. The site will be afforested in compliance with the surrounding vegetation. |  | BOTAŞ | During Decommissioning |  |

# B. MONITORING PLAN

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
| **Construction of Pipeline and Surface Facilities** | Top soil storage | Top soil storage area to be identified by Contractor and approved by BOTAS prior to use | Visual | Weekly during construction activities |  | Environmental Monitoring Company | During  construction activities |  |
|  | Storage and Disposal of excavated material | Designated disposal areas along the pipeline routes and at Surface Facilities | Visual | Weekly during construction activities |  | Environmental Monitoring Company | During  construction activities |  |
|  | Daily backfilling of trenches | Trench area | Visual | Daily |  | Environmental Monitoring Company | During  construction activities |  |
|  | Covering of vehicles, which carry excavation material | Work site boundaries at the location, where loading will be performed. | Visual | At random, but averaging weekly during construction activities |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Dust Level | Excavation, material storage, handling areas | Visual | Weekly during construction activities. More frequently (2-3 times/week) during hot, dry, windy conditions |  | Environmental Monitoring Company | During  construction activities |  |
|  | Solid Waste  (Collection, storage and disposal) | Work site boundaries  (at the solid waste storage area) | Visual | Initially once a week, if satisfactory subsequently monthly |  | Environmental Monitoring Company | During  construction activities |  |
|  | Domestic wastewater management | In Lab and WWTP (at the discharge side of Wastewater treatment plant) | Visually for leaks  (Sudden decrease in the level) | Weekly |  | Environmental Monitoring Company | During  construction activities |  |
|  | Washing waters management  Suspended solids (ss), oil and grease | At the exit of the washing water treatment area (for ss, oil grease removal) | * Gravimetric analysis for ss * Hexane solubility test for oil and grease | Weekly  initially  then monthly |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Hydro test water disposal  (either settled before discharge for suspended solids and any coarse material removal) | At the hydro test water collection tank prior to discharge | Visual  (not necessary to make physical/chemical analysis) | Before discharge |  | Environmental Monitoring Company | During  construction activities |  |
|  | Waste/residual oils collection and removal | Waste oil containers (either collected separately and removed by firms licensed by MoEU) | Visual | Once a week  Check certification/check validity of license before engaging the firm |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Noise level  dB[A] | Along the pipeline route and surface facilities construction areas | Noise measurements by sound level meter  with  weighting options (constant ,slowly changing noise and impulsive noise)  also measuring sound pressure level (SPL) | During major construction activities and if there are local complaints |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Health and Safety   * Use of equipments   By employees  against noise   * Warning signs * Safety equipments of workers * Adoption of safety rules (for security of site and excavation, scaffold and heavy vehicles, etc) | Work site boundary  Before entering workplace | Visual | Random, but averaging once/week. If violations are observed, frequency will be increased |  | Environmental Monitoring Company | During  construction activities |  |
|  | Work site safety (either fenced and entrance & exit are kept under control and include hazard warning signs to alert the public, especially children, of the danger of any open trenches.) | Work site boundary | Visual | Random, but averaging once/week. If violations are observed, frequency will be increased |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Storage of explosive material (either in locked containers) | Storage area | Visual | Random, but averaging once/week. If violations are observed, frequency will be increased to daily |  | Environmental Monitoring Company | During  construction activities |  |
|  | Storage of fuels or hazardous liquids | Storage tank (either stored in properly designed tanks situated on impermeable surface with bund) | Visual | Before initial use of storage facilities  Monthly check for leaks |  | Environmental Monitoring Company | During  construction activities |  |
|  | Fuel purchase (from the licensed firms) | Before delivery is allowed to fill storage tanks | Visual  (check certification) | Upon arrival at site |  | Environmental Monitoring Company | During  construction activities |  |
|  | Drainage of surface facilities area and impermeability of internal roads | Facilities area | Visual | During site preparation and construction of facilities (Check during rainy conditions) |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Flora under protection | Along the pipeline route and at the surface facilities area | Visual monitoring, recording and reporting by ecological expert (to be approved by BOTAŞ) | Weekly during construction activities  (if necessary ,then more frequent, to be decided by BOTAŞ) |  | Environmental Monitoring Company | During  construction activities |  |
