



GÜZELYURT GEOTHERMAL EXPLORATION DRILLING PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Prepared for Güzelyurt Exploration Drilling Project of Güzelyurt Jeotermal Enerji A.Ş.

Prepared by:

ENPARK Environment and Energy Consultancy
T: +90 312 4720813
www.enpark.com.tr

Güzelyurt Jeotermal Enerji A.Ş.
Project Team
T: +90 312 439 43 34
F: +90 312 439 43 36
www.gmkenerji.com.tr

© 2022 ENPARK Environment and Energy Consultancy
All Rights Reserved.

Table of Contents

Table of Contents	i
Annex List.....	iii
Table List	iv
Figure List	iv
Executive Summary	1
1.0 Responsible Party.....	1-3
2.0 Project Description.....	2-5
2.1 Background and Description of the Project and Related Activities	2-5
2.2 Purpose of the Project	2-12
2.3 Technical Studies for the Project	2-13
2.4 Components of the Project	2-13
2.5 Location and Characteristics of the Investment	2-25
2.5.1 Geographical Location	2-25
2.5.2 Landforms and Geology.....	2-31
2.5.3 General Characteristics of the Region.....	2-33
3.0 Description of the Impact Area of the Project.....	3-34
4.0 Environmental and Social Baseline.....	2
4.1 Current Status of the Impact Area (Air Quality, Water Quality, Noise Levels, Soil Quality, etc.)	2
4.2 Soil and Land Characteristics (Land Use and Soil Quality)	8
4.3 Flora- Fauna-Ecosystem Diversity and Habitat Types.....	13
4.3.1 Flora	13
4.3.2 Fauna	19
4.3.3 Ecosystem Diversity and Habitat Types	27
4.3.4 Assessment of Habitats in the Region.....	4-1
4.4 Vulnerable Areas (Sensitive Areas - Protected Areas)	4-1
4.5 Socio - Economic Conditions of the Region.....	4-1
5.0 Potential Impacts.....	5-3
5.1 Potential Impacts from Wastes.....	5-4
5.1.1 Domestic Solid Waste	5-6

5.1.2	Packaging Waste	5-7
5.1.3	Hazardous Wastes	5-7
5.1.4	Medical Waste.....	5-8
5.1.5	Waste Batteries and Accumulators.....	5-9
5.1.6	End-of-Life Tires (ÖTL)	5-10
5.1.7	Other Non-Hazardous Wastes (Scrap Metals, Broken Glass, Pieces of Wood, Excavation and Construction Waste, etc.).....	5-10
5.2	Potential Impacts from Liquid Waste.....	5-11
5.2.1	Liquid Wastes from Personnel:	5-12
5.2.2	Liquid Wastes from Processes:	5-13
5.2.3	Waste Oils (Mineral Waste Oils-Machinery Oils)	5-26
5.3	Potential Impacts from Hazardous-Chemical Substances	5-27
5.4	Potential Impacts on Surface Water and Groundwater	5-31
5.5	Potential Impacts from Emissions	5-33
5.5.1	Noise Emission.....	5-34
5.5.2	Air Quality (Dust - Gas - Exhaust Emissions)	5-36
5.6	Impacts on Soil and Land Use.....	5-47
5.7	Impacts on Soil Pollution	5-48
5.8	Impacts on Biodiversity	5-50
5.8.1	Conservation Measures to be taken on Habitats in the Region	5-51
5.9	Impacts from Well Blowouts and Pipeline Ruptures	5-52
5.10	Social Impacts	5-52
5.10.1	Landscape and Image Impacts	5-52
5.10.2	Impacts on Cultural Heritage and Archaeology	5-53
5.10.3	Social Impacts (Socio-Economic Development - Employment Opportunities) and Measures to be Taken:.....	5-53
5.11	Potential Impacts	5-0
6.0	Impact Mitigation Plan.....	Hata! Yer işareti tanımlanmamış.
7.0	Monitoring Plan	7-1
8.0	Institutional Arrangements.....	8-1
9.0	Audit and Reporting	9-7
10.0	Training	Hata! Yer işareti tanımlanmamış.
11.0	Consultations with Affected Groups and Civil Society Groups.....	11-8

REFERENCES:..... 11-15

Annex List

Annex-1: Official Documents

Annex-1.1: Exploration License

Annex-1.2: EIA Not Required Decisions

Annex-1.3: Use Permits for Gaziemir-1 Drilling Location

Annex-1.4: AG-4 Drilling Location Use Permits

Annex-1.5: Use Permits for Gaziemir-5 Drilling Location

Annex-1.6: Institutional Opinions for the PTD subject to the EIA Not Required Decision for Gaziemir-1 and Gaziemir-5

Annex-1.7: Institutional Opinions for the PTD subject to the EIA Not Required Decision where AG-4 is evaluated

Annex-1.8: Gaziemir-5 Non-Legal User Consent Form

Annex-2: Stakeholder Engagement Plan

Annex-3: Noise Emission Calculations

Table List

Table 1. Amounts of Vegetable Soil to be Stripped from Drilling Sites and Storage Area Size	2-22
Table 2. Spatial Sizes of Main Components	2-23
Table 3. Cadastral and Property Information of the Areas to be Used	2-23
Table 4. Table showing the nearest settlements and their distances to the areas to be used	2-28
Table 5. Physical Properties of Water in the License Area	4
Table 6. Chemical Properties of Water in the License Area	4
Table 7. Coordinates of the Project Area's Monitoring Locations for the Project Area	6
Table 8. Distribution of Identified Plant Taxa at Family and Taxon Level	13
Table 9. Plant Taxa and Threat Categories Identified in the Project Area and its Vicinity	15
Table 10. Annex Lists and Explanations of the Bern Convention	17
Table 11. Annex Lists and Explanations of the Cites Convention	18
Reptile (Reptilia) Species and Threat Categories Detected in the Project Area and its Vicinity	21
Table 13. Bird (Aves) Species and Threat Categories Detected in the Project Area and its Vicinity	23
Table 14. Mammalia Species Detected in the Project Area and its Vicinity and Their Conservation Status	26
Table 15. Distribution of EUNIS Habitat Classes	4-1
Table 16. Population Data of Aksaray Province (by Districts)	4-1
Table 17. 2021 Population Data of the Nearest Settlements	4-1
Table 18. Approximate Noise Values at Vulnerable Receivers for Each Well	5-35
Table 19. Air Quality Limit Values Defined in National Legislation	5-37
Table 20. World Health Organization (WHO) Outdoor Air Quality Guideline values, 2021	5-38
Table 21. Annex-2 Table 2.1 Hourly Mass Flow rates of the Regulation on Control of Industrial Air Pollution	5-44
Table 22. Engine Power and Number of All Machinery and Equipment to be Used in the Drilling Phase	5-45
Table 23. Emission Factors from Diesel Oil Use	5-45
Table 24. Exhaust Emission Flows from the Equipment to be Used in the Drilling Phase	5-45
Table 25. Table Showing Potential Impacts	5-0
Table 26. Table Showing the Importance Levels of the Level of Impact	5-3
Table 27. Impact Mitigation Plan	6-1
Table 28. Monitoring Plan	7-1

Figure List

Figure 2.1 Representative view of drilling mud circulation	2-14
Figure 2.2 Drilling mud circulation and solids control (filtration) system view	2-15
Figure 2.3 Possibility of separation down to 1-2 micron sized particles with high speed centrifugal decanters	2-17

Figure 2.4 Representative layout of the Dry-location system integrated into the rig solid control system (without mud-pit)	2-17
Figure 2.5 Estimated waste quantities in drilling	2-19
Figure 2.6 Transportation Routes	2-21
Figure 2.7. Map Showing the Settlement within the Drilling Location (Gaziemir-1)	2-24
Figure 2.8. Map Showing the Layout within the Drilling Location (AG-4)	2-24
Figure 2.9. Map Showing the Settlement within the Drilling Location (Gaziemir-5)	2-25
Figure 2.10. Map showing the most vulnerable structure and its location around the drilling locations (Gaziemir-1).....	2-26
Figure 2.11. Map Showing the Most Vulnerable Structure and its Location around the Drilling Locations (AG-4)	2-27
Figure 2.12. Map showing the most vulnerable structure and its location around the drilling locations (Gaziemir-5).....	2-27
Figure 2.13. Locator Map Showing the License Area.....	2-29
Figure 2.14. License Area Neighborhood Map	2-30
Figure 2.15. Map Showing Main Faults and Main Volcanic Formations Around the License Area (Sözbilir H., Geology of Aksaray Center Koçpınar and Güzelyurt Fields and Evaluation of Geothermal Energy Potential, GMK Energy Project Report, 2021, İzmir)	2-31
Figure 2.16. Satellite Image Showing Geological Structures Around the License Area (Sözbilir H., 2021, Diker C., 2021).....	2-33
Figure 2.17. Map Showing the Location and Nearest Distance of the Drilling Sites to Ihlara Special Environmental Protection Area	2-34
Figure 3.1. Map Showing the Impact Area of Drilling Locations.....	3-1
Figure 4.1. Graph showing General Air Quality in Aksaray Province, 2022.....	2
Figure 4.2. Graph showing Aksaray Province General Air Quality Index and Explanations According to the Index, 2022	3
Figure 4.3. Map showing the location of the well near Ihsu Bath and its distance to the drillings...4	4
Figure 4.4. Closest GWS and SWS Points to Drilling Locations	6
Figure 4.5. Map showing the Land Asset of the Project Area	7
Figure 4.6. Photograph showing Gaziemir-1 Location	11
Figure 4.7. Photograph showing AG-4 Location	11
Figure 4.8. Photograph showing Gaziemir-5 Location	12
Figure 4.9. Photograph showing Zone 0 ada 616 through which the road will pass.....	12
Figure 4.10. Distribution of Plants Identified in the Project Area and its Vicinity	14
Figure 4.11. Graphic of Phytogeographic Distribution of Plant Species Detected in the Project Area and its Vicinity	14
Figure 4.12. IUCN Risk Classes	17
Figure 4.13. Distribution Chart of Plant Taxa Identified in the Project Area and its Vicinity According to IUCN Threat Categories.....	18
Figure 4.14. Distribution Chart of Plant Taxa Identified in the Project Area and its Vicinity According to the Bern Convention.....	19
Figure 4.15. Graphic of Distribution of Plant Taxa Identified in the Project Area and its Vicinity According to the Cites Convention	19

Figure 4.16. Distribution Chart of Seasonal Status of Birds Detected in the Project Area and its Vicinity.....	22
Figure 4.17 EUNIS Habitat Classes Map.....	29
Figure 4.18 Map of Important Nature Areas (INA), Important Bird Areas (IBA), Important Plant Areas (IPA)	4-6
Figure 4.19 Map of Areas of Zero Extinction (AZE).....	4-7
Figure 4.20. Map Showing Drilling Locations and Protected Areas Surrounding the Parcels Where They Are Located.....	4-8
Figure 5.1. Possibility of separation down to 1-2 micron sized particles with high speed centrifugal decanters.....	5-15
Figure 5.2. Representative layout of the Dry-location system integrated into the rig solid control system (without mud-pit)	5-15
Figure 5.3. IOGP's 5R waste management strategy	5-18
Figure 5.4. European Union waste management hierarchy.....	5-18
Figure 5.5. Half Moon Tanks	5-21
Figure 5.6. Vertical Cylindrical Tank	5-22
Figure 5.7. Figure Showing the Geothermal Fluid Pool Planned to be Built at Drilling Locations.....	5-23
Figure 5.8. Representative Image of Silencer-weirbox System	5-25
Figure 5.9. Graphic of Noise Values that may occur during Operations at Drilling Locations ...	5-35
Figure 5.10. A view inside the mudlogging unit. All critical information about the drilling is collected in this unit and monitored instantly with many screens.....	5-42
Figure 5.11. Rock fragments cut by drilling are examined under microscope. Lithological well log is recorded	5-42
Figure 5.12. Sample Well log.....	5-43
Figure 5.13. Representative view of Blowout Preventer-Blowout Preventer (BOP).....	5-44
Figure 5.14. Figure Showing Vulnerable Sensors on the Access Road to the Drilling Location	5-65
Figure 8.1. Beneficiary Company Organization Chart.....	8-4

Abbreviation List

T.C.	Republic of Turkey
MTA	Mineral Research and Exploration
TVD	True Vertical Depth
KD	Northeast
KB	Northwest
GB	Southwest
GD	Southeast
ESMP	Environmental and Social Management Plan
EIA	Environmental Impact Assessment
OG	Official Gazette
OP	Operating Policy
RSM	Risk Sharing Mechanism
E&S	Environmental and Social
OHS	Occupational Health and Safety
cm	Centimeter
m	Meter
m ²	Square meter
m ³	Cubic meter
ERAC	Earthquake Research and Application Center
VED	Vertical Electrical Drilling
AMT	Audio Magnetotellurics
MT	Magnetotellurics
pH	Potential Hydrogen
bbl	Barrel
etc.	etc.

CVP	Cappadocia Volcanic Provenance
°C	Degree Celsius
other	Others
SEP	Special Environmental Protection Area
GWS	Groundwater
SWS	Surface Water
EC	Electrical Conductivity
EUNIS	European Nature Information System
EEA	European Environment Agency
IFC	International Investment Fund
WBG	World Bank Group
EHS	Environment, Health and Safety
PS	Performance Standard
BOP	Blowout Preventer
INA	Important Nature Area
SDS	Safety Data Sheets

Executive Summary

This executive summary provides an overview of the Environmental and Social Management Plan (ESMP) for the geothermal exploration project conducted by Güzelyurt Geothermal Energy Inc., a subsidiary of GMK Renewable Energy Engineering Manufacturing Industry and Trade Inc. The project, falling under the World Bank Geothermal Resource Verification Risk Sharing Mechanism (RPM), aims to explore geothermal resources in the Güzelyurt region of Aksaray Province, Turkey.

The project involves drilling three geothermal exploration wells: AG-4, Gaziemir-5, and Gaziemir-1. The ultimate goal is to identify geothermal resources, with the potential for establishing a geothermal power plant if viable sources are found.

The drilling parcels are located in Aksaray Province, Güzelyurt District, specifically in Güzelyurt Village (AG-4), Gaziemir Village (Gaziemir-5 and Gaziemir-1), and Akyamaç District for access to Gaziemir-5. The access road to Gaziemir-5 will be a new 65m-long, 5m-wide route connecting to parcel 0/616 in Akyamaç District (see Figure 0.1).

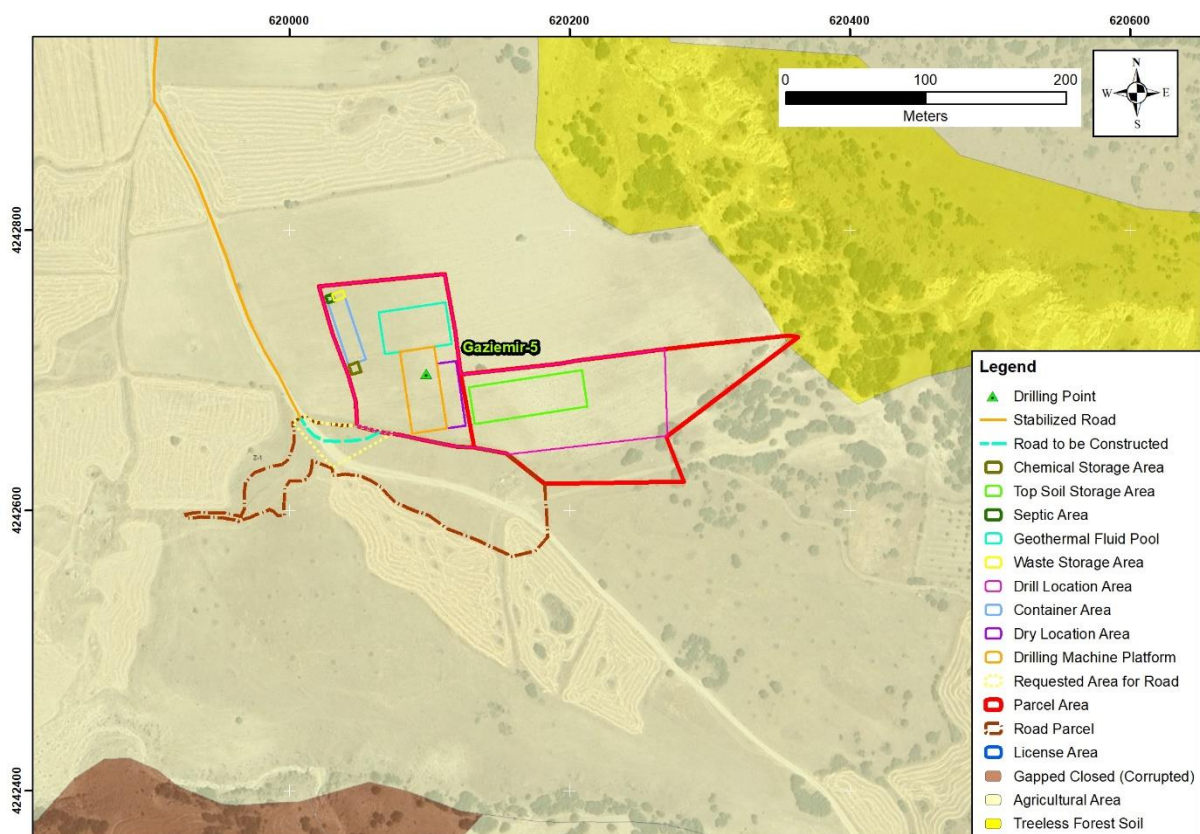


Figure 0.1 Stand Map of Gaziemir-5 Drilling Area and Parcel

Parcels vary in environmental classification, from forested land (Gaziemir-1) to pasture and arable land (Gaziemir-5 and AG-4). The RPM project adheres to Turkish legislation, and the Environmental Impact Assessment (EIA) process for AG-4, Gaziemir-5, and Gaziemir-1 has been completed.

Continuous communication with local communities, including meetings with village leaders, has been ongoing since the issuance of the license in 2019. Recent discussions were held between November 7, 2020, and July 19, 2021, engaging both men and women in various settings.

A Stakeholder Participation Meeting was held on September 29, 2021, at Güzelyurt Municipality Wedding Hall. Extensive notifications were issued via national and local newspapers, official letters to neighboring regions, and announcements in villages. Over 100 participants from various villages attended, and mechanisms for future complaints were outlined, including the placement of complaint boxes in villages.

To ensure inclusive engagement, communication with women will be facilitated through female representatives within villages. The aim is to gather input from all local women and address their potential concerns.

Prioritizing local hires, especially women, and sourcing materials and services locally are integral components of the project. Future investments are expected to positively impact local employment and the regional economy.

All project waste will be managed and disposed of in accordance with Turkish regulations and the World Bank Group's (WBG) Environmental, Health, and Safety (EHS) Guidelines. An Environmental and Social Management Plan (ESMP), along with a Stakeholder Engagement Plan (SEP), has been developed and will be updated as needed.

A comprehensive Occupational Health and Safety (OHS) Plan, compliant with local regulations and World Bank requirements, will be developed before fieldwork commences. Approval from the RPM Unit is mandatory for the initiation of the plan.

This executive summary outlines key aspects of the Environmental and Social Management Plan for the Güzelyurt Geothermal Energy Project. The project aims to align with international standards, adhere to Turkish legislation, and foster positive relationships with local communities throughout its lifecycle.

1.0 Responsible Party

This Environmental and Social Management Plan has been prepared by ENPARK Environment and Energy Consultancy for Güzelyurt Jeotermal Enerji A.Ş. Güzelyurt Geothermal Exploration Drilling Project. Güzelyurt Jeotermal Enerji A.Ş. has been identified as the Beneficiary under the RSM Program and is responsible for the implementation of this Environmental and Social Management Plan.

Revision History

Revision	Revision Date	Detail
V12	13.12.2023	Information regarding the Stakeholder Engagement Meeting conducted on 29.12.2023 has been entered. It is the final approved version.

Prepared by	Position
Can Cihan YILMAZ	Environmental Engineer
Burcu ÇOLPAN UCA	Mining Engineer
Remzi Alper BİLER	Geological Engineer
Celile ERTUNÇ	Social Expert



2.0 Project Description

Within the scope of the RSM project, 3 (three) geothermal exploration drillings will be drilled. The wells planned to be drilled under the RSM project are **AG-4, Gaziemir-5, and Gaziemir-1** wells. The depths of these three wells are planned as follows: AG-4 will be $3,000 \pm 250$ m, Gaziemir-5 will be $2,500 \pm 250$ m and Gaziemir-1 will be $2,500 \pm 250$ m.

The volumes of wells vary according to their depths. The volume of a 2,500-meter well is approximately 230 m^3 , while a 3,000-meter well has a volume of 242 m^3 . Accordingly, among the wells to be drilled, Gaziemir-1 and Gaziemir-5 wells will have a volume of 230 m^3 and AG-4 well will have a volume of 242 m^3 .

The World Bank classifies three categories depending on the type of project, location, sensitivity, scale, nature and magnitude of potential environmental impacts. In most cases, geothermal exploration drilling and testing is expected to be classified in Category B projects under Operational Policy (OP) 4.01. According to OP 4.01, a proposed project is classified as a Category B project if its potential adverse environmental and social impacts on human populations or environmentally significant areas are site-specific, only a few of them are irreversible, and mitigation measures can be easily designed.

In this respect, the current project is classified as Category B and this ESMP has been prepared.

The wells planned to be drilled within the scope of the RSM project are the wells on 0 Block 3809 Parcel (AG-4), 0 Block 1328 parcel and 0 Block 879 parcel (Gaziemir-5) and 0 Block 2863 Parcel (Gaziemir-1). In addition, a new 65 m long, 5 m wide connection road in 0 Block 616 parcel for access to Gaziemir-5 well is within the scope of the project. This ESMP indicates the permits obtained and environmental and social impacts and measures to be taken for these three wells and the access road in question.

In the event of an issue, situation or event that will change the environmental and social risks and impacts after the Project has commenced operations, this ESMP will be updated. Social safeguard documents evaluating the impacts and measures related to land acquisition, if necessary, will be prepared. The updated ESMP and other pertinent environmental and social safeguard documents will be submitted for approval by the RSM Unit, ensuring no activities is undertaken without requisite approval.

This ESMP is a living document that subject to change over time and it will be regularly monitored, reviewed and updated by the Beneficiary throughout all stages of Project implementation. In the event that the Beneficiary identifies an environmental and social (E&S) and/or Occupational Health and Safety (OHS) risk or impact arising from Project activities that was unforeseen during the development of ESMP, the Beneficiary will review and update this ESMP accordingly, including an explanation of mitigation measures for the identified risks and impacts. The Beneficiary is solely responsible for revising and updating the ESMP and obtaining the approval of the RSM Unit for the revised ESMP.

2.1 Background and Description of the Project and Related Activities

The parcel areas where the drilling will take place are as follows in order of priority;

- Aksaray Province, Güzelyurt District, Güzelyurt Village, **0 Block 3809 Parcel (AG-4)**,

- Aksaray Province, Güzelyurt District, Akyamaç Neighborhood; **0 Block 879 Parcel and 0 Block 1328 parcel (Gaziemir-5)**,
- Güzelyurt Village, Güzelyurt District, Güzelyurt District, Aksaray Province; **0 Block 2863 Parcel (Gaziemir-1)**.

The geothermal resource exploration license numbered 2019680002, where the project is located, has been converted to Geothermal Resource Operation License No. 2023/15 dated 15.08.2023 (Annex 1.1).

In the licensed area where the drilling will take place:

- The EIA Not Required Decision dated 13.01.2022 for 0 Block 3809 Parcel (AG-4) was given with the letter of Provincial Directorate of Environment, Urbanization and Climate Change dated 11.04.2022 and numbered 202262 (Annex 1.2). As a result of the application of the former activity performer GMK Energy to the relevant institution for the EIA Decision, the institution stated that the said EIA Transfer would not be possible since a total of 4 locations were examined in the said Project Introduction File, three of these locations are located in another operating license area registered in the name of GMK Energy and only AG-4 is located within the Geothermal Source Operation License area numbered 2023/15 and dated 15.08.2023 registered in the name of Güzelyurt Geothermal Energy. On the other hand, the AG-4 location is within the Gaziemir-3 EIA polygon subject to the EIA not required decision dated 29.11.2022, which was communicated by the Provincial Directorate of Environment; Urbanization and Climate Change letter dated 02.12.2022 and numbered 2022285. For this reason, with the guidance of the institution, it was requested to add an additional drilling point and well location to the mentioned project by keeping the EIA not required decision dated 29.11.2022 for the AG-4 location. With the letter of the Provincial Directorate of Environment, Urbanization and Climate Change dated 20.10.2023, it was stated that there is no objection to the addition of AG-4 drilling location (Annex 1.4).
- For the drilling sites of 0 Block 879 Parcel and 0 Block 1328 Parcel (Gaziemir-5) and 0 Block 2863 Parcel (Gaziemir-1), EIA is not required decision dated 29.11.2022, which was communicated with the letter of Provincial Directorate of Environment, Urbanization and Climate Change dated 02.12.2022 and numbered 2022285 (See Annex 1.2). With the letter dated 24.02.2023 and numbered 5824983 of Provincial Directorate of Environment, Urbanization and Climate Change, the aforementioned EIA Not Required Decision was transferred to Güzelyurt Jeotermal Enerji A.Ş. (Annex 1.3 and Annex 1.5).

Land acquisition and current use of land at location AG-4:

AG-4 Well Selected as Drilling Location under RSM (July 2021);

As a result of the geological and geophysical (MT, AMT, Gravity, Magnetic) surface and underground investigations carried out in the geothermal resource operation license numbered 2023/15 (former: 2019680002) held by Güzelyurt Jeotermal Enerji A.Ş. (former: GMK Yenilenebilir Enerji Müh. İml. San. Ve Tic. A.Ş.) and provided by Aksaray Special Provincial Administration, shallow and deep wells were drilled and the drilling resource exploration phase was started. The target depth for the AG-4 well [Right (Y): 619135 Upper (X): 4242000 Z: 1340 m] was determined as 2500 meters (2021). According to the first geological-geophysical

(excluding seismic) studies conducted in the field for the AG-4 well location, it was determined as a well point applied in July 2021, evaluated within the scope of RSM and included in the ESMP.

The AG-4 well was removed from the RSM scope (July 2022);

The AG-4 well, which was evaluated within the scope of the RSM and identified as a well point included in the ESMP, was the only well point that received a pasture use permit and EIA not required decision at that time (until December 2022, when operations started in the field). The EIA process and land permission process continued for other well sites in the field on similar dates and efforts were made to obtain the decision papers quickly. Since the Exploration License expiry date was dated March 12, 2023, it was necessary to prove the existence of the resource by drilling at least one well in the field until this date. For this reason, the AG-4 well was removed from the scope of the RSM and in order not to waste any more time, in December 2022, the preparation of the wellhead concrete, cellar pool and geothermal fluid pool covered with impermeable membrane, which is large enough to fit an MR-7000 or ZJ30 type rig, was started. In the meantime, 2D Seismic Reflection geophysical method was applied within the license area between July 2022 and September 2022 and the process of processing and interpretation of the seismic data collected from the field was concluded in December 2022. With the arrival of the seismic interpretation results at the end of the work in the AG-4 well field, it was deemed more appropriate by the technical consultants of the Beneficiary to carry out the 1200 meter deep shallow drilling in Gaziemir-2 well instead of AG-4. In the same period, Gaziemir-2 land permitting and EIA processes were also completed, so the work on the AG-4 well was left as it was and the preparation of the Gaziemir-2 well location was started. Subsequently, the exploration license was converted into an operating license through the Gaziemir-2 well.

The AG-4 well has been selected as a re-drill location under the RSM (July 2023);

In this process, the geological and geophysical evaluation processes of the site continued with the data obtained from the Gaziemir-2 drilling and the technical consultants of the Beneficiary suggested a 3000 meter deep drilling in the AG-4 well area. For this reason, AG-4 well has been included in the scope of ESMP dated 23.07.2023.

Drilling Permit Processes and Legal Status;

The AG-4 location selected as the location of the well is within the pasture land with a title deed area of 101.600,00 m² in parcel 3809 of Güzelyurt Village of Güzelyurt District of Aksaray Province.

Within the scope of Environmental Impact Assessment (EIA: 35154), an EIA application dated 28.07.2021 was made for a 10 acre land area covering the AG-4 wellhead. The "EIA is not required" decision of the Administration is dated 13.01.2022.

In the announcement dated 05.10.2022 by Aksaray Provincial Directorate of Agriculture, permission was granted for geothermal drilling for approximately 10.315,83 m² in the pasture land numbered 3809 parcel with the Governorate Approval.

Applications were made for the transfer of AG-4 pasture permit to Güzelyurt Jeotermal Enerji A.Ş. between September 2023, and in line with the opinions of Aksaray Provincial Directorate of Agriculture, a new application was made on 20.09.2023 for a total area of 19.291,29 m² covering the area where the road will be passed through the AG-4 parcel and the area where the old permit was obtained. On 17.10.2023, land permission was granted by Aksaray Provincial Directorate of Agriculture (Annex 1.4).

AG-4 Current Use:

During the period when the AG-4 well site was included in the previous ESMP revisions, it was reported by the RSM consultants that part of the land appeared to be under occupation and the Beneficiary was asked.

As can be seen from the past aerial photographs, it has been determined that agricultural activities were carried out by an illegal user in the past in a section within the pasture land. It is seen that there was no cultivation-planting activity in the period when the permission of the land was obtained; only some of the land was plowed in the old satellite images (Figure 2.1). In order to make the necessary explanations within the ESMP, the person(s) who illegally used the occupation part of the parcel at that time were investigated by the Beneficiary. With the help of Akyamaç village headman, it was learned that the land within the pasture was plowed by a person named -- -- ---- in the past. Again, through Akyamaç Village Headman, the person was contacted by phone and the situation was explained. Person responsible for Aksaray named ---- ---- ---- conducted these interviews on behalf of the beneficiary. In the interview, the person was asked whether he had any claim on the land, and the person stated that he had not planted any crops in that area for a while, that he did not have any claim on the land, and that he had already quit farming, that he had no livelihood problems, and that he was engaged in contracting and trade. The beneficiary requested a face-to-face follow-up to this phone call and was asked if he could provide a written statement of what he said. The person responded negatively that he had already illegally cultivated the pasture area and that if he gave a written document, this would turn into evidence and the state could impose sanctions on him, and ended the interview by saying that he should not be involved in this matter and asked not to be bothered about this issue again.

There is currently no illegal use on the site. In the 2023 satellite images, it can be seen that there is no impact on the previously occupied parts of the parcel outside the beneficiary use permit, although the person does not carry out any activity (see Figure 2.1 and Figure 2.2).



Figure 2.1 Google Earth Past Time Aerial photo dated 05.08.2021. (The area within the yellow colored borders is Pasture land with parcel number 3809. The area outlined in blue is used by an illegal user).

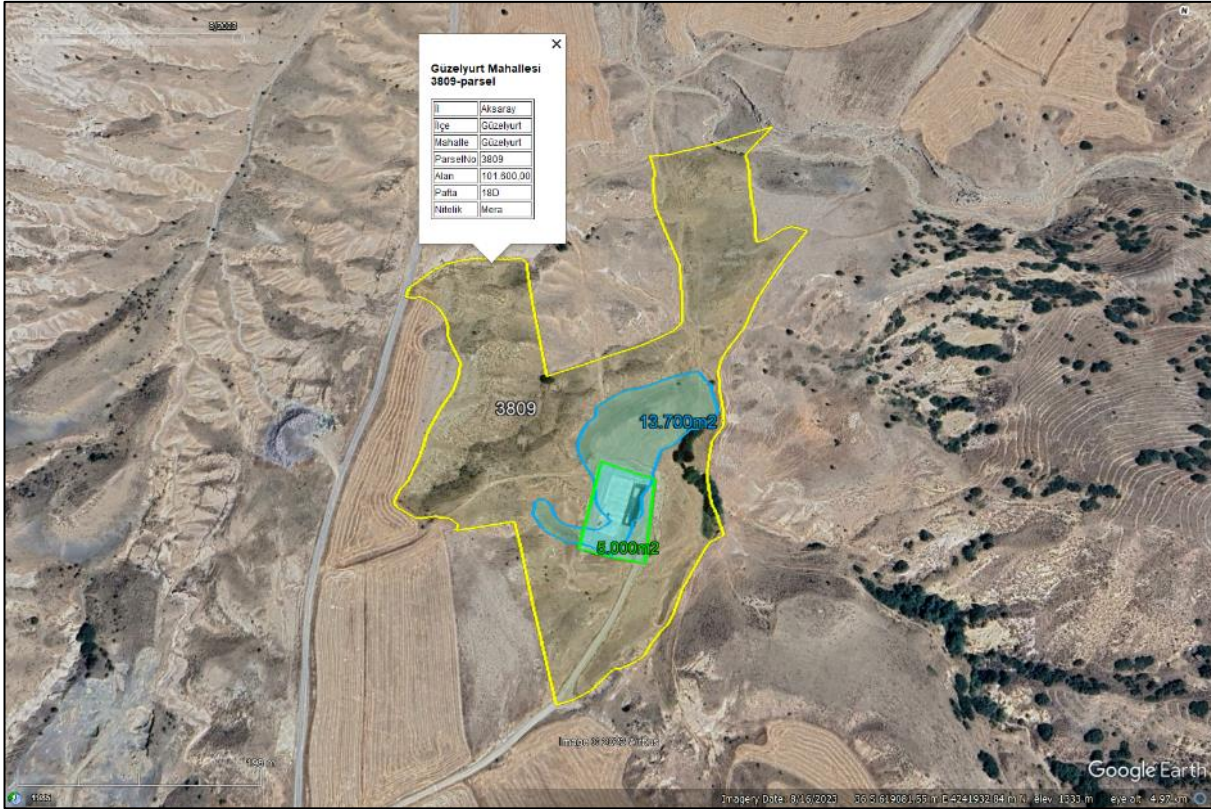


Figure 2.2 Google Earth Aerial photo of Google Earth dated 16.08.2023. (The area within the yellow colored borders is Pasture land with parcel number 3809. The area bordered in blue is the area used by the illegal user and is no longer cultivated. The area in green is the area to be used for approximately 6 acres of drilling location).

In December 2022, the construction of the AG-4 well location was started by the beneficiary. In this context, firstly, a total of 290 m³ of topsoil was stripped with a thickness of 10 cm (it varied between 5 cm and 7 cm on the land surface). Some of the removed topsoil (approximately 95 m³) was left at the AG-4 location, while the remaining 195 m³ was stored in the area rented by Güzeyurt Geothermal.

A wellhead concrete of 21mx60m with an area of 1250m², a concrete cellar pool of 2.5mx2m, and a geothermal fluid pool of 2400m³ with an area of 46mx13mx4m covered with impermeable geomembrane, covered with 50 cm clay on the bottom, were prepared.

An iron gate was built at the entrance of the location and the location was completely surrounded by a wire fence to ensure the security of the location.

Land Acquisition Status: EIA and pasture use permits have been obtained. It is given in Annex 1.4.

Gaziemir-5 location and connection road land acquisition and current utilization status:

Gaziemir-5 drilling location and the access road to be constructed remain as a threshing floor, a pasture recycling project has been prepared for these parcels and a land use permit dated 17.10.2023 has been obtained from the Provincial Directorate of Agriculture (Annex 1.5).

For Gaziemir-5 land it was understood that the owner of the parcel ----- entered and occupied the pasture / threshing ground. He was contacted and the situation was explained. The person stated that he did not have any claim and that this land was not important for his livelihood. The beneficiary also informed the person that the land will not be entered until the crops planted for

the summer of 2023 are harvested in the summer and stated that they will help him. The person in question also stated in writing in his own handwriting that he did not have any claim in the witness of the headmen. This writing is given in Annex-1.8¹.

Permits obtained from EIA and Provincial Directorate of Agriculture is given in Annex 1.5.

Gaziemir 1 location land acquisition and current utilization status:

An application was made to Aksaray Special Provincial Special Administration for geothermal resource exploration on 02.06.2022 regarding the use of the drilling location determined for Gaziemir-1 well and the permission process was transferred to the Directorate of National Real Estate through Aksaray Special Provincial Special Administration. With the letter transferred on 26.12.2022 by Aksaray Special Provincial Special Administration through the Directorate of National Real Estate, the parcel in question was allowed to be used for drilling activities for geothermal resource exploration. The relevant correspondence is presented in Annex 1.3.

It has been determined that there is unofficial agriculture in the northwestern part of Gaziemir-1 location at 12.373,19 m². In order not to affect informal users, location use and drilling layout plans have been organized so as not to remain within the agricultural area (Annex 1.3). In this way, there will be no physical or economic displacement of informal users.

Transportation to the project areas will be done using the existing roads. Project areas can be accessed from Güzelyurt-Aksaray highway. Gaziemir-1 and AG-4 wells can be accessed by existing stabilized roads. In order to reach Gaziemir-5 well, a new 65 m long, 5 m wide connection road will be constructed within the 0 Block 616 Parcel with pasture qualification, which is qualified as a threshing floor. Regarding the use of this parcel, the necessary permissions were obtained from the Provincial Directorate of Agriculture with a letter dated 17.10.2023 and presented in Annex 1.5. Except for the Gaziemir-5 drilling area within the scope of the RSM, there is no use by the local community in any of the parcels. There is an illegal user in the Gaziemir-5 drilling area, but he has been contacted and consent has been obtained which is given in Annex 1.8. The road parcel (0 Block 616 Parcel) to be used for access to the Gaziemir-5 drilling site is also not in use.

General authorization process for treasury lands in Turkey;

For the use of Treasury lands, an application is made to the National Real Estate Directorate of the Governorship where the area to be used is located and permission is obtained.

For the use of Treasury lands, Article 12, Paragraph 7 of the Law No. 5686 on Geothermal Resources and Natural Mineral Waters states that "No rent or extra charge shall be levied after the effective date of this Law for the activities carried out in the private property of the Treasury or in places under the dominion and disposal of the State". Paragraph 5 of Article 26 of the Implementation Regulation of the Law on Geothermal Resources and Natural Mineral Waters states that "After the effective date of the Law, no rent or adequate payment is charged for the facilities for the exploration, development and operation of geothermal resources and the areas required for the use of geothermal and natural mineral waters in the private property of the Treasury or in the places under the rule and disposal of the State. (Additional sentence: OG-24/9/2013-28775)".

General permission process for pasture lands in Turkey:

¹ Publication and dissemination will be kept confidential.

In Turkey, pasture land use permits are obtained from the Provincial Directorates of Agriculture and Forestry in accordance with the Soil Conservation and Land Use Law No. 5403, Pasture Law No. 4342 and Additional Article 2 (1) of the Implementation Regulation of the Law on Geothermal Resources and Natural Mineral Waters. A deposit is paid by the investor when obtaining a permit. Use permits for pasture lands are granted on condition that the land is restored to its former quality and capacity at the end of the work. If the land is not restored to its former condition by the investor, the collateral paid when obtaining the permit is not recovered by the investor (it is not reimbursed to the investor). This guarantee is used by the Provincial Directorate to restore the site to its former condition.

Once the exploration drilling is completed, if the project is successful, the land will need to be restored in order to continue use under pasture permits. The legal regulations on this issue are given in the Implementation Regulation of the Geothermal Resources and Natural Mineral Waters Law and the Pasture Law. According to Additional Article 2 (2) of the Implementing Regulation on the Law on Geothermal Resources and Natural Mineral Waters, "The allocation purpose of the areas where all activities related to the production and production of the geothermal resource whose reserves are determined as a result of exploration activities can be changed by submitting the required information and documents".

In addition, Article 14 of the Pasture Law No. 4342 is applied in allocation restoring operations.

Stages of the Project

This project consists of 4 stages:

Site preparation stage: This stage includes removal and storage of topsoil, excavation of pits such as geothermal fluid pools, storage or utilization of the materials extracted from the pits, surface leveling operations, preparation of the access road for Gaziemir-5 and strengthening of existing stabilized roads if deemed necessary, concrete casting the location, placement of containers for drilling activities. This stage encompasses a period of approximately 1 (one) month per site.

Drilling activities stage: Starting with the placement of the drilling tower, this stage covers the commencement of drilling and all activities until reaching the final depth of the drilling. This stage spans approximately 2 to 4 months per drilling.

Well production testing: This stage involves testing procedures conducted after the final depth of drilling. It lasts approximately 10 (ten) days.