|  | Fauna under protection and the construction periods for wintering and migratory birds | Along the pipeline route and at the surface facilities area | Visual monitoring, recording and reporting  by ecological expert (approved by BOTAŞ) | Weekly during construction activities  (if necessary ,then more frequent, to be decided by BOTAŞ) |  | Environmental Monitoring Company | During  construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
| **Construction of Energy Transmission Line (ETL), Access Roads, Pump Stations and Water Storage Areas** | Storage and Disposal of excavated material | Designated disposal areas along the ETL, Access Roads, Pump Station and Water Storage Tank areas | Visual | Weekly during construction activities |  | Environmental Monitoring Company | During construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Noise Level  dB[A] | Along the ETL, Access Roads, Pump Station and Water Storage Tank construction areas | Noise measurements by sound level meter  with  weighting options (constant, slowly changing noise and impulsive noise)  also measuring sound pressure level (SPL) | During major construction activities and if there are local complaints |  | Environmental Monitoring Company | During construction activities |  |
|  | Flora under  protection | Along the ETL, Access Roads, Pump Station and Water Storage Tank construction areas | Visual monitoring, recording and reporting by ecological expert (to be approved by BOTAŞ) | Weekly during construction activities (if necessary ,then more frequent, to be decided by BOTAŞ) |  | Environmental Monitoring Company | During construction activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Fauna under protection and the construction periods for wintering and migratory birds | Along the ETL, Access Roads, Pump Station and Water Storage Tank construction areas | Visual monitoring, recording and reporting by ecological expert (approved by BOTAŞ) | Weekly during construction activities  (if necessary more frequent, to be decided by BOTAŞ) |  | Environmental Monitoring Company | During construction activities |  |
| **Drilling Activities** | Oily wastewaters collection and storage | Wastewater pool (either lined and oil trap functioning properly) | Visual | Weekly or daily if problems are observed |  | Environmental Monitoring Company | During drilling activities |  |
|  | Removal of oily wastewater by Licensed Companies | Plant site | Visual | According to removal schedule to be determined prior to the construction activities |  | Environmental Monitoring Company | During drilling activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Casing usage against leakage of drilling mud | Drilling area | Pressure monitoring of the drilling casing to see if there is a rapid decrease | Continuously, during drilling activities |  | Environmental Monitoring Company and also whoever will be monitoring the drilling activity and well pressure. | During drilling activities |  |
|  | Formation wastes and drilling muds storage and removal | * Mud pits for leakage * Controlled entrance to mud pit area * Disposal by licensed firm | Visual  Check certification.  Check validity of license before engaging the firm | Weekly |  | Environmental Monitoring Company | During  drilling activities |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
| **Leaching Operations** | Brine quality/Receiving water quality  (salt content, pH, heavy metals, ) | At diffuser location Tuz Gölü (brine discharge)  Measurements to be made upstream and downstream of diffuser as well as on either side. Attempts will be made to characterize the brine discharge “plume” and how/if it is evolving with time compared to predictions to ensure it remains in the unproductive area | Conductivity meter,  pH meter  Atomic absorption  –key parameters –compare to receiving water in unproductive area | Monthly |  | Environmental Monitoring Company | During  Leaching operations |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Discharge Point | At discharge point (arid zone of Tuz Gölü)  Discharge water | The analysis of the soil which is sampled from the arid zone, will be conducted.  The discharge water will be analyzed in terms of electric conductivity, salinity and anion-cation parameters | Weekly |  | Environmental Monitoring Company | During  Leaching operations |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
| **Operation** | Noise from Compressor Stations | * Compressor Station at the project sites * At the nearest settlement area | Noise measurements  by sound level meter  with  weighting options (constant ,slowly changing noise and impulsive noise)  also measuring sound pressure level (SPL); | Measurement at the start of operation, and then any complaints from local residents |  | BOTAŞ | During  operation |  |
|  | Domestic Wastewater | Wastewater treatment plant effluent | Effluent analysis for basic quality parameters  (pH, BOD, suspended solids) | Initially  Weekly  then monthly if operation remains stable In accordance with the official discharge permit) |  | BOTAŞ | During  operation |  |

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| **Phase** | **What**  **Parameter**  **is to be monitored?** | **Where**  **is the**  **parameter**  **to be**  **monitored?** | **How**  **is the**  **parameter**  **to be monitored/ type of**  **monitoring equipment?** | **When**  **is the**  **parameter**  **to be monitored-frequency of measurement or continuous?** | **Monitoring Cost**  **What is the**  **cost of**  **equipment**  **or contractor charges to**  **perform**  **monitoring** | **Responsibility** | **Start**  **Date** | **End Date** |
|  | Fire protection system | At surface facilities area | Visual and regularly scheduled simulations | Monthly initially, quarterly if no problems observed |  | BOTAŞ | During  operation |  |
|  | Leakage and explosion | Gas storage area, surface facilities | Methane detectors | Continuous |  | BOTAŞ | During  operation |  |

# C. INSTITUTIONAL ARRANGEMENTS

## Organization Overview

In order to provide an efficient co-ordination,

* BOTAŞ,
* Construction Contractor,
* Independent Environmental Monitoring Company to be hired by BOTAŞ,
* Ministry of Environment & Urbanization (MoEU), EIA Monitoring and Control Department and its associated units.

have to work in coordination in both technical and managerial matters. Please refer to the Organization Chart for the information flows and the responsible parties in BOTAŞ and its Contractor.

With reference to the Environmental Management Plan (EMP), monitoring and control are of critical importance for minimizing the environmental impacts during project implementation.

BOTAŞ Management (refer to the chain in the chart) together with the department that will be responsible for the construction activities will ensure that all construction related activities of Contractor(s) comply with approved EMP. To achieve this, BOTAŞ will regularly monitor and evaluate the Contractor’s field activities and performance through auditors.

Environmental Engineer of BOTAŞ directly connected to Underground Storage Manager, will be responsible for coordinating and supervising the monitoring activities. BOTAŞ will also carry out an independent auditing programme through an Environmental Monitoring Company, which will inspect the field activities of Contractor(s) and directly report to BOTAŞ.

## Roles and Responsibilities

BOTAŞ Contractor(s) will be responsible for the adoption of the EMP during the construction phase, implementation of all mitigation measures stated in EMP and required to be in compliance with the EMP together with the project’s environmental standards. In order to achieve this, BOTAŞ Contractor(s) will adopt a self-control/monitoring mechanism and formulate his own management plan including regular self-inspection and auditing programme, which will be reviewed in terms of consistency with EMP and approved by BOTAŞ prior to construction. BOTAŞ Contractor(s) through assigning a full time “Environmental Engineer” will prepare the progress reports (weekly) based on the monitoring plan detailing works completed within the respective period, results of measurements and supervisions in addition to the problems encountered on the site and have direct contact with BOTAŞ Environmental Engineer. The progress reports should also include a work schedule for the next period.

**BOTAŞ MANAGEMENT**

**General Manager**

**Deputy**

**General Manager**

**Head of Underground Natural Gas Storage Department**

**Construction Manager**

**Environmental Engineer**

**Construction Contractor’s**

**Environmental Chief**

**Environmental Monitoring**

**Company’s Environmental Chief**

independent audit of construction contractor

**Construction Contractor’s environmental team at site**

**(archaeological and ecological experts)**

**Environmental Monitoring Company’s environmental team at site**

BOTAŞ will hire an “Environmental Monitoring Company” for independent monitoring the BOTAŞ Contractor(s) activity. Environmental Monitoring Company will weekly review and comment on the weekly reports written and presented by the Contractor(s), inspect the work sites, review the environmental performance of the project and the Contractor’s field activities, carry out environmental control analyses and data collection as defined in EMP, and report the findings both to the Contractor’s Environmental Engineer and BOTAŞ Environmental Engineer, in weekly basis. The reports should detail environmental problems encountered on the site, deficiencies in protection measures and recommendations for solutions. Responsibility for solving the reported problems and remedying the reported deficiencies rests with the Contractor(s) may possibly need approval from BOTAS if either the schedule is affected or money is needed to make the recommended solutions. The Environmental Monitoring Company should integrate into this studies the site visits and environmental control analyses, and propose solutions for any bottlenecks environmentally encountered on the site.