Rehabilitation (reinstatement) works: After the completion of drilling activities and well tests, if the well is deemed successful, the wellhead area will be preserved, and the rest of the location will be rehabilitated. In case of well failure, the well will be sealed closed and the entire location will be rehabilitated. In both conditions, the rehabilitated areas will be handed over to the National Real Estate Directorate with the planting of region-specific plants.

- The rehabilitation of pasture lands and threshing floor locations will be carried out according to the approved Reinstatement Plan. The draft 'Reinstatement Plan' includes the following measures for the relevant land: After completing the geothermal exploration period, the land is prepared for planting by correcting the pits and stock areas formed during drilling. Pasture plants suitable for the region's vegetation are identified. In the first year, pre-sowing is necessary due to the initial weak development of pasture plants.
- Arrange the pits and depths from the activity area so that coarse materials like stones and rubble are placed at the bottom, with smaller materials on top.
- Following the acquisition of the ideal soil for the seedbed, thorough leveling is essential for sowing convenience. Sowing is recommended after fall rains to ensure the soil, ready for sowing, retains the moisture required for germination.
- In regions with a dominant continental climate, wheatgrass plants are preferred. When preparing the seed mixture for barren land, a suitable ratio is 60% wheatgrass and 40% legumes. It is advised to use 4 kg of seed per decare.

Rehabilitation works lasts approximately 20-25 days. Afterward, the drilling location is handed over to the Agriculture and Forestry Provincial Directorate. In another scenario, after deciding that the well is unsuccessful, the Beneficiary (project owner) plans to use the location for a specific purpose. In this case, the Beneficiary will request approval from the RPM Unit, providing appropriate justifications, and if approved by the RPM Unit, rehabilitation works may not be carried out.

2.2 Purpose of the Project

The primary goal of this project, conducted under the guidance of the RSM, is to identify and assess potential geothermal resources. Upon successful identification, the main focus will shift towards the development and implementation of a sustainable geothermal energy solution, potentially leading to the establishment of a geothermal power plant.

2.3 Technical Studies for the Project

Within the scope of surface exploration activities in the geothermal exploration licenses subject to the project, Dokuz Eylül University Earthquake Research and Application Center (ERAC) Director Prof. Dr. Hasan Sözbilir is working with Dokuz Eylül University for geological and tectonic studies. Prof. Dr. Alper Baba, Director of Geothermal Energy Research and Application Center of Izmir Institute of Technology, is working with Prof. Dr. Alper Baba for geochemistry and hydrogeology studies. For gravity-magnetic, Vertical Electrical Drilling (VED), Audio Magnetotelluric (AMT) and Magnetotelluric (MT) measurements and reporting we work with FNÇ Petrol Madencilik San. ve Tic. A.Ş. In addition, GMK Energy team also worked on geochemistry measurements in the field. Within the scope of geochemistry studies, manual surface water and groundwater samples were taken in 2019 and sent for analysis. These studies were carried out within the scope of surface exploration studies carried out in order to determine the drilling locations in the geothermal exploration drilling project. The samples taken are outside the license area.

In addition, seismic measurements were also made in the field in July and August 2022. A total of 97.17 km of measurements were taken and PG SERV was engaged for the fieldwork. We continue to work with Prof. Dr. Hasan Sözbilir on the interpretation of seismic studies and Çoşkun Bulut has joined the consultant team. We work with BGP Int, and TBI for the processing of seismic data collected from the field.

2.4 Components of the Project

This section provides descriptions of the main components, auxiliary components and auxiliary facilities (drilling locations) to be constructed in the Project.

❖ Main components

➤ Geothermal Exploration Wells

It is planned to drill geothermal exploration wells in the areas of Block 0 Parcel 2863 (Gaziemir-1), Block 0 Parcel 3809 (AG-4) of Güzelyurt Village, Güzelyurt District of Aksaray Province and Block 0 Parcel 879 and Block 0 Parcel 1328 (Gaziemir-5) of Akyamaç Neighborhood, Güzelyurt District of Aksaray Province. Another important component of a drilling activity after the rig is the rig mud circulation system. The main components of this system are mud tanks, water tanks, mud pumps, compressors, mud line, mud filter systems (vibrating screens: shale shaker, sand trap, solids separators: decanters, hydrocyclones: silt separators and gas separators: degassers etc.).

Drilling fluids are circulated in the mud system. Since suspensions of natural clay (bentonite etc.) and other natural substances (fine-grained calcium carbonate etc.) in fresh water are generally used as drilling fluid in geothermal wells, this fluid is generally called drilling mud. Suspension is defined in the language of chemistry as solids suspended in a liquid without dissolution. For a drilling mud produced in this way, solid-liquid separation can be easily done with appropriate methods.

In the geothermal exploration well drilling to be carried out within the scope of RSM, fresh water based natural clay/calcium carbonate drilling mud containing high temperature polymers (non-toxic-non-hazardous) will be used as drilling fluid.

Petroleum based drilling mud will not be used within the scope of the Project.

The primary purpose of using drilling mud is to remove rock cuttings from the well during drilling. In addition, by forming a cake layer on the wellbore wall, it prevents collapse and spillage in the well while at the same time providing impermeability. In addition, thanks to the rheological properties of the drilling mud, it performs vital functions such as preventing the drilling tools from jamming and preventing uncontrolled coming from the well and cooling the drill bit.

Drilling mud is kept in continuous circulation during drilling and circulation is achieved. The mud prepared in the mud tanks is pumped into the well through the drill string with the help of mud pumps. By carrying the crumbs cut by the drill to the surface, the well is kept clean at all times. The mud reaching the surface is passed through vibrating screens and a series of solid-liquid separators (shaker, desander, desilter, degasser, etc.) to separate the drilling mud from the formation cuttings and to treat the mud. As long as the mud maintains certain properties according to its intended use, it can be used repeatedly in a closed circuit (see [Figure 2.3](#) and [Figure 2.4](#))

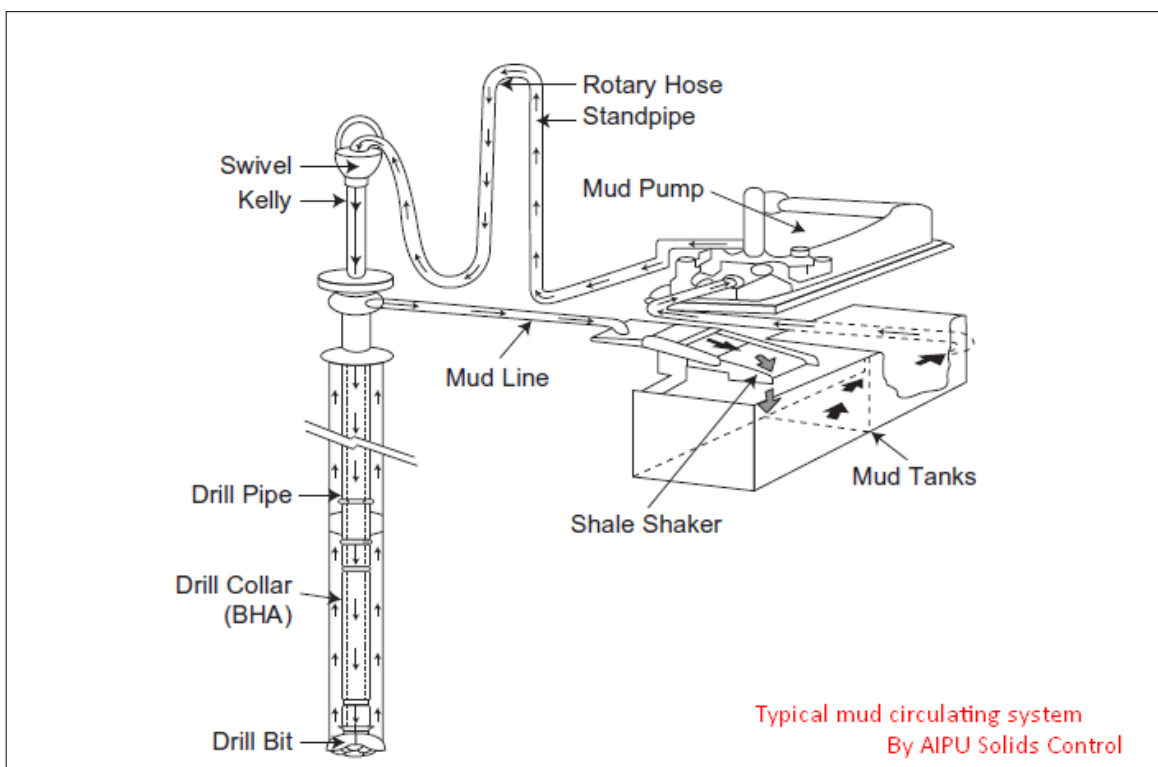


Figure 2.3 Representative view of drilling mud circulation

Drilling mud is as vital as the blood circulation in a human body and must be carefully monitored during drilling. For this reason, it is used in all shallow and deep drilling both on land and at sea. In geothermal resource exploration drilling, freshwater-based drilling muds containing natural clay are prepared. It is essential for an economical drilling to ensure that these muds, which are critical for drilling, are produced as much as necessary and, if possible, reused during drilling with good filtration.

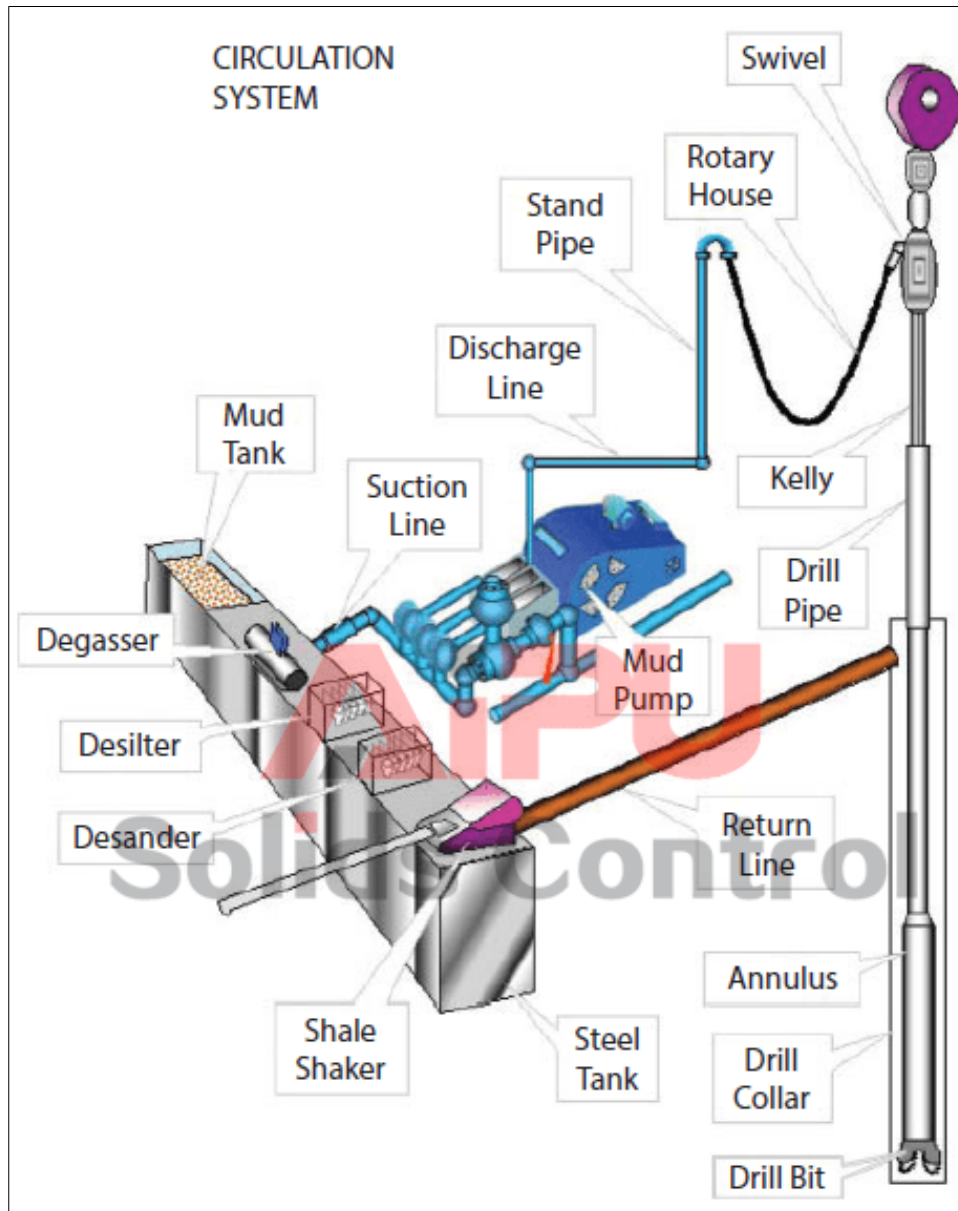


Figure 2.4 Drilling mud circulation and solids control (filtration) system view

During drilling, many physical, chemical and rheological properties such as mud tank levels, mud outlet-inlet temperatures, pressure, mud weight, viscosity, pH, electrical conductivity, salinity, crumb carrying capacity and water loss are monitored instantaneously. The rheological properties of drilling mud are analyzed at least 4 times a day in the portable laboratory and the mud is intervened and improved when necessary and as often as necessary.

The mud used in drilling operations is affected by the cut formations as the depth of the well increases and starts to collect crumbs, cuttings and debris materials. These solids are tried to be removed from the mud system by primary treatment method (vibrating screens and hydro cyclones etc.) on the surface. However, if the mud is not cleaned sufficiently, mud weight and viscosity increase, drilling progress becomes difficult and even mud losses and tool jams may occur. For this reason, the mud is kept within certain parameters. If proper cleaning is not achieved, a significant amount of mud is removed from the system and new mud is prepared. In this case, the new mud will significantly increase the well costs and a significant amount of waste will be generated. In such traditional methods, waste mud ponds called mud-pits have to be excavated.

Due to both drilling costs and environmental problems, it is aimed to treat drilling mud wastes and interruptions in-situ and to minimize the amount of waste and minimum water use. For this purpose, dewatered and stabilized drilling solid wastes accumulated in half-month tanks without using mud-pit (drilling mud waste pool) will be analyzed for hazardousness and will be removed from the location in accordance with the Waste Management Regulation and sent to disposal. In this way, waste management will be carried out and the DRY-LOCATION system, which is an environmentally-friendly system, will be used.

➤ Dry-Location System - Mudpitless Drilling

The dry-location system will be integrated into the tower floor control system. It consists of high-speed centrifugal pumps (redundant) and dewatering units (see [Figure 2.5](#) and [Figure 2.6](#)).

The decanter, which is the main element of the system, is one of the main treatment equipment for separating the fluidized waste into solid and water. Its biggest advantage over other treatment equipment performing similar tasks is that it can operate for a long time without interruption.

It is designed to phase separate liquid/solid suspensions. The low density liquid is separated from the incoming product at high drum speeds, while the solid is continuously ejected at high conveyor torques, taking advantage of the speed difference between the drum and conveyor.

Within the scope of the system; it is aimed to clean the drilling mud from solids at the highest possible rate and to dewater the waste mud collected by combining with other drilling wastes (pump and rig wash water, etc.), that is, to separate the waste mud into moist solids and clean water. In the system to be implemented, the clean water obtained can be reused for new mud preparation or mud dilution. With the use of the Dry Location system, the following 5 (five) main elements are targeted:

1. Reduction of the amount of waste mud is achieved by treating the system mud with the help of a high-speed decanter centrifuge specially assigned for this task.
2. Recycling of qualified waste mud is ensured by collecting and cleaning the qualified mud overflowing from the screens and/or accumulated in the cellar pool in semi-cylindrical tanks and returning it to the system.
3. Dewatering of unqualified waste mud is achieved by collecting the unqualified mud mixed with tower washing, pump and drawworks waste water in the waste mud tank, subjecting it to physical and chemical treatment, and then separating the solids and water it contains through the dewatering decanter.
4. Reuse of the water removed from solids is achieved by reusing the clean water from the dewatering decanter for mud making after the necessary drilling chemicals are added.
5. Reduction of the solid waste volume is achieved by maximum solids dewatering with the help of decanter centrifuges and chemical preparation unit, which generate high g-force with high rotational speed.

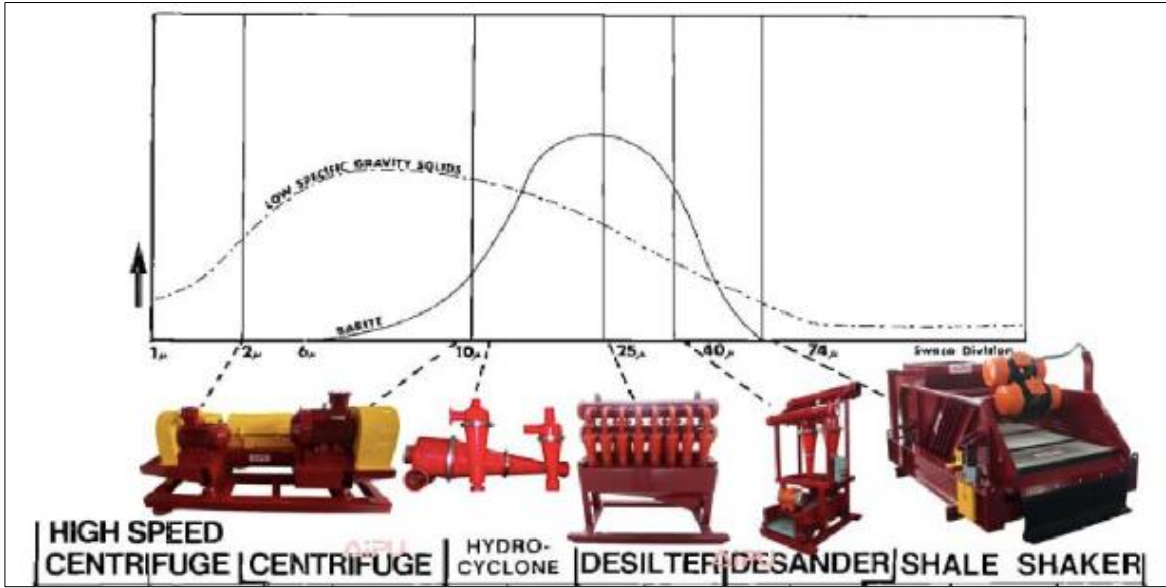


Figure 2.5 Separation up to 1-2 micron sized grains with high speed centrifugal decanters

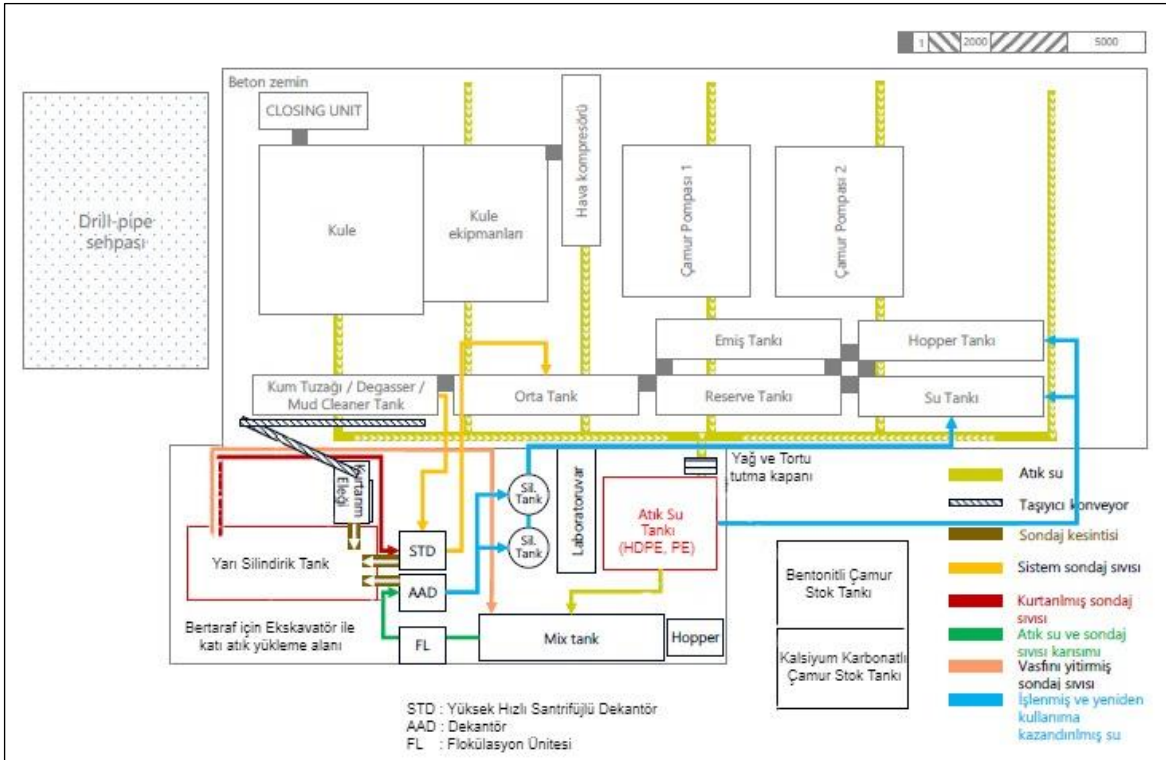


Figure 2.6 Representative layout of Dry-location system integrated into drilling rig solid control system (without mud-pit)

In the Drilling Waste Management System, the operation and equipment requirements vary according to the needs and capacity of the project. The system designed for the planned drilling works is based on the solids control of the drilling fluid (drilling mud), drying of the cuttings and recovery of the drilling fluid on the cuttings, and its operation is summarized below:

- As it is known, drilling mud, which is in continuous circulation during drilling activity, brings the cuttings cut by the drill to the surface. The mud mixed with cuttings passes through vibrating screens, which are the primary solids control equipment, and continues to circulate after being largely cleaned of solids (drill cuttings). In addition to vibrating screens, mud cleaners and hydro cyclones, which function as secondary solids control equipment, separate smaller solids (down to

10 microns) that vibrating screens cannot separate. While these two pieces of equipment separate the solids, some mud is also removed along with the solids.