Weekly and Monthly reports by Environmental Monitoring Company will be provided to BOTAŞ for review and approval of BOTAŞ Environmental Engineer who will evaluate data collected and analyses, perform verification visits during construction and operation activities in case needed, and prepare a final report including summary of the activities and recommended actions, if necessary.as monthly basis, which needs to be reviewed and approved by the UGS Manager. In case any significant action is required (such as stopping the construction or needs money), BOTAŞ Management will be informed.

At the project site, daily meetings initially (but the frequency may be changed by BOTAŞ, depending on the work progress) with the participation of Environmental Monitoring Company’s, Contractor’s and BOTAŞ’s site supervisors, to discuss the daily activities, and take decisions. With BOTAS authorization and approval, the Contractor(s) will be responsible for adoption of the decisions and to perform the required actions.

Compliance and non-compliance with EMP identified during the inspection and audits will be recorded by Environmental Monitoring Company and reported to BOTAŞ immediately. BOTAŞ Management will take necessary actions in such a case stop the activities in the case of Contractor’s non-compliance with EMP and take the corrective actions.

BOTAŞ will submit Summary Reports to World Bank quarterly basis indicating the activities and actions taken, as well as project progress.

The monitoring process should involve the contribution of the MoEU. The Independent Environmental Monitoring Company will also report to the MoEU periodically during the construction activities in a requested time schedule and format. In accordance with Article 18 of EIA Regulation in force upon issue in Official Gazette no. 26939 dated 17.07.2008 within the framework of Environment Law no.2872, environmental monitoring and auditing works shall be performed by subject matter engineers and specialists deemed appropriate for project investment during construction, operation and post-operation periods of projects which received “EIA Positive Decision” from Ministry of Environment and Urban Planning, and this provision shall also be complied in the scope of this project.

In this regards, the applications within the scope of Final EIA Report will be submitted to the Ministry of Environment and Urbanization in a report at **6-month intervals**.

During the operation phase of the project, the unit in BOTAŞ that will be responsible for the operation will be totally responsible for the monitoring of the activities and reporting.

BOTAŞ, at that stage, will either continue on working with the Environmental Monitoring Company, which performs the monitoring during the construction phase, or hire another company (in a time based-reimbursable basis) for making the necessary measurements as defined in the operation phase of the monitoring plan and reporting the measurement results to BOTAŞ. The environmental engineer of the department responsible for the operation of the project will review and evaluate these results and prepare the reports quarterly including any recommended actions to the BOTAŞ Management.

# D. CONSULTATION WITH LOCAL NGOs AND PROJECT-AFFECTED GROUPS

In the scope of the Tuz Gölü Underground Natural Gas Project 2 different public participation meetings have been conducted after the EIA process for informing the public about the project modifications. The first public participation meeting took place at Sultanhanı Municipality Meeting Hall on 27.03.2003. The second public participation meetings were performed at Sultanhanı Municipality Meeting Hall and Agaçören Municipality Meeting Hall on 24.03.2005. However, the last consultation meeting was realized in the scope of the II. Addendum Report to the EIA Report in Sultanhani Municipality where is the closest district to the drilling area of the project to inform the public about the project changes and the process on 01.02.2013. Minutes of participation meeting which included the subject, date, time, location, participators, etc. are given below.

**CONSULTATION WITH PROJECT-AFFECTED GROUPS**

**Announcement**

The notification of the consultation was announced by loudspeaker at several times along the week before meeting (February, 01-02) by Sultanhani Village to the local people.

**Date of Consultation**

01.02.2013, at 15:00 pm

**Location**

Sultanhani Municipality, Meeting Room

Participators

* Department of Land Estate and Expropriation vice-president Suleyman Lala
* Konya Office Contact-Rep Zubeyir Donmez
* Lawyer Ilayda Yanarates
* Geomatics Engineer Sule Karatatar Cicek
* Local People (28 persons, refer to Annex)

**Meeting Program/Schedule**

The Public Consultation Meeting was held at 15:00 p.m. at Sultanhani Municipality Meeting Room, Representative of BOTAŞ gave brief information about the importance of the project to the attendees. During the meeting subjects listed below was held:

* Land acquisition, social and environmental issues
* Committee who determine the prices and determination of the prices
* Agreement/Disagreement Report
* Court Process
* Date at which landowners will derive the money and conditions for deriving
* Issues about certificate of inheritance and heritable security
* Legal process of land acquisition

**A brief summary of the presentation:**

- Land acquisition procedure

- An Environmental Management Plan (EMP) was prepared which includes mitigation and monitoring plans in order to minimize the possible environmental effects of the Tuz Gölü Underground Gas Storage Project.

BOTAŞ Management together with the Underground Gas Storage Department ensures that all construction related activities of Contractor, including subcontractors, comply with EMP. To achieve this, BOTAŞ will regularly monitor and evaluate the Contractor’s field activities and performance through auditors and the consultant company (ÇINAR Mühendislik, Müşavirlik ve Proje Hizmetleri Ltd. Şti., Turkey).

**The questions raised from local people and the replies:**

**Question 1:** How are property experts determined and how they determine the land value?

***Answer****:* *BOTAS committee are the people educated in the field of land value assessment, have experience in the company and are experts in their fields.*

*Agriculture Engineers from Chamber and Property Experts who shall be assigned every year form the Court committee.*

**Question 2:** What are the restrictions of land use for long term easement?

***Answer:*** *All kind of agriculture is permitted; it is only prohibited planting trees and building structure.*

**Question 3:** Why are prices different for land acquisition and long term easement?

***Answer:*** *For land acquisition whole area is acquired, however for long term easement there are only some restrictions in terms of planting trees and building structure, besides this landowner can use the land for agricultural activities.*

**Question 4:** Is it possible to use the area that is below the Energy Transmission Lines (ETL) for agricultural activities?

***Answer:*** *The area will be available for agricultural uses after the completion of ETL construction. This doesn’t include the pole locations?*

**Question 5:** Will the irrigation canals be affected?

***Answer:*** *Special crossings techniques will be applied for all water channels including irrigation canals. In case of any damage, the Contractor will recover?*

**Question 6:** How many persons are working for the project, how long the project will take?

***Answer:*** *More than 100 people. The project will take 7,5 years.*

**Question 7:** Will the project provide an employment opportunity to the local people during the construction and operation?

***Answer:*** *The project has provided employment for 50 local people currently. These people are working for various services. In addition to employment, it also provided the opportunity to improve job skills.*

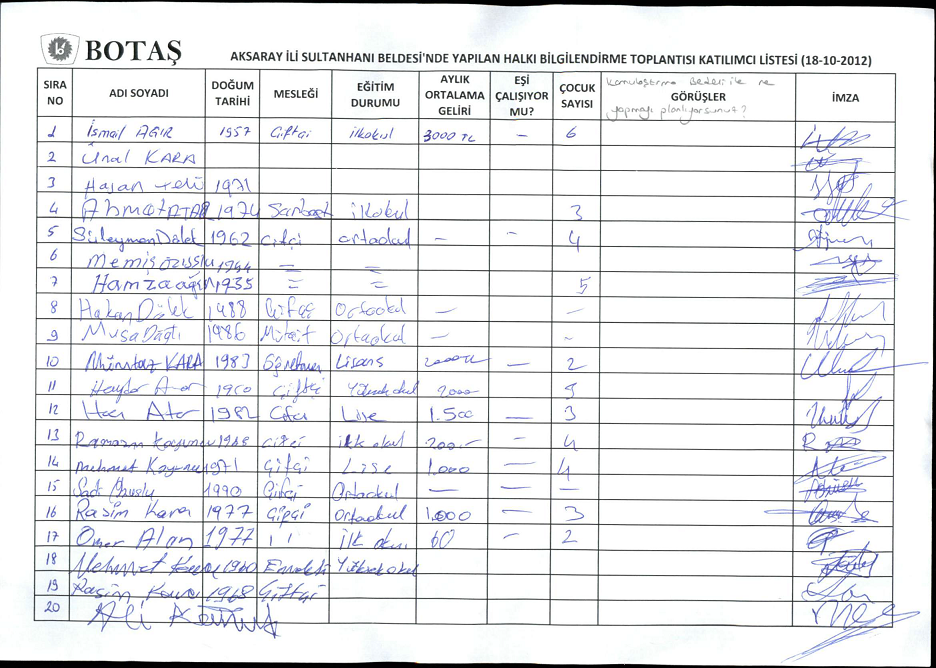
**Question 8:** Will the animal husbandry be affected from the noise or blasting etc.? Which measures will be taken to prevent noise?