- The mud solids separated by these two equipment are transferred to the drying screen by means of conveyors or chutes.
- In the drying screen, the muddy solid exposed to vibration is separated from the mud and transferred to the half-moon tank. Drying performance may vary depending on the structure of the drilled formation and the type of mud system vibrating screen.
- The drilling fluid recovered from the muddy solids by the drying screen is collected in the recovery tank under the screen and reintroduced to the system through the mud cleaner.
- On the other hand, since the vibrating screens of the mud system do not operate with 100% efficiency, fine fractions cannot be separated from the mud and some of these fractions accumulate in the tank below the screen over time. Therefore, periodically the screen tank (sand trap) will be emptied into the drying screen and cleaned.

The quality of the mud-water mixture collected in the cellar pool and waste water tank is tested by mud engineers and system engineers. If found qualified, it is cleaned with a decanter and returned to the system. The necessary chemical supplement to the system mud is planned by the mud engineer.

- The task of the high speed decanter is to connect to the mud system from the first compartment of the tower settling tank and continuously act as the tertiary solids control equipment of the mud system, removing the unwanted 1-2 micron sized solids in the system mud, which cannot be removed by the vibrating screen and mud cleaner, from the system and delivering processed mud to the second compartment. Thus, the mud is continuously treated and the mud disposal period is extended or completely prevented.

In addition to processing drilling cuttings and recovering mud, the water used daily in the rig can be collected and recovered. With the specially designed tower floor concrete, the water used in the drilling area is collected in the waste water tank in the oil and sediment separator with the corrugated structure on the concrete floor. The necessary analysis of the water is performed instantly on site and if it is suitable, it is reused for mud making. If there is doubt about its suitability, it will be treated in the flocculation unit. However, if deemed necessary, it will be sent for disposal. Efforts will be made to recover surface water and wastewater. The waste water tank will be provided by the company performing the work within the scope of dry location service and this tank will be placed in the ground by digging a pit. The tank will be made of HDPE or PE material which is completely impermeable in terms of material type. Tank volume will be 5 m³ volume. When the work of the tank is completed, it will be removed by holding the lifting shoes and the pit where the tank is located will be closed. Under normal operating conditions, the wash water coming from the drainage channels in the drilling site will be transferred to this tank after the collection channel and will be continuously transferred to the mud making or flocculant unit without allowing it to overflow by means of a submersible pump in the tank and will be treated quickly.

- 2 extra semi-cylindrical tanks will be kept on site continuously during drilling in order not to stop the operation in the field and to eliminate possible risks.

- The chemical and physical properties of drilling mud, cleaned mud and produced water are continuously analyzed by laboratory equipment. Decanter speeds and mud compositions are managed in line with detailed laboratory analysis.
- Dewatered and stabilized drilling solid wastes are accumulated in 35 m³ half-moon tanks and transferred to a licensed waste transport truck in accordance with environmental legislation by using excavator etc. vehicle as often as necessary without causing overflow and sent to disposal immediately.
- During the drilling of reservoir quality rocks, drilling mud will be replaced with water based mud containing calcium carbonate in order not to clog the pores in the formation and for easy cleaning of the well. Bentonite mud previously circulating in the well will be taken to the stock tank and stored to be used as spud mud for another well. This will reduce the consumption of water and mud making materials to prepare mud again and reduce the environmental impact. These tanks can also be used for possible emergency situations.

For a 3,000 meter deep drilling, waste management is envisaged under the following conditions (see Figure 2.7). Accordingly, it is estimated that approximately 1,099 tons (~450 m³) of total Solid Waste will be generated when Waste Management is performed using the Dry-Location system. Compared to the amount of waste generated by conventional drilling, the waste reduction rate with Waste Management will be 69% on average.

Kuyu Çapı (in)	Kuyu Profili	Derinlik (m)	Kuru Kesinti Hacmi (bbl)	Kuru Kesinti Ağırlığı (ton)	Tahmini Katı Atıklar (bbl)	Tahmini Toplam Katı Atık (Atık Yönetimi Yapılmadan) (ton)	Tahmini Toplam Katı Atık (Atık Yönetimi İle) (ton)	Atık Azaltım Oranı (%)
26		100	215	92	510	183	105	42.6%
17½		800	684	292	3,570	928	378	59.3%
12¼		1,800	478	205	5,300	1,150	335	70.8%
8½		3,000	276	118	6,480	1,276	281	78.0%
Total			1,653	708	15,860	3,538	1,099	68.9%

Figure 2.7 Estimated quantities of waste in the drilling

➤ Geothermal Fluid Pool

One geothermal fluid pool will be constructed at each drilling location. The volumes of these pools are planned to be 3,350 m³ except for AG-4. The existing pool in the AG-4 area is built as 2,400 m³. The purpose of this unit is to cool the incoming geothermal fluid. While the existing pool dimensions at the AG-4 location are 13 m * 46 m * 4 m, the pool dimensions are planned to be approximately 30 m * 48 m * 2.5 m at the other locations. However, these dimensions may vary according to the shape and condition of the drilling locations so that the volume remains constant. In case of variability in the geothermal fluid pool dimensions, it will be submitted to the approval of the RSM Unit. Following the approval, construction work will commence.

Only the geothermal fluid pool planned at the AG-4 drilling location has a lower volume. This is because there is another drilling owned by the beneficiary located 350 meters away from the location (Gaziemir-2) and this drilling can be injected with test water in case a long term flow test is required and geothermal fluid if available. Since the aforementioned Gaziemir-2 drilling is owned by the beneficiary, no additional authorization is required. The actual drilling of Gaziemir-2 well was completed at 2004 meters. Well production-injection tests were conducted within the scope of well completion tests. However, the actual reinjection capacity of the well is not known since the tests could not be carried out for a long time and with high capacity pumps. According to the preliminary information obtained, a flow rate of 60 tons/hour could be reinjected. However, it is not possible to be sure of this flow rate for a long-term reinjection test. At this stage, no commitment can be made for reinjection to Gaziemir-2 well in the ESMP. If a longer term flow test is desired in AG-4 well production tests, reinjection to Gaziemir-2 well under current conditions will be reported to RSM experts as an alternative suggestion and their opinion will be sought. During the tests, impermeable storage tanks will be made available on site to contain the fluid.

➤ Temporary Waste Storage Area

A temporary waste storage area will be established at drilling locations. During temporary storage, the provisions of Article 13 of the Waste Management Regulation published in the Official Gazette dated 02.04.2015 and numbered 29314 will be complied with.

In the temporary waste storage area created within the drilling location, wastes will be stored in such a way that they will not react with each other; there will be areas such as hazardous waste storage area, chemical storage area, scrap material storage area. The temporary storage area will be established as a sealed, covered and enclosed area, surrounded by a leakage collection channel for leaks and spills, and this channel will end with a blind well. Secondary containers will be placed under the storage containers or in areas to prevent contamination of liquid waste and leakage. Wastes will be classified according to their characteristics. Temporarily stored waste will be labeled as hazardous or non-hazardous waste, waste code, amount of waste stored and storage date.

If one thousand kilograms or more of hazardous waste is produced per month, a temporary storage permit will be obtained from the provincial directorate for the areas where hazardous waste is temporarily stored.

Regardless of the amount, Hazardous Substances and Hazardous Waste Compulsory Financial Liability Insurance will be taken out for hazardous waste temporary storage areas/containers in accordance with the provisions of Article 16 of the Regulation.

The Municipal Solid Waste storage area will be located at the entrance of the drilling location so that the municipality's vehicle can pick up the waste.

➤ Septic Tank Area

One sealed septic tank will be constructed at each drilling location. After the septic tank pit is excavated, a sealed tank will be placed inside.

➤ Transportation Routes

Within the scope of RSM, 3 exploration drillings are planned. These drillings are AG-4, Gaziemir-5 and Gaziemir-1 as mentioned in the previous section. Access to Gaziemir-1 and AG-4 drilling

locations is possible via existing roads, and a 65 m long access road will be constructed for Gaziemir-5, the details of which are given below (see Figure 2.8).

Transportation routes for drilling locations are as follows:

For Gaziemir-1: There is a stabilized road to the location. The width of this road is 5 meters and it passes outside the parcels along the road.

For AG-4: The distance of the location to the stabilized road is 378 meters. 258 meters of the 378-meter road was straightened without changing the existing width. The remaining 120 meters passes through the pasture qualified treasury land numbered 0/3809, where road widening and correction operations were carried out. The permit for the relevant drilling location and road route is dated 17.10.2023 and is given in Annex-1.4.

For Gaziemir-5: A 65 m long and 5 m wide connection road will be established from the existing stabilized road to the drilling location for access to Gaziemir-5. This access road is located in Aksaray Güzelyurt district Akyamaç neighborhood Block 0 Parcel 616, which is a pasture qualified as a threshing floor. No use for any purpose has been observed on the mentioned parcel and the permits related to the road to be opened for access to Gaziemir-5 drilling location are given in Annex 1.5.

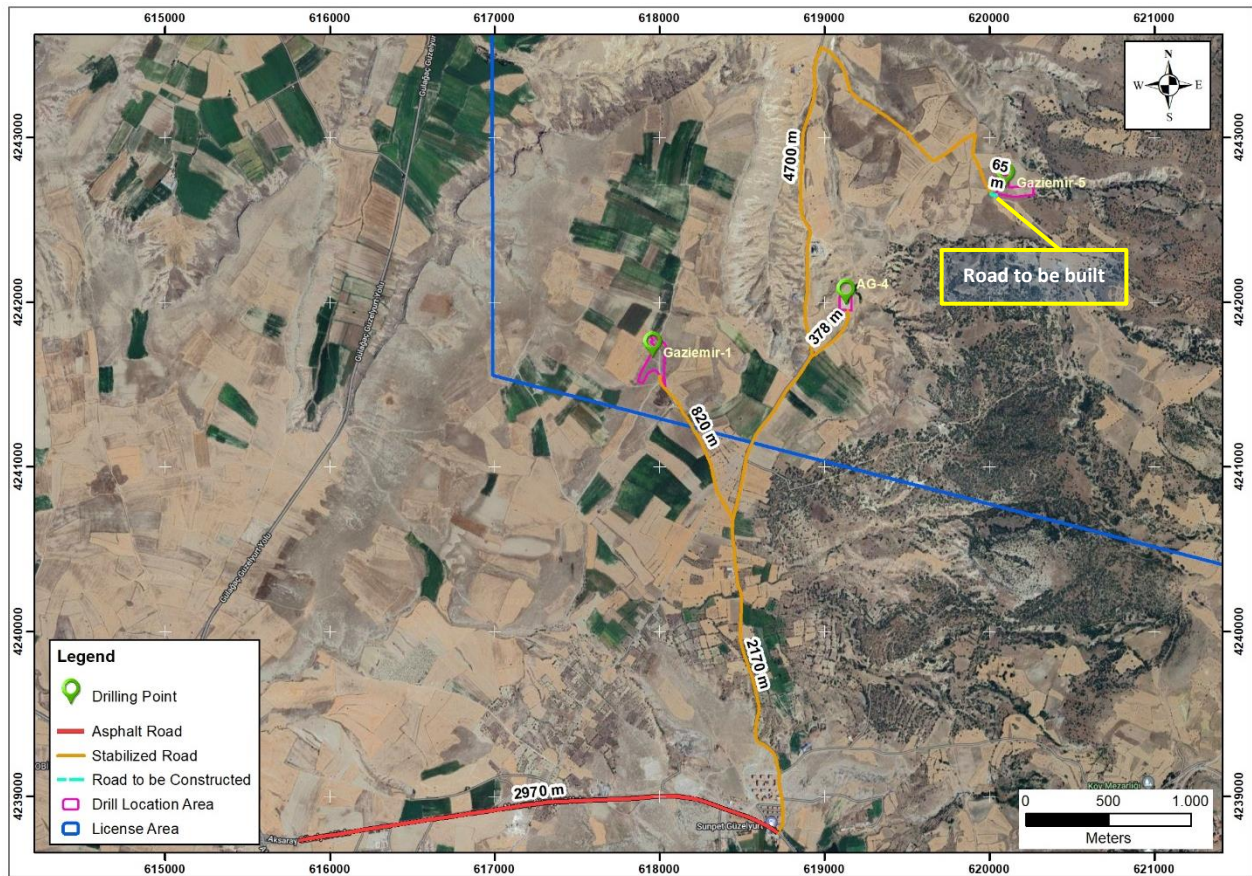


Figure 2.8 Transportation Routes

➤ Vegetated Soil Storage Areas

Before the activities, approximately 10 cm of topsoil will be removed from Gaziemir 1 drilling site due to its stony and rocky nature, 15 cm of topsoil will be removed from these two drilling sites due to the fact that Gaziemir-5 drilling site is a threshing floor and AG-4 drilling site is a pasture land and will be stored for reuse during the rehabilitation phase.

Drilling is planned to start at the AG-4 location. The topsoil to be stripped will be stored in the topsoil storage area designated at each drilling location and will be used for rehabilitation purposes after the drilling activities/well tests are completed. Images showing the topsoil storage areas and other unit areas for each location are shown in Figure 2.9, Figure 2.10 and Figure 2.11. The amounts of topsoil to be stripped from the drilling areas and storage area sizes are given in Table 1. In the AG-4 drilling area, only the required 5,000 m² of the land has been leveled and 290 m³ of topsoil from this 5,000 m² has been removed and approximately 95 m³ has been stored in the AG-4 drilling area and the remaining 195 m³ has been stored in the area leased by Güzelyurt Geothermal (See Figure 4.6 and Figure 4.7). For the new 65 m connection road to be constructed for access to Gaziemir-5 location, the topsoil will be stripped and deposited on the side of the road.

As stated in Article 14 of the Regulation on Control of Excavation Soil, Construction and Demolition Wastes published in the Official Gazette dated 18.03.2004 and numbered 25406 (Amended: RG-9/10/2021-31623), the topsoil will be collected separately from the subsoil. Depending on its depth and structure, it will be excavated and piled for reuse. The place where the topsoil will be stored should not be sloped more than 5%. Losses that may occur during the storage process of the topsoil will be prevented, it will be stored in the form of a herringbone mound, lightly pressed on top to prevent dusting and water ingress, and the quality of the soil will be protected. Separately collected topsoil will be reused in rehabilitation works as it is suitable for reuse in parks, gardens, green areas, agriculture and similar works according to the regulation.

When storing topsoil, it will be stored at a maximum height of 3 m and the slope will not be above 30 degrees.

Article 14 of the aforementioned regulation states that "...the excavated soil shall first be utilized within the activity area." Land leveling and arrangement operations involve excavation and backfilling of the subsoil, i.e. excavated soil. There will be no excavated earth storage in all areas, all of it will be utilized within the activity area and used in backfilling for leveling.

Table 1. Amount of Vegetable Soil to be stripped from Drilling Sites and Storage Area Size

Drill No	Block/Parcel	Area with Pasture Permit for Threshing Area m ²	Pasture Permit Area m ²	Area Permitted for Treasury Lands m ²	Area to be used m ²	Soil to Scrape	Total Vegetated Soil Volume m ³	Temporary Storage Area to be used for Drilling Activity m ²
AG-4	0/3809	-	19.291,29	-	6.000	15 cm	290+ ~100	1.000
Gaziemir-5	0/1328 and 0/879	24.350		-	18.032	15 cm	2.704,80	2.156
Gaziemir-1	0/2863		-	23.477,81	23.477,81	10 cm	2.347,78	830

Approximately 95 m³ is stored in the AG-4 drilling area and the remaining 195 m³ is stored in the area leased by Güzelyurt Geothermal. 100 m³ of topsoil expected to be generated by 1000 m² of stripping will be deposited in the topsoil storage area within the AG-4 location.

➤ Auxiliary Facilities

In geothermal drilling, the drilling location is created by covering the area with concrete floor and gravel. Container area for personnel (accommodation units, office sheds, guest house sheds, etc.), dry location, area where the drilling rig will be placed, waste storage area, chemical storage area, septic tank area, etc. areas are located on this location. The drilling company will make an agreement with a hotel in the region for its own personnel and the personnel will come and go to the site in shifts. However, for the Beneficiary personnel and the personnel carrying out service services (cleaning, catering, etc.) within the scope of the Beneficiary, two-compartment containers used in drilling will also be requested from the drilling contractor. These containers are 7x2.5 meters wide and of standard type dimensions. Approximately 644 m² container space is allocated in Gaziemir-1 and Gaziemir-5 drilling areas and 364 m² container space is allocated in AG-4 drilling area. Approximately 16 people will be accommodated at the site during drilling and the remaining personnel will be accommodated in hotels in the region and will work in shifts.

There is no domestic water, sewage lines and electricity services at the drilling locations. Potable and process water is planned to be supplied by transportation and generators are planned to be used for electricity needs.

Sizes of the main components are presented in Table 2.

Table 2. Spatial Sizes of Main Components

Drill No	Dry Location	Geothermal Fluid Pool	Drilling Concrete	Container Area	Temporary Waste Storage Area	Chemical Storage Area	Septic Tank Area
AG-4	364 m ² (14x26)	1,228.5 m ³ (9x39x3.5)	1500 m ² (60x25)	312 m ² (13x24)	40 m ² (8x5)	49 m ² (7x7)	25 m ² (5x5)
Gaziemir-5	644 m ² (14x46)	3600 m ³ (48x30x2.5)	1500 m ² (60x25)	611 m ² (13x47)	40 m ² (8x5)	49 m ² (7x7)	25 m ² (5x5)
Gaziemir-1	644 m ² (14x46)	3600 m ³ (48x30x2.5)	1500 m ² (60x25)	611 m ² (13x47)	40 m ² (8x5)	49 m ² (7x7)	25 m ² (5x5)

The drilling locations to be used in the Project, i.e. the area sizes to be used, are presented in Table 3 below. The general layout of the drilling locations is shown in Figure 2.9, Figure 2.10 and Figure 2.11 respectively.

Table 3. Cadastral and Property Information of the Areas to be Used

Drill No	Location	Block/Parcel	Parcel Area m ²	Permit Area m ²	Area to be used m ²	Usage %	Parcel Qualification
AG-4	Aksaray Province, Guzelyurt District, Guzelyurt Village	0 / 3809	101.600	19.291,29	6.000	3,11	Pasture
AG-4 connection road	Aksaray Province, Guzelyurt District, Guzelyurt Village	0 / 3809	101.600	19.291,29	600=120x5	0,31	Pasture
Gaziemir-5	Aksaray Güzelyurt District Akyamaç Neighborhood	0 / 1328, 0 / 879	9.950, 14.400 (24.350)	24.350	18.032	74,05	Threshing Place
Gaziemir-1	Aksaray Province, Guzelyurt District, Guzelyurt Village	0 / 2863	35.500	23.477,81	23.477,81	66	Treasury
Connection Road for Gaziemir-5	Aksaray Güzelyurt District Akyamaç Neighborhood	0 / 616	10.400	1.110,52	1.110,52	10,68	Threshing Place

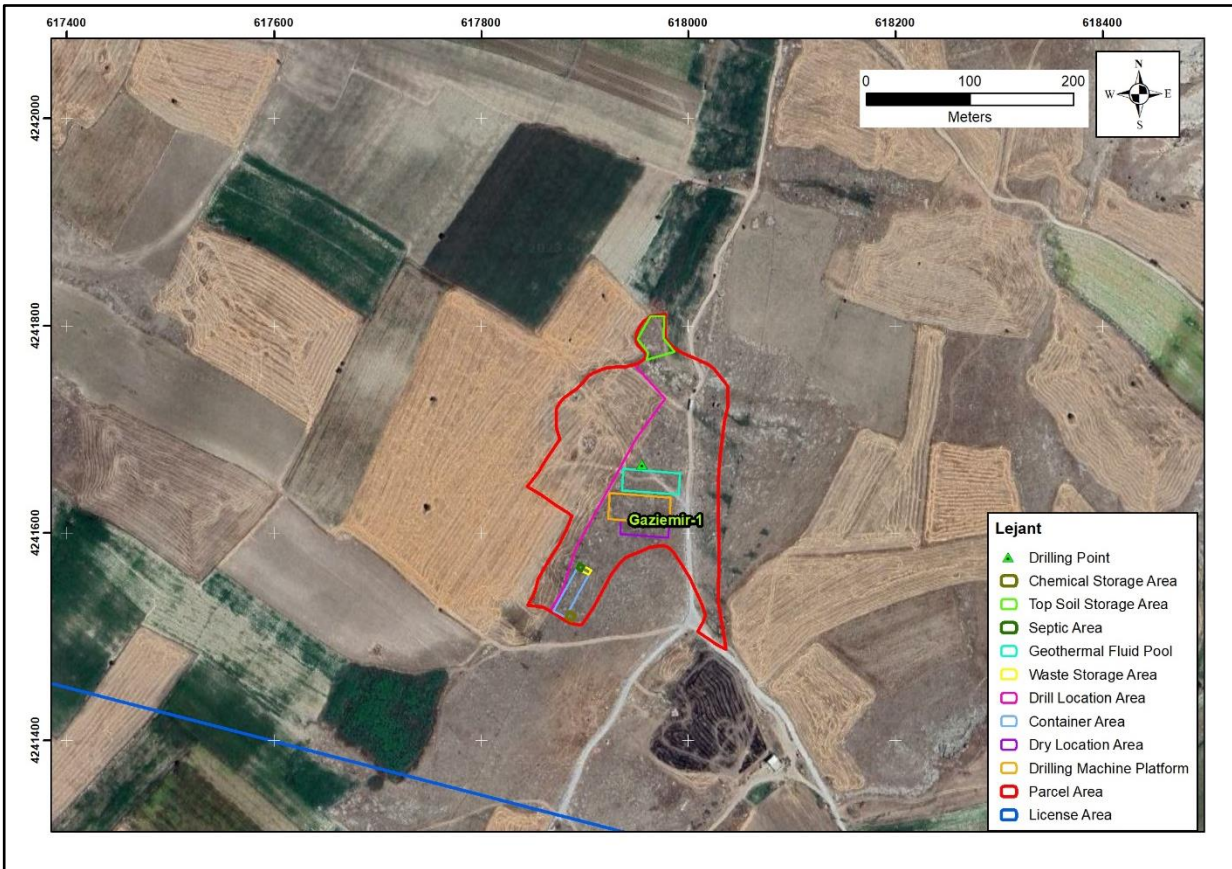


Figure 2.9. Map Showing the Settlement within the Drilling Location (Gaziemir-1)

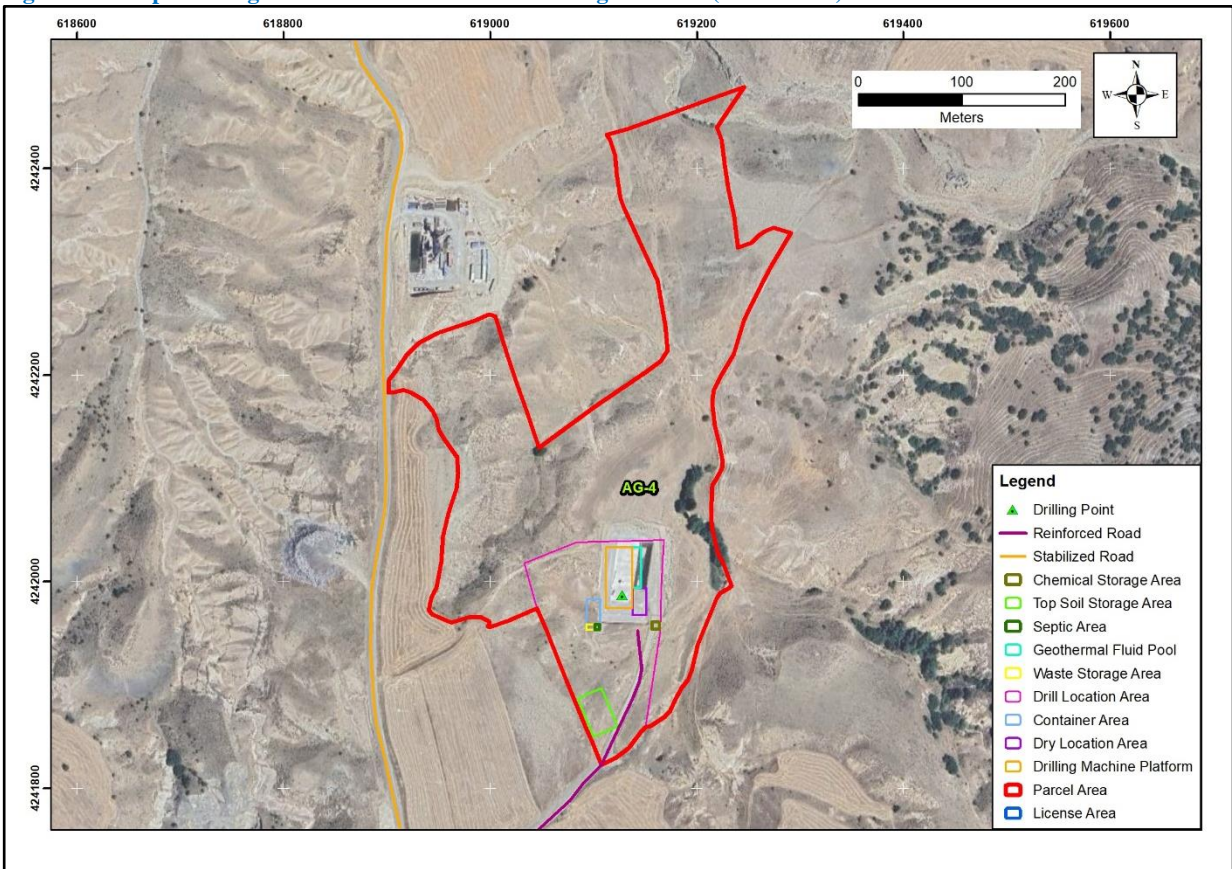


Figure 2.10. Map Showing the Layout within the Drilling Location (AG-4)

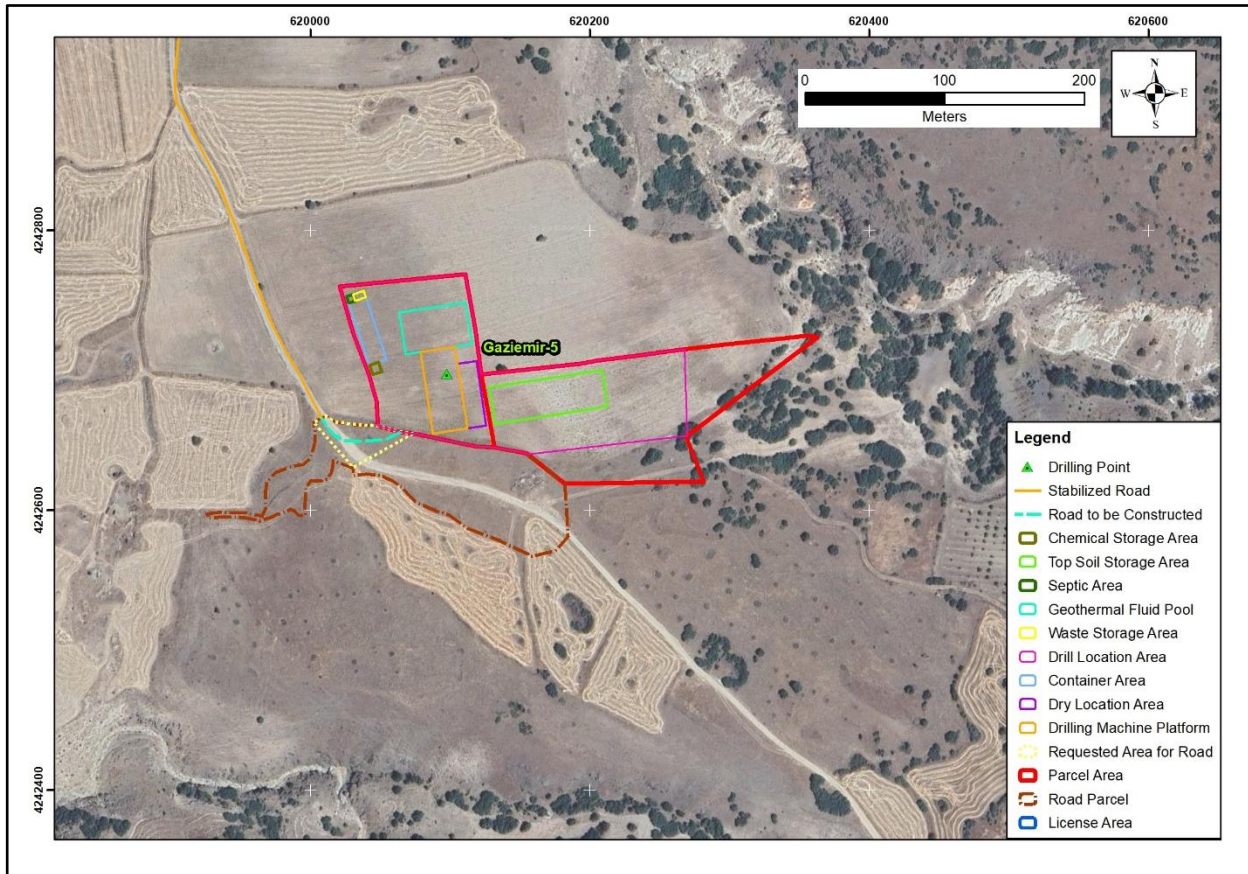


Figure 2.11. Map Showing the Settlement within the Drilling Location (Gaziemir-5)

2.5 Investment Location and Features

2.5.1 Geographical Location

Aksaray Province, where the project is located, is located in the Central Anatolia Region and is surrounded by Nevşehir in the East, Niğde in the Southeast, Konya in the West, Ankara in the North and Kırşehir in the Northeast. Its surface area is 7.626 km². Aksaray has 8 districts as Center, Ağaören, Eskil, Gülağaç, Güzelyurt, Ortaköy, Sultanhanı, Sarıyahşi and 192 villages and towns.

Drilling will be carried out in the identified parts of the areas of Zone 0, Parcel 3809 (AG-4), Zone 0, Parcel 2863 (Gaziemir-1) in Güzelyurt Village, Güzelyurt District, Güzelyurt District, Aksaray Province and Zone 0, Parcel 879 and Zone 0, Parcel 1328 (Gaziemir-5) in Akyamaç Neighborhood, Güzelyurt District, Güzelyurt District, Aksaray Province (See Figure 2.12. Figure 2.12, Figure 2.13 and Figure 2.14).

Within the scope of the Project, geothermal exploration drilling will be carried out in the areas detailed in Table 3. Again as given in Table 3, a 65 m long and 5 m wide connection road will be constructed for Gaziemir-5 location passing through a parcel (0 Block 616 Parcel) qualified as a threshing floor.

Permits for Gaziemir-1 drilling location are given in Annex 1.3, permits for AG-4 drilling location are given in Annex 1.4 and permits for Gaziemir-5 drilling location are given in Annex 1.5.

Akyamaç, Güzelyurt, Bozcayurt and Gaziemir villages are located around the drilling areas and within the license area.

Maps showing nearby settlements and distances are presented in Figure 2.12, Figure 2.13 and Figure 2.14 and a table with relevant distances is presented in Table 4.

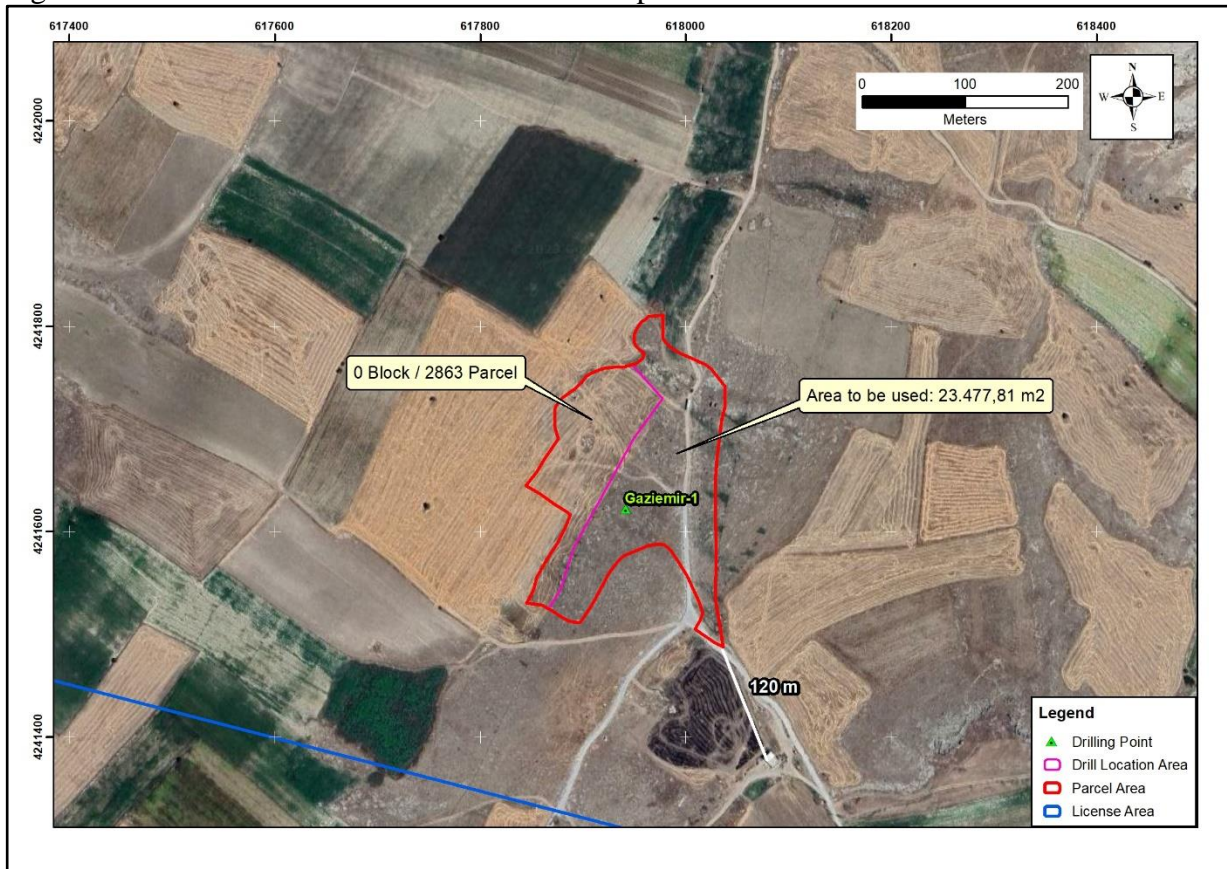


Figure 2.12. Map Showing the Most Vulnerable Structure and its Location around the Drilling Locations (Gaziemir-1)

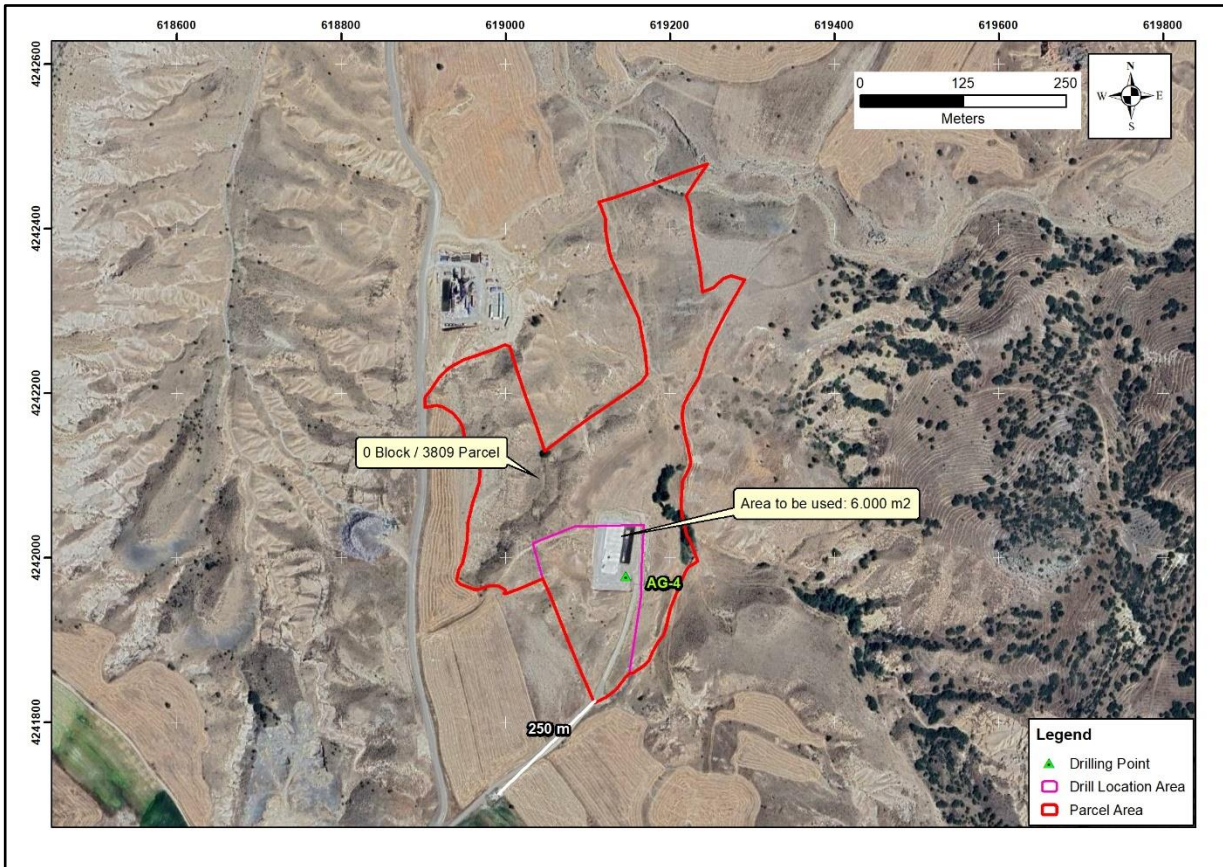


Figure 2.13. Map Showing the Most Vulnerable Structure and its Location around Drilling Locations (AG-4)

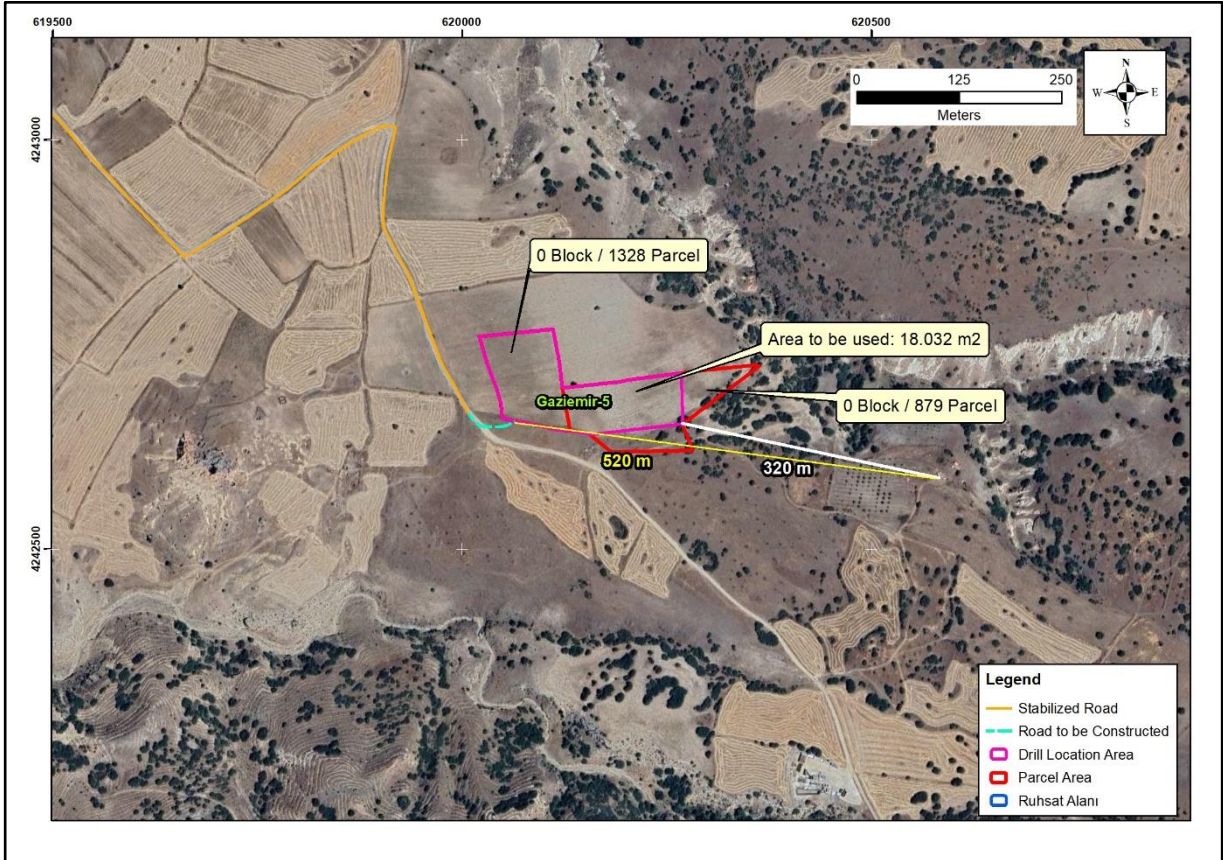


Figure 2.14. Map showing the most vulnerable structure and its location in the vicinity of Drilling Locations (Gaziemir-5)

Table 4. Table showing the nearest settlements and their distances to the areas to be used

Nearest Location	Type	Distance	Location According to the Project Area
0 Block 2863 Parcel (Gaziemir-1)			
Vulnerable Construction (Guzelyurt Village)	Disused vineyard house	120 m	South
Settlement (Guzelyurt Village)	Village	4.4 km	Southeast
Settlement (Akyamac Village)	Village	4.15 km	Southeast
Settlement (Alanyurt Village)	Village	4.2 km	Northwest
Settlement (Gaziemir Village)	Village	4.9 km	Northeast
Settlement (Aksaray Province)	Province	28.5 km	Northwest
0 Block 3809 Parcel (AG-4)			
Vulnerable Construction (Guzelyurt Village)	Disused vineyard house	250 m	South
Settlement (Bozcayurt Village)	Village	2.9 km	Northeast
Settlement (Gaziemir Village)	Village	3.75 km	Northeast
Settlement (Guzelyurt Village)	Village	4.25 km	South
Settlement (Akyamac Village)	Village	3.7 km	Southeast
Settlement (Alanyurt Village)	Village	5 km	Northwest
Settlement (Aksaray Province)	Province	30 km	Northwest
0 Block 1328 Parcel and 0 Block 879 Parcel (Gaziemir-5)			
Vulnerable Construction (Akyamac Village)	Disused vineyard house	320 m	East
Settlement (Guzelyurt Village)	Village	5 km	South
Settlement (Akyamac Village)	Village	4 km	South
Settlement (Gaziemir Village)	Village	2.5 km	Northeast
Settlement (Aksaray Province)	Province	30.5 km	Northwest
0 Block 616 Parcel (Gaziemir-5 Road)			
Vulnerable Construction (Guzelyurt Village)	Disused vineyard house	520 m	East

The location map showing the license and the general location of the parcels within the license is given in Figure 2.15 and the neighborhood map of the license area is given in Figure 2.16..

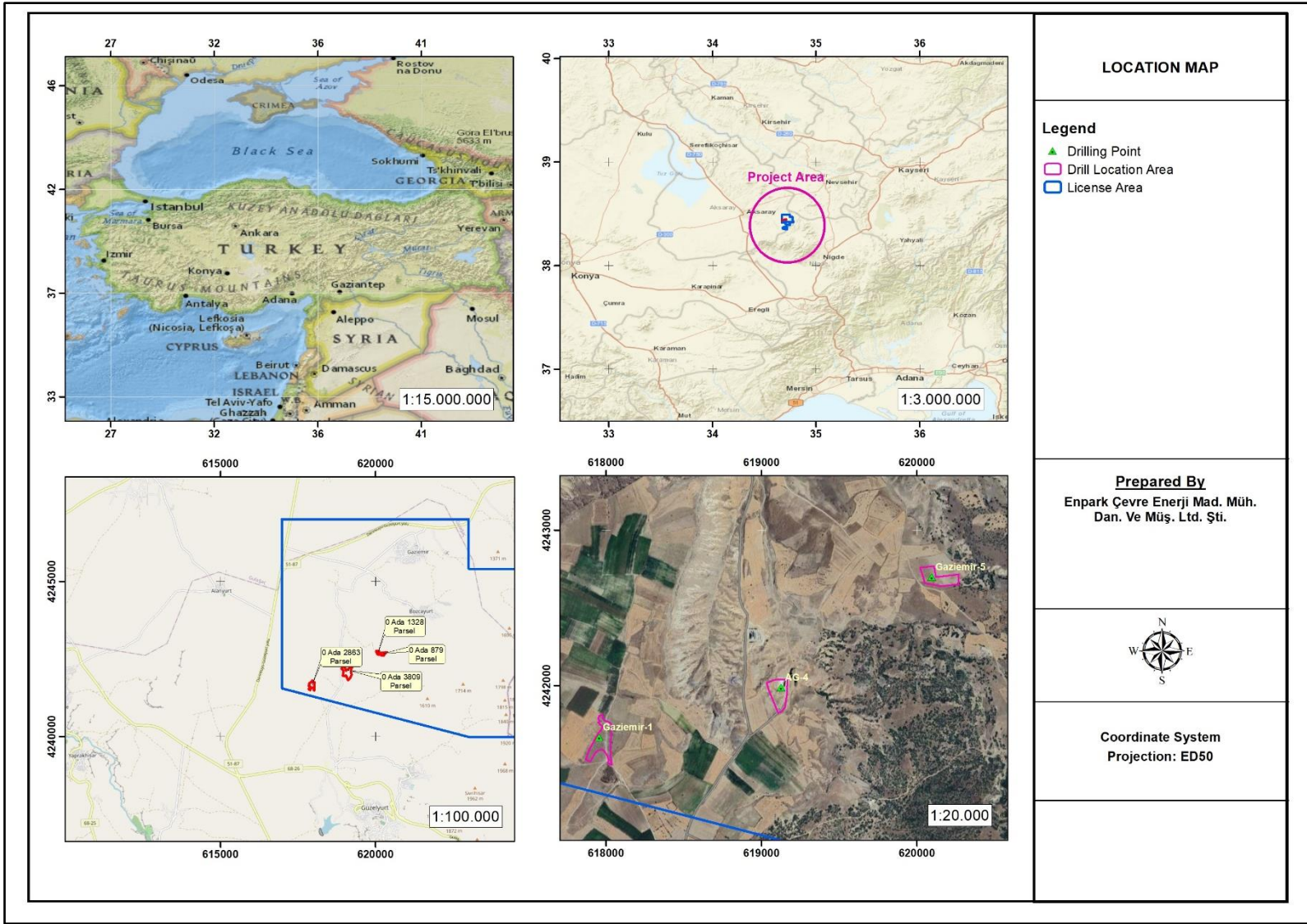


Figure 2.15. Locator Map showing the License Area

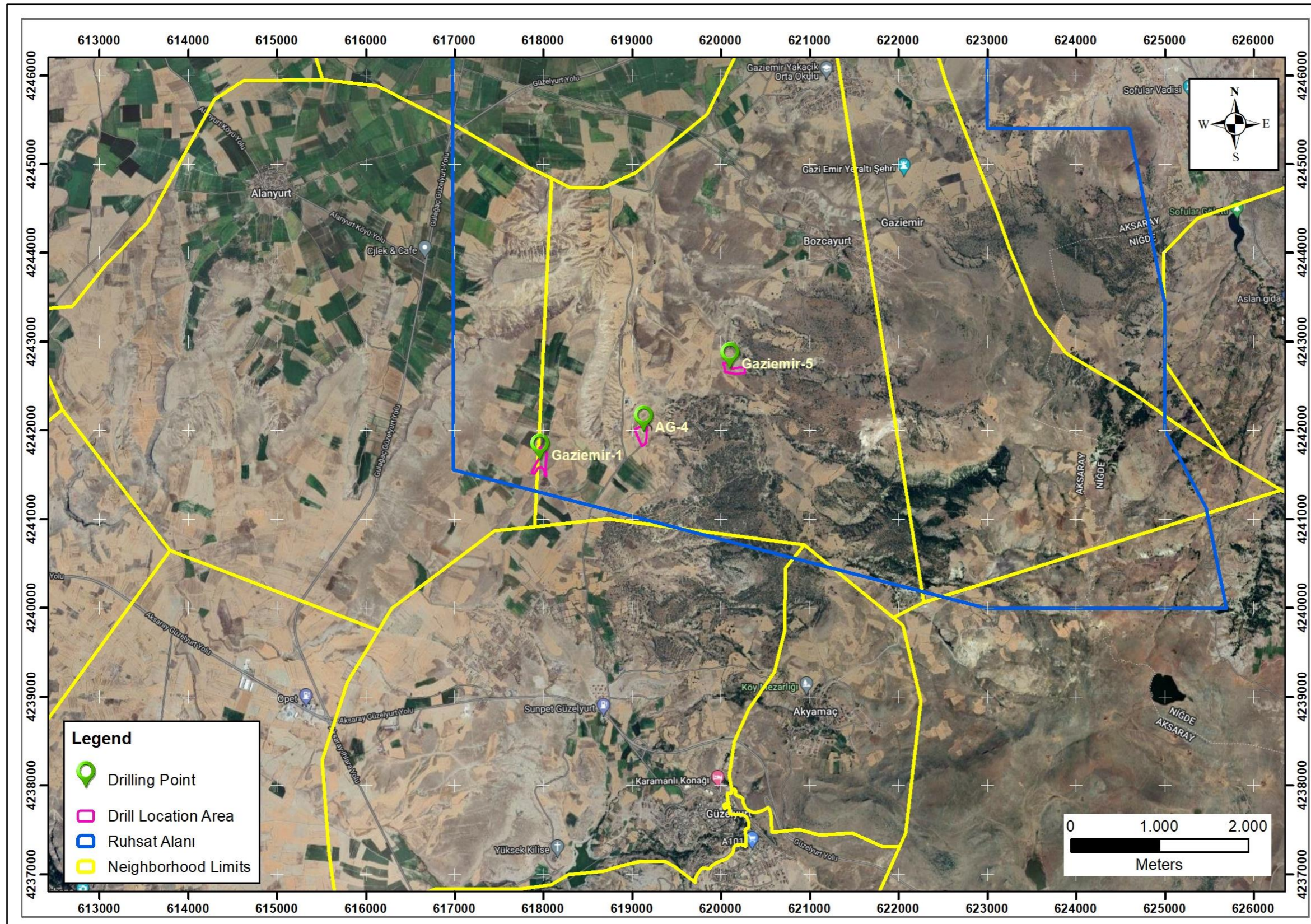


Figure 2.16. License Area Neighborhood Map

2.5.2 Landforms and Geology

The geothermal license area of the Beneficiary is located in the southeast of Aksaray province within the L32 plot. This region is also within the Cappadocia Volcanic Provenance (CVP). The license area is located in the region between Güzelyurt and Güllağaç. There are hills reaching a height of 1.300 to 1.800 meters and it is observed that streams develop in all directions between these hills. These streams, which are mostly structurally controlled, contain alteration zones in certain sections. The license area subject to ESMP is located around Gaziemir.

The eastern edge of the license area is limited along the Şahin Kalesi- Narköy-Sofular line. To the west of this line, there is a collection of NW-SE elevations formed by Keltepe-Ziyaret Tepe - Zerdali Tepe and extending up to 2 km in width. These elevations gradually step down towards the west to 1200 levels. A similar elevation drop continues from Keltepe towards Güzelhisar to the southwest and from Keltepe towards Yakacık Mahallesi to the northwest and transitions to the 1200 meter high plain.

The license area corresponds to the intersection of the NW-SSE trending Tuzgölü Fault Zone and the NE-SW trending Central Anatolian Fault Zone on a regional scale. Therefore, it can be said that the morphological discontinuities described above are related to the development of these fault zones (Figure 2.17).

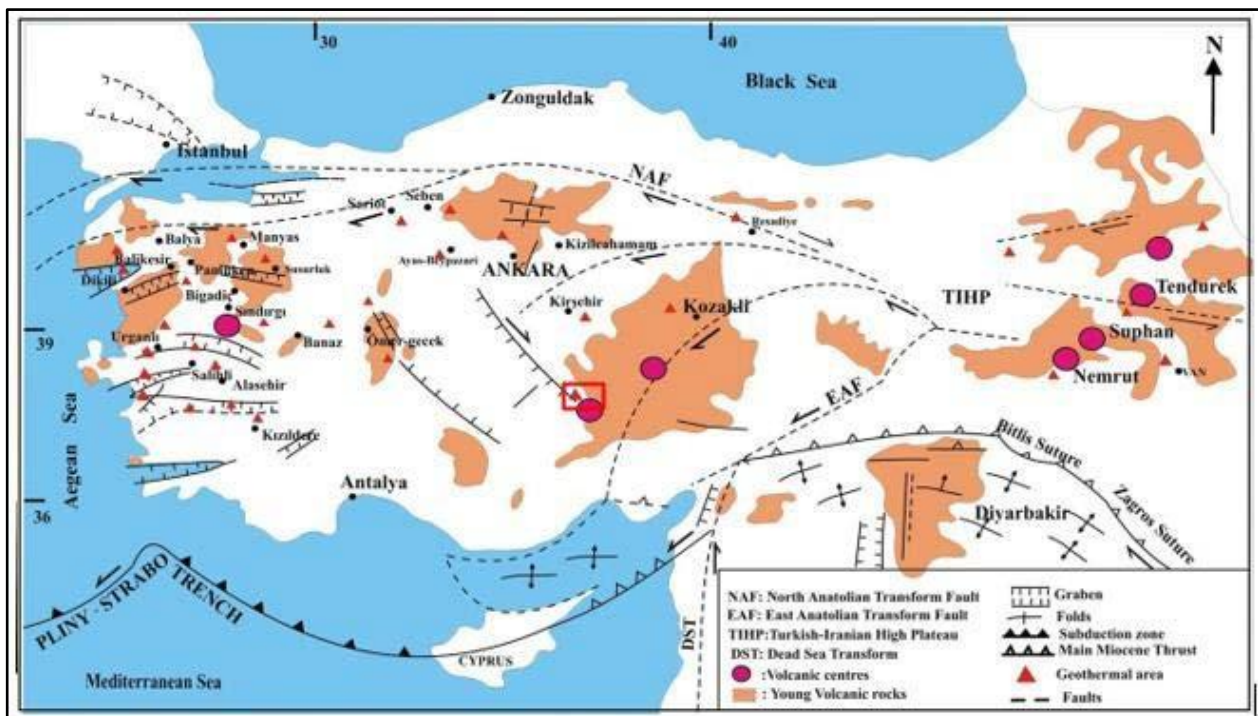


Figure 2.17. Map Showing Main Faults and Main Volcanic Formations Around the License Area (Sözbilir H., Geology of Aksaray Center Koçpinar and Güzelyurt Fields and Evaluation of Geothermal Energy Potential, GMK Energy Project Report, 2021, İzmir)

Previously, geothermometric studies conducted by the General Directorate of Mineral Research and Exploration (MTA) indicated source temperatures of 160-181°C, 119-145°C and 135-159°C in Acıgöl, Ziga, and Şahinkalesi fields, respectively. The Sivrihisar-3 well drilled in 2016 by 3S-Kale was announced as the hottest well in Turkey with a temperature of 294 °C at 3200 m True Vertical Depth (TVD). The presence of hot fluid with natural outflows and drillings in the

settlements of Ziga, Iısu, Güzelyurt, Narköy, Sofular, which surround almost the entire area of the field is very promising for this region.

The Project area is located in the east-southeast of Aksaray Province. The satellite image showing the geological structures around the project area is given in Figure 2.18. The basement of the area is composed of Paleozoic aged Tamadağ gneisses and schists and Bozçaldağ marbles and Upper Cretaceous aged Baranadağ granitoid intrusion. These units are overlain by Lower Eocene aged Çayraz formation and Upper Eocene-Lower Miocene aged Mesgite group rocks as discordant sedimentary rocks. All these rock units are unconformably overlain by Middle Miocene-Quaternary aged rocks represented by tuff-ignimbrite, tuff, basalt lavas, pumice, dacitic-rhyodacitic lava domes containing sedimentary intermediate levels. In the study area, which includes two important volcanic centers consisting of Hasan Mountain and Melendiz Mountain, many circular structures such as calderas and pyroclastic cones were identified between Şahinkalesi Tepe and Kurugöl.

Tectonic lineaments in the region are grouped in two directions, NW-SE and NE-SW. The most prominent of the NW-SE oriented lineaments is the Tuz Gölü fault and the Melendiz Valley lineament, which is parallel to it, is probably located on an old fault zone covered by young volcanites. NE-SW trending fractures are located south and north of Ziga, between Melendiz Mountain and Altunhisar and between Şahinkalesi and Acıgöl. The intersections of the NE-SW and NW-SW fractures coincide with the volcanic outcrops. Two important volcanic outlets in the north of Melendiz Mountain were located on the intersection projection of the lineation on which the Melendiz valley is located and the lineation connecting Acıgöl and Şahinkalesi calderas. Hasan Mountain, Melendiz and Acıgöl-Şahinkalesi calderas and craters and the pyroclastic cones around them are located on a NE-SW line.

This volcanic activity is associated with the westward movement of the Anatolian block (McKenzie, 1972) as a result of the closure of the Tethys ocean (McKenzie and Yilmaz, 1991; Lyberis et al., 1992) and the deformation of the block (Aydar et al., 1995). As a result of this activity, stratovolcanoes known as Miocene-aged Karacadağ, Melendiz and Quaternary-aged Erciyes and Hasan Mountains developed (Burçak, 2006).

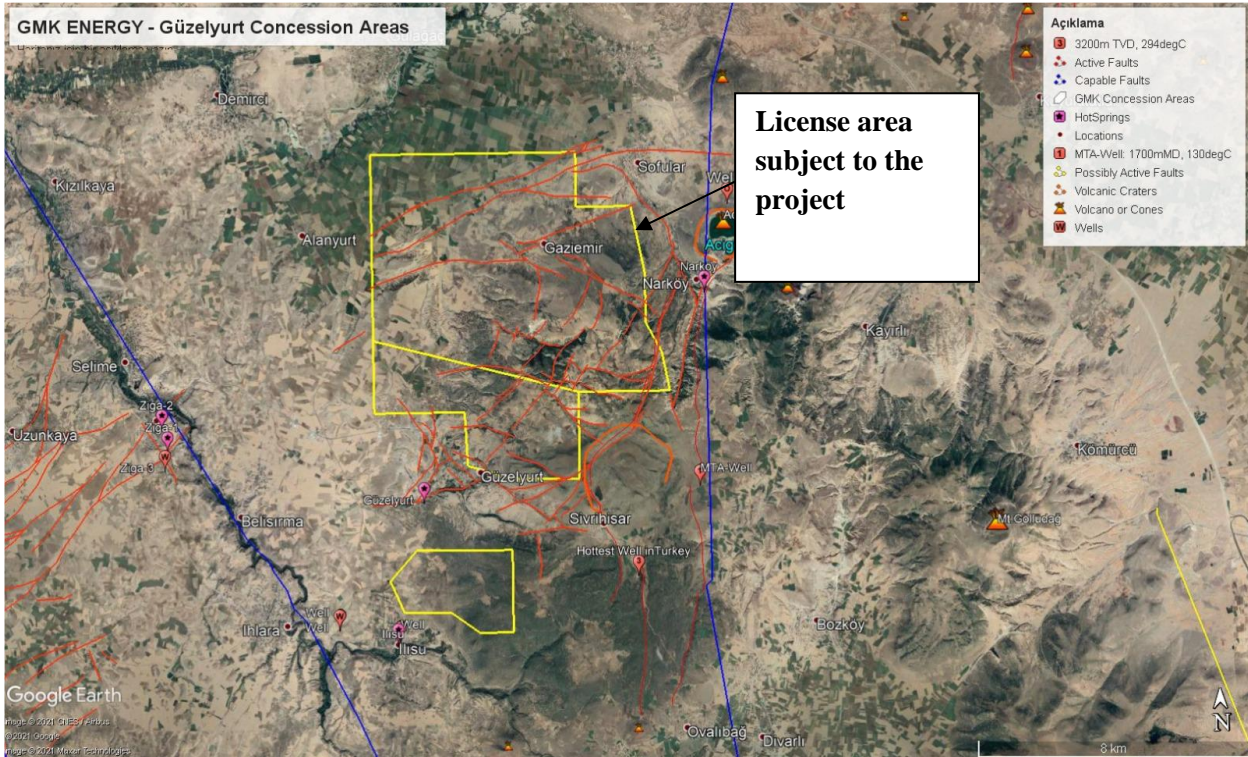


Figure 2.18. Satellite Image Showing Geological Structures around the License Area (Sözbilir H., 2021, Diker C., 2021)

2.5.3 General Characteristics of the region

Detailed soil and terrain characteristics of the areas where the drilling and transportation road will be constructed are given under the heading "Environmental and Social Basis". However, to summarize, the region is generally dominated by steppe. Forested areas are extremely limited. There are stony and rocky lands in the locations. Among the drilling locations, Gaziemir-1 drilling area is treasury land and the lands to be used for AG-4 and Gaziemir-5 drilling and Gaziemir-5 drilling transportation road are pasture lands with the quality of threshing ground.

The drilling locations and the road planned for access to Gaziemir-5 are not located within a protected area, known historical or cultural site. Ihlara Valley Special Environmental Protection Area is located northeast of the drilling locations. The closest distance of the border of this area to the drilling locations and the road planned for transportation to Gaziemir-5 is 2.62 km. No intervention will be made to this area during Project activities. A map showing the Ihlara Valley Special Environmental Protection Area, the license area and drilling locations is presented in Figure 2.19 below.

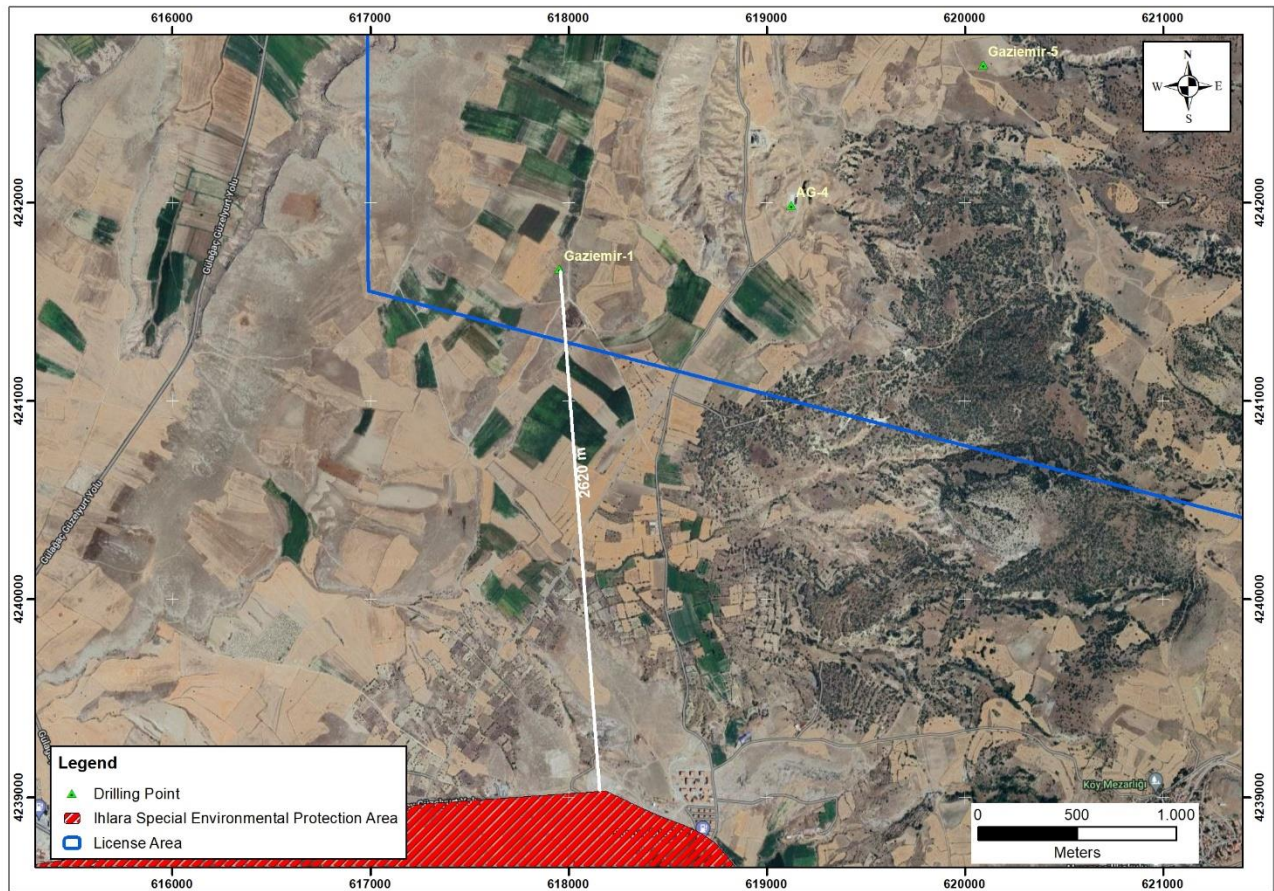


Figure 2.19. Map showing the location and closest distance of the drilling sites with respect to Ihlara Special Environmental Protection Area

During the EIA process regarding the drilling locations, the opinions of the institutions were asked by Aksaray Governorship Provincial Directorate of Environment, Urbanization and Climate Change and the process has been completed. Relevant institutional opinions are given in Annex 1.6. In addition, the institutional opinions received regarding the AG-4 drilling area are given in Annex 1.7.

3.0 Description of Impact Area of the Project

In determining the environmental impact area (Area of Influence) of the project, consideration was given to the definition provided in the World Bank Operational Policy 4.01, Appendix A;

- Potential effects on physical-biological environment: This encompasses the direct and indirect impacts on the physical and biological environment.,
- Impacts on natural geography and geological structure: The potential effects on the natural geography and geological structure were thoroughly evaluated.
- Effects on water resources: The project's potential impacts on water sources, including quality and quantity, were carefully examined.
- Impacts on the ecosystem: The influence of the project on local ecosystems, including flora and fauna, was assessed.

- Effects on air quality: The project's potential contributions to air pollution and its impact on air quality were considered,
- Noise and vibration effects: The anticipated noise and vibration levels resulting from the project were taken into account.
- Impacts on road traffic: The potential effects of the project on local road traffic patterns were evaluated.
- Impacts on the settlement: Consideration was given to how the project might affect nearby settlements.

Some of these factors exert direct effects, while others exert indirect effects. However, it is crucial to comprehensively evaluate all these factors collectively.

To holistically assess the project, its impacts were examined in at least two stages: the construction phase and the operational phase. The project under consideration, subject to the Environmental and Social Management Plan, involves the exploration of geothermal resources and the implementation of drilling activities. Therefore, the operational phase of the project is not in applicable at this stage.

The quantity and quality of the identified geothermal reserves resulting from drilling activities will be assessed. If deemed suitable for production, the project will proceed to the production phase. Before entering the production phase, necessary permits will be obtained in accordance with laws and regulations.

All potential environmental impacts, including solid/liquid waste, exhaust, dust, noise, etc., arising from drilling activities during the exploration phase have been taken into consideration. The environmental and social impacts during the drilling phase are short-term and will cease upon completion of the drilling activities, ensuring they do not pose a continuous concern.

Taking into account factors such as noise, exhaust emissions, dust, the Project's impact area during the drilling phase was determined with a radius of 320 meters. The Environmental, Health and Safety (EHS) Guidelines of the World Bank Group (WBG) specify the daytime period as 07:00-22:00 and the night-time period as 22:00-07:00 concerning noise emissions. Additionally, it stipulates that the existing background noise level should not increase by more than 3 dB. Limit values for noise emissions are 55 dBA for daytime and 45 dBA for night-time. At drilling locations, the 45 dBA limit is maintained within the 320-meter range. Further details on noise calculations are provided in Appendix 3

The impact area of the connection road to be constructed for access to Gaziemir-5 well was determined as 50 m from the road line outwards. The main reasons for choosing this distance can be listed as the work to be done will be limited and the impact will be limited.

The impact areas are marked based on the outermost points of the drilling location where the Project will be carried out. The nearest vulnerable structures and distances to the drilling locations is given in Section 2.5.1 Table 4.

Map showing impact areas are given in Figure 3.1.

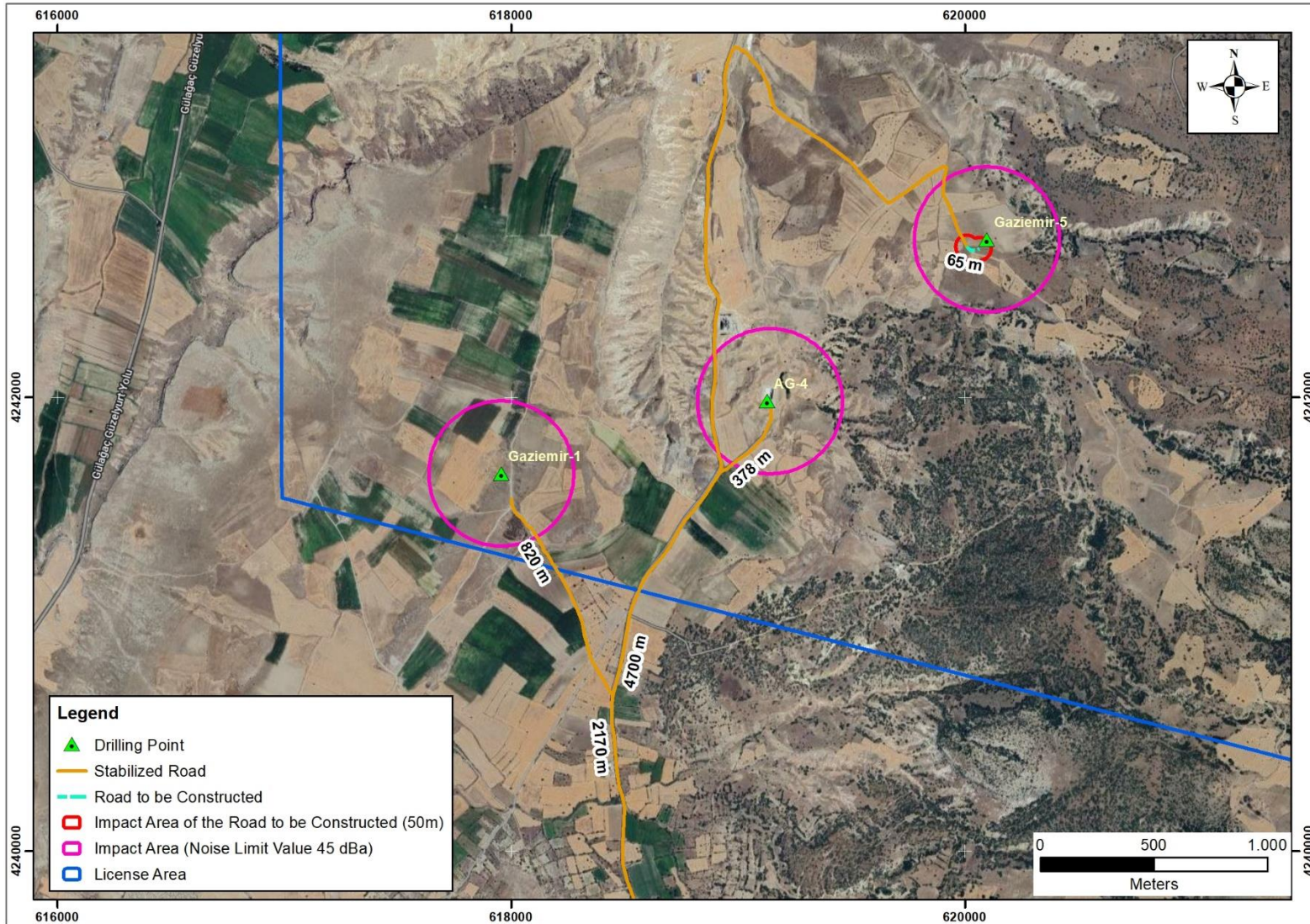


Figure 3.1. Map Showing the Impact Area of Drilling Locations

4.0 Environmental and Social Baseline

This section provides a brief description of the environmental and social conditions of the Area of Influence identified for the drilling study, i.e. information on air quality, water quality, soil quality, odor levels, noise levels, waste/wastewater generation, land use, protected areas, archaeological/historical sites, flora and fauna, socio-economic status, agricultural resources, tourism, people affected by the project, etc.

There are no domestic water, sewage lines and electricity services at the drilling locations. Potable and process water is planned to be supplied by transportation and generators are planned to be used for electricity needs.

4.1 Current Status of the Impact Area (Air Quality, Water Quality, Noise Levels, Soil Quality etc.)

Air quality:

According to the data of Republic of Turkey Ministry of Environment, Urbanization and Climate Change's air quality measurement station in Aksaray Central District, the overall air quality in Aksaray province is "Good". "Air quality is satisfactory and air pollution poses little or no risk". The graph showing the relevant station data is given below in Figure 4.1 and Figure 4.2.

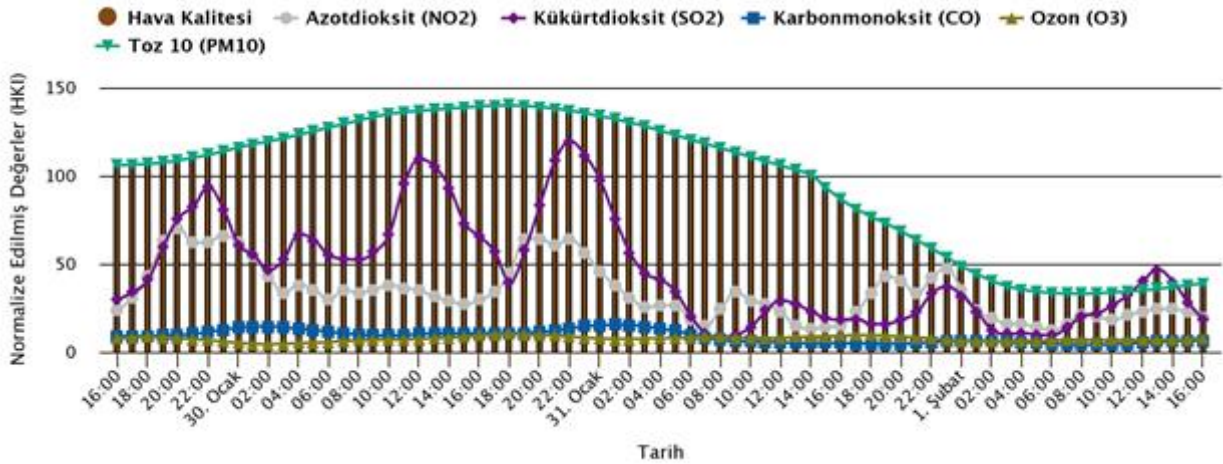


Figure 4.1. Graphic Showing General Air Quality in Aksaray Province, 2022



Figure 4.2. Graphic Showing Aksaray Province General Air Quality Index and Explanations According to the Index, 2023 (<https://sim.csb.gov.tr/Services/AirQualityDetails>)

Looking at the impact areas of the drilling locations, it is seen that there are no industrial facilities. It is known that traffic is not intense on the nearby highways. Therefore, it is thought that there is no significant air emission from traffic or industrial facilities.

At the nearest receiver for drilling locations (see Table 4) background air quality measurement will be carried out with the approval of the RSM Unit prior to the start of field works.

Noise:

Since there are no industrial facilities in the impact area of the locations and the traffic density is low, there is no noise disturbing the environment and society in the region. In the Provincial State of the Environment Report, 2020, it is stated that noise complaints in the province are generally in the city. It has been observed that traffic-related complaints are generally less.

For drilling locations, the closest receiver to the location (see Table 4) background noise level measurement will be carried out with the approval of the RSM Unit prior to the start of field works.

Water Quality:

There is no natural spring water within the Güzelyurt license area (201968002). The temperatures of the water resources in the immediate vicinity of the license boundaries vary between 14.30-33.20 °C. (Source: Aksaray Province Central and Güzelyurt Districts 2019680001, 2019680002, 2019680005 and 2019680006 License Numbered Geothermal Resource Field Hydrogeological and Hydro geochemical Analysis Report). The temperature differences are due to the change in the proportion of cold water mixing with the hot water source as a result of the seasonal variation of the regional local groundwater level. The temperature of the water, whose physical properties are given in Table 5, was 33.20 °C in the groundwater (GWS) sample taken from the 100 meter deep hot water well next to the Ihsu bathhouse. The satellite image showing the location of this well and its distance to the boreholes is given in Figure 4.3.

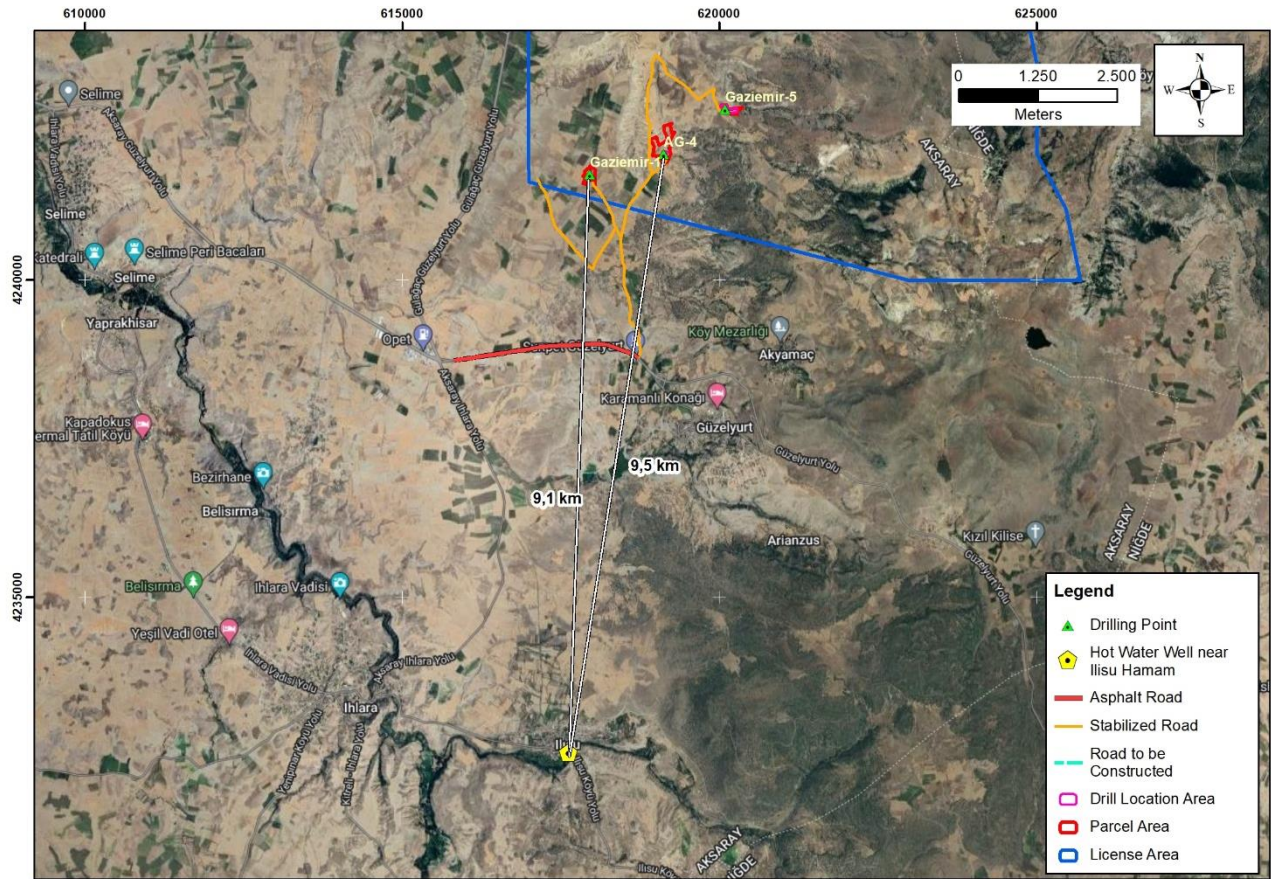


Figure 4.3. Map showing the location of the well near Ihsu Hamam and its distance to the drillings

The temperature of surface waters varies depending on parameters such as geographical location, elevation, season, river flow rate and depth. Physical, chemical and biological processes in the water environment are under the influence of temperature.

Table 5. Physical Properties of the Water in the License Area

Location	X	Y	Z (elevation)	T (°C)	pH	EC (µ S/cm)
Ihsu	617621	4232546	1300	33.20	7.09	482

Source: Hydrogeological and Hydro geochemical Analysis Report of Geothermal Resource Field with License Numbers 2019680001, 2019680002, 2019680005 and 2019680006 in Central and Güzelyurt Districts of Aksaray Province

The sample taken from the hot water well near Ihsu bathhouse reflects Na-Ca-HCO₃ water type. According to the results of the heavy metal analysis of the water sample taken from the Ihsu hot water well; it is seen that it is between the limit values specified in the table of the Regulation on Water Intended for Human Consumption (ITASHY), 2013 for the use of water for consumption purposes (Source: Aksaray Province Central and Güzelyurt Districts 2019680001, 2019680002, 2019680005 and 2019680006 License Numbered Geothermal Resource Field Hydrogeological and Hydro geochemical Analysis Report). Chemical properties of the waters in the license area are given in the table below.

Table 6. Chemical Properties of Water in the License Area

Location	X	Y	Z	Ca ²⁺ (mg/l)	Mg ²⁺ (mg/l)	Na ⁺ (mg/l)	K ⁺ (mg/l)	SO ₄ (mg/l)	HCO ₃ ⁻ (mg/l)	Cl ⁻ (mg/l)
Ihsu	617621	4232546	1300	28.48	9.89	35.87	17.00	15.55	193.80	22.05

Source: Hydrogeological and Hydro geochemical Analysis Report of Geothermal Resource Field with License Numbers 2019680001, 2019680002, 2019680005 and 2019680006 in Central and Güzelyurt Districts of Aksaray Province

Other water sources in the vicinity of the drilling locations were not sampled. However, there is Melendiz Stream at a distance of 10 km. In Aksaray Provincial Environmental Status Report (2020), it is stated that the physical and chemical properties of Melendiz Stream, which feeds Mamasun Dam, have class I quality criteria according to the classes of continental water resources. In this classification process, water temperature, pH, dissolved oxygen "DO", total dissolved ion and heavy metal content etc. were evaluated. However, when we look at the pollution parameters of Melendiz stream waters, it varies between Class II and Class IV according to the parameters "Total nitrogen, NH₄, NO₃, NO₂ and Total PO₄". This change is an indication that the amount and content of wastewater discharged into the stream waters change seasonally.

Groundwater sampling points and surface water sampling points were identified within the project areas where the drilling sites are located.

In order to determine the current situation from the groundwater (GWS) source closest to the drilling locations, analysis will be carried out according to the parameters given in Annex 3 Article 7 and Annex 5 Article 2 of the Regulation on the Protection of Groundwater against Pollution and Degradation. In addition, analysis will be made from the surface water (SW) point according to the parameters specified in Annex-5 of the "Regulation on Surface Water Quality", which entered into force after being published in the Official Gazette dated 30.11.2012 and numbered 28483 (Last amendment: Official Gazette dated 01.02.2023 and numbered 32091). The current situation analysis will be carried out with the approval of the RSM unit before the field work starts.

The nearest surface water source (SWS) is located within the identified impact area, as can be seen in the map below. Point SWS01 is located in a seasonal flowing stream bed. The nearest groundwater source (GWS) is also within the impact area and the GWS01 point is a well belonging to the people living in the region. The approximate depth of this well is 15-20 meters.

Current status measurement and monitoring studies from GWS and SWS resources will be carried out with the approval of the RSM unit.

Within the scope of the Project, the nearest GWS and SWS points to the drilling locations are shown in [Figure 4.4](#). The given GWS01 and SWS01 points will be used as sampling points for monitoring purposes during the baseline analysis and then during the drilling period - when drilling activity for drilling starts.

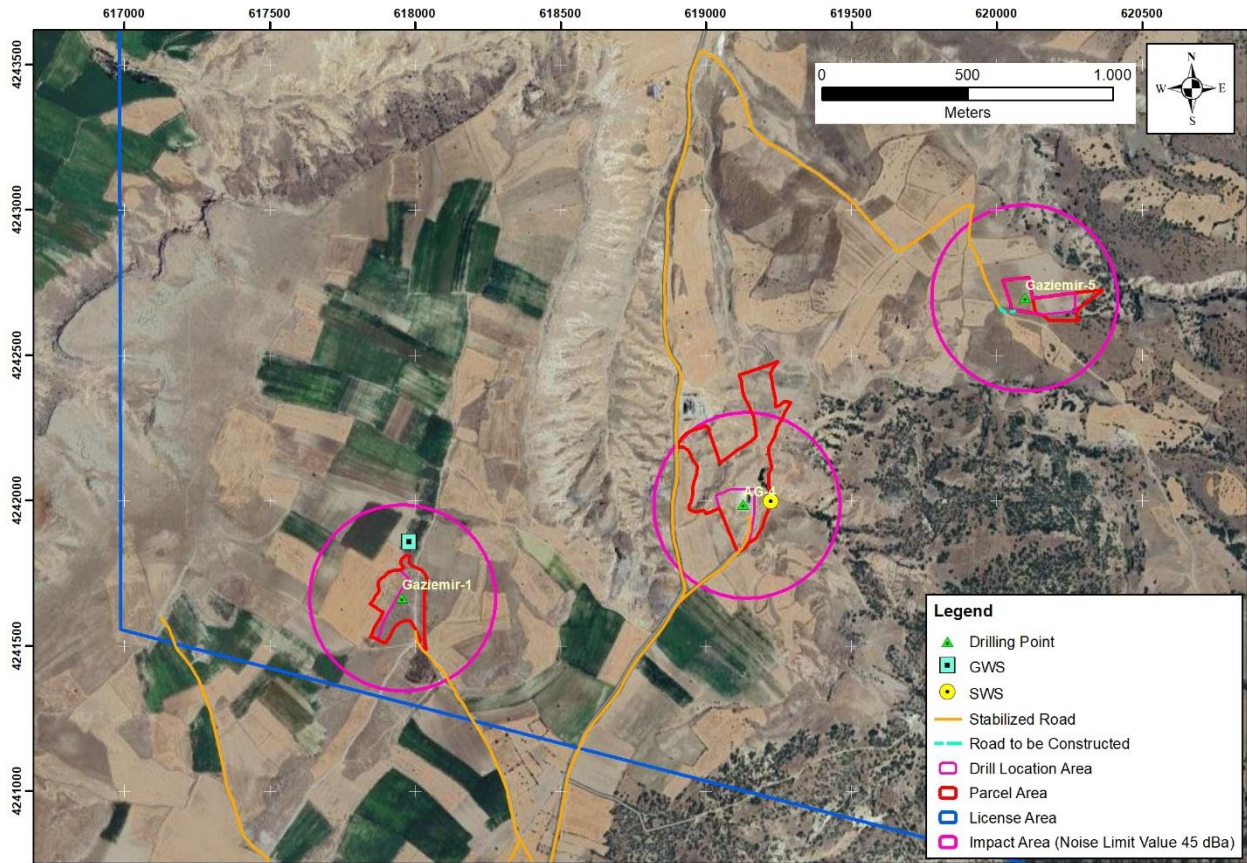


Figure 4.4. Nearest GWS and SWS Points to Drilling Locations

Table 7. Coordinates of the GWS and SWS Points that can be used for Monitoring Purposes in the Project Area

Coordinate Sequence		Right (Y), Up (X)		Coord. Sequence		Latitude Longitude	
Datum		ED-50		Datum		WGS-84	
Projection		UTM		Projection		GEOGRAPHIC	
D.O.M.		33		D.O.M.		--	
Zone		36		Zone		--	
Scale Fac.		6 degrees		Scale Fac.		--	
GWS 01	617979,868	4241859,012		38,315442		34,349217	
SWS 01	619223,875	4241997,012		38,316521		34,363467	

Within the scope of the Project, it is planned to conduct monitoring at GWS01 and SWS01 points for all three drillings once a month during drilling. The approval of the RSM Unit will be obtained prior to all analysis and measurement activities.

Soil Quality:

The soil properties of 28 meters of the 65 m long connection road to be built for access to Gaziemir-1 drilling area and Gaziemir-5 drilling area from the drilling locations are class IV and 37 meters are class VI. In the area where Gaziemir-5 drilling area is located, 327 m² is class IV and the remaining part is class VI in terms of soil properties. In the region where AG-4 drilling area is located, it is class VII. The lands are stony and rocky lands. Map showing the land assets of the project area [Figure 4.5](#) is given in Figure 4.5. More detailed information about the locations and photographs showing the sites are presented under Section 4.2.

For the determination of the current situation in drilling locations, the Regulation on Soil Pollution Control and Point Source Contaminated Sites Annex-2: List of Pollution Indicator Parameters, Potential Soil Polluting Activities and Activity Specific Pollution Indicator Parameters Table 1. Soil analysis will be performed for TOX, TPH, Ag, As, B, Cd, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn, Co, pH, Oil and Grease parameters given in the Pollution Indicator Parameters List and evaluated in relation to drilling activity. Analyses will be carried out with the approval of the RSM Unit prior to the start of field works.

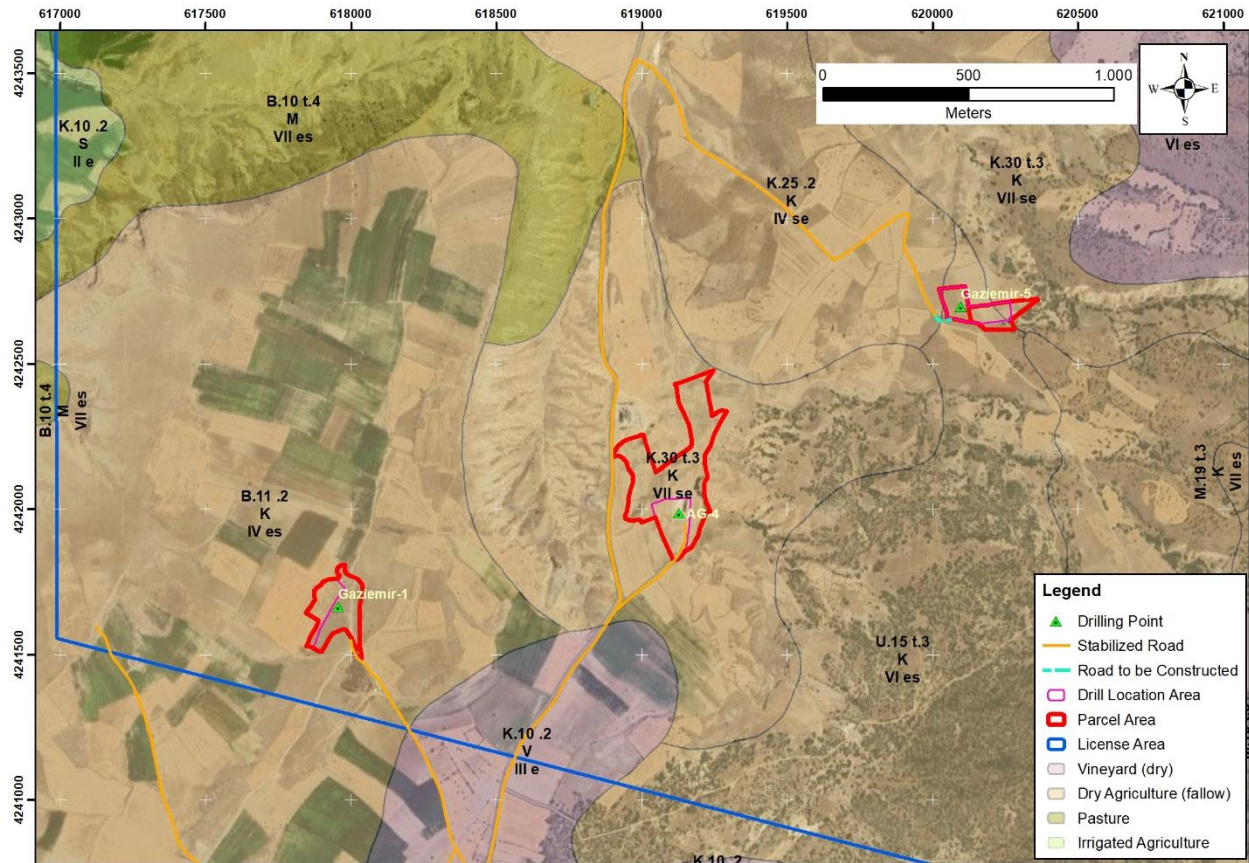


Figure 4.5. Map Showing the Land Asset of the Project Area

History and Current Status of the AG-4 Location:

Historical information on the AG-4 well is detailed in Section 2.1. In December 2022, the construction of the AG-4 well location was started by the Beneficiary. In this context, firstly, a total of 290 m³ of topsoil was stripped with a thickness of 10 cm (it varied between 5 cm and 7 cm on the land surface). While some of the removed topsoil (approximately 95 m³) was left at the AG-4 location (Figure 4.7) and the remaining 195 m³ was stored in the area leased by Güzelyurt Geothermal (Figure 4.6).

An area of 1250m² of wellhead concrete measuring 21mx60m, a concrete cellar pool measuring 2.5mx2m and a geothermal fluid pool with a volume of 2400m³ measuring 46mx13mx4m covered with an impermeable geomembrane with a bottom covered with 50 cm clay. Thus, a total area of 5.000 m² has already been utilized.

An iron gate was built at the entrance of the location and the location was completely surrounded by a wire fence to ensure the security of the location.



Figure 4.6. Topsoil Stored at Gaziemir-2 Location



Figure 4.7. Topsoil Stored at AG-4 Location

4.2 Soil and Land Properties (Land Use and Soil Quality)

Steppe appearance is generally dominant in the region. Forested areas are extremely limited. Stony and rocky lands are available.

Gaziemir-1 drilling area is treasury land. AG-4 drilling area is pasture and the connection road with Gaziemir-5 drilling area is on pasture land with the qualification of threshing ground.

A drilling location/area is a fenced area with all drilling units (fluid pool, drilling rig, containers, etc.), which will be used for exploration drilling, for which the necessary permits have been obtained. In some cases, the entire parcel is designated as a drilling location/area, and in some cases, part of the parcel is designated as a drilling location/area, this preference is determined at the initiative of the beneficiary.

Soil Properties of Drilling Locations:

Gaziemir-1: 0 Block 2863 Parcel area is 35.500 m². Only 23.477,81 m² of this parcel will be used for drilling. Accordingly, 66% of the whole parcel will be used. Gaziemir-1 drilling will be carried out in this parcel.

The site is land without vegetation belonging to the treasury. According to the land asset map given in Figure 4.5, productivity is low. It is fourth class land. It is a stony and rocky land.

AG-4: 0 Block 3809 Parcel area is 101.600 m². Only 6.000 m² of this parcel will be used for drilling. Accordingly, 3.11% of the whole parcel will be used. AG-4 drilling will be carried out in this parcel. A 120 m long and 5 m wide road has been established on the same parcel for access to the AG-4 location. With a total area of 600 m², 0.31% of the entire parcel will be utilized. The impact on the parcel will be 3.42% due to the project.

The site is in the nature of pasture. According to the land asset map given in Figure 4.5, productivity is low. It is seventh class land. It is a stony and rocky land.

Gaziemir-5: 0 Block 1328 Parcel area is 9.950 m², 0 Block 879 Parcel area is 14.400 m². 74% of these two parcels, 18.032 m², will be used. Gaziemir-5 drilling will be carried out within the area determined in these parcels.

The site is a threshing floor. According to the land asset map given in Figure 4.5, productivity is low. It is a sixth-class land. It is a stony land. The soil properties of the 65 m long and 5 m wide connection road to be constructed on parcel 616 of zone 0, which is a threshing floor for access to the Gaziemir-5 drilling site and for which a usage permit has been applied, are partly class IV and partly class VI. The land where the connection road will be built is stony.

Permits for the use of the areas planned for Gaziemir-1, AG-4 and Gaziemir-5 wells have been obtained and the relevant permits are presented in Annex-1.3, Annex-1.4 and Annex-1.5, respectively.

It has been detected that a section remaining within the scope of the AG-4 location and having a pasture-like appearance in old aerial photographs was used for agricultural purposes by a user who did not have legal permission. During the period when the permission for the land was obtained, it is seen that there was no cultivation-planting activity on the land, only some of it was plowed in the old satellite images. With the help of the headman of Akyamaç village, it was learned that the land in the pasture was plowed by a person named ---- ---- in the past. Again, through the mukhtar of Akyamaç village, the person was contacted by phone and the situation was explained. In the interview, the person was asked whether he had any claim on the land, and he stated that he had not planted any crops in that area for a while, that he did not have any claim on the land, and that he had already quit farming, that he had no livelihood problems, and that he was engaged in contracting and trade. There is currently no illegal use on the site. In the 2023 satellite images, it can be seen that there is no impact on the previously occupied parts of the parcel outside the beneficiary use permit, although the person does not carry out any activity (See Figure 2.1 and Figure 2.2).

It has been determined that there is unofficial agriculture production in the northwestern part of Gaziemir-1 location at 12.373,19 m². In order not to affect unauthorized users, location usage and drilling layout plans have been arranged to avoid the area, where agriculture is conducted (Annex 1.3). In this way, there will be no physical or economic displacement of informal users.

For Gaziemir-5 land it was understood that the owner of the parcel ----- entered and occupied the pasture / threshing ground. He was contacted and the situation was explained. The person stated that he did not have any claim and that this land was not important for his livelihood. The beneficiary stated that the land will not be entered until the crops he planted for the summer of 2023 are harvested in the summer and stated that he would help him. The person in question has also stated in writing in his own handwriting that he does not have any claim in the witness of the headmen and the said consent is presented in Annex-1.8. There are no orchards, etc. within the lands. There are agricultural lands around the lands. The works to be carried out within the scope of the Project will not cause any damage to agricultural lands in the region and lands other than drilling locations.

Closure (Rehabilitation) stage:

The closure stage of geothermal well drilling projects is a critical phase aimed at minimizing environmental impacts and restoring the natural balance of the region. This stage encompasses pre-project qualification and capacity transformation activities, necessitating adherence to various environmental regulations and procedures.

Initiation of Activities: Prior to commencing project operations, drilling locations will be restored to their natural state with the shaping of the area using appropriate vegetation cover encouraging to the local ecosystem, initiating a comprehensive rehabilitation process.

Cleaning and Dismantling: Pre-project, the well location will be cleaned, and