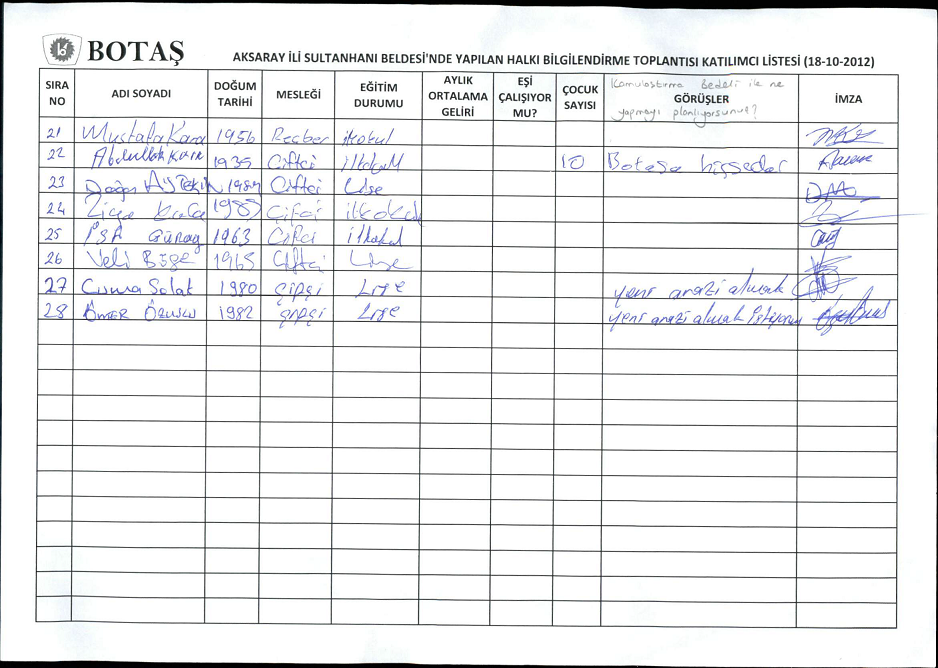
***Answer:*** *Management of Environmental Noise Regulation will be strictly applied; the maximum limit values will not be exceeded in every accessible point of the facilities. No blasting will be performed. Some examples of measures are;*

* *Low noise emitting equipment will be procured*
* *Installation of silencers where applicable*
* *Limitation of truck transportation merely with hours of daylight.*

**List of Participiants:** As the following;

**Attendees List for the Last Public Participation Meeting**





# E. ANNEX

## 1. Water Pollution Control Regulation/Table 21.2

Table 1. Domestic Wastewater Discharge Standards

|  |  |  |
| --- | --- | --- |
| **Parameters** | **Discharge Limits** | |
| 2 hours composite sample | 24 hours composite sample |
| BOD5 (mg/L) | 50 | 45 |
| COD (mg/L) | 160 | 110 |
| SPM (mg/L) | 60 | 30 |
| pH | 6-9 | 6-9 |

*BOD: Biochemical Oxygen Demand*

*COD: Chemical Oxygen Demand*

*SPM: Suspended Particulate Matter*

*Class 2: Pollutant load is 120-600 kg/day as raw BOD*

## 2. Worker Health and Occupational Safety Act/Article 22

The noise levels, where heavy and dangerous activities are not performed, shall not exceed 80 dBA. At the areas, where the working activities, generating higher noise levels due to the requirements are conducted, the noise levels shall be 95 dBA maximum. However, in such a case, the workers shall be given protective equipments, i.e. special helmets, earphones or earplugs against noise.

## 3. Regulation on Assessment and Management of Environmental Noise (Table 4&5)

Environmental noise limit values for construction site provided in Appendix-VII Table-5 of ENAMR (Environmental Noise Assessment and Management Regulation) force upon issue in Official Gazette no.27601 dated 04.06.2010 are given in Table 2.

Table 2. Environmental Noise Limit Values for Construction Site

|  |  |
| --- | --- |
| **Activity Type**  **(construction, demolition and repair)** | **Ldaytime (dBA)** |
| Building | 70 |
| Road | 75 |
| Other source | 70 |

Facilities requiring permit for noise management are defined in the Regulation on Permits and Licenses required in Accordance with Environmental Law. Accordingly, Underground Gas Storage projects are exempted from the provisions regarding noise control of the environmental permit. However for these facilities which are not listed in the Appendix-1 and Appendix-2 of relevant regulation, for opening and work licenses to be given in the context of the regulation on Opening and Work Permits of the Facilities entered into force by being published in the Official Gazette dated 10.08.2005 and numbered 25902, authorized administration make assessment in terms of environmental noise and if required environmental noise level assessment report is requested and the positive opinion of the authorized administration for this report is based on.

Therefore, regarding the machinery and equipment which will be used in the context of the Project, regulation on Environmental Noise Emissions Generated by Equipment used in the Open Areas entered into force by being published in the Official Gazette dated 30.12.2006 and numbered 26392 will be obeyed. Certain limit values are defined for day, evening and night timeframes in the operation phases of the industrial facilities in the Assessment and Management of Environmental Noise Regulation. These facilities are divided into four groups according to the sensitivity of the Project area. This Project is subject to the limit values defined for “the areas where houses are densely located within the sites of the commercial buildings existing together with the noise sensitive utilizations” (Table 3). The project must not exceed the given limit values during the operation period.

Table 3. Environmental Noise Limit Values for Industrial Plants

|  |  |  |  |
| --- | --- | --- | --- |
| **Category Area** | **Lday**  **(dBA)** | **Levening**  **(dBA)** | **Lnight**  **(dBA)** |
| The areas where houses are densely located within the sites of the commercial buildings existing together with the noise sensitive utilizations | 65 | 60 | 55 |

## 4. Decisions of Central Hunting Commission

The protection status of species is defined by Law No 4915 on Terrestrial Hunting which took force upon promulgation in the Official Gazette Issue No 25165 of 11.07.2003. The Law extends protection to certain designated areas under annual Central Hunting Commission decisions, closing certain areas to hunting temporarily or permanently. The areas placed under protection by the Terrestrial Hunting Law are Wild Life Protection Sites and Wild Life Development Sites

Also, the Resolutions of the Central Hunting Commission for the Hunting Period 2012-2013, which took effect upon their publication in the Official Gazette No. 28316 of 07/06/2012, from the Republic of Turkey, Ministry of Forestry and Water Affairs are inserted in the tables. According to the latest lists reflecting the “2012-2013 Hunting Season, Decisions of Central Hunting Commission”, which came into effect upon its publication by the Republic of Turkey Ministry of Forestry and Water Affairs in the Official Gazette no. 28316 dated 07 June 2012; 79 bird species are included in the list of Annex-I, i.e. the list of “Wild Animals Put Under the Protection of the Ministry of Forestry and Water Affairs”; 16 bird species are included in the list of Annex-II, i.e. the list of “Hunting Animals Put Under the Protection of the Central Hunting Commission”; and 18 bird species are included in the list of Annex-III, i.e. the list of “Hunting Animals Permitted by the Central Hunting Commission to be Hunted for the Indicated Periods”.

## 5. Bern Convention

In the context of Bern Convention, in Article 6, for the special protection of the wild fauna species specified in Appendix II, the following will in particular be prohibited for these species:

1. all forms of deliberate capture and keeping and deliberate killing;
2. the deliberate damage to or destruction of breeding or resting sites;
3. the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;
4. the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;
5. the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognizable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article.

In Article 7, for the special protection of the wild fauna species specified in Appendix III measures to be taken shall include:

1. closed seasons and/or other procedures regulating the exploitation;
2. the temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels;
3. the regulation as appropriate of sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

1. Refer to the Annex for the related Article of Worker Health and Occupational Safety Act and the noise levels [↑](#footnote-ref-1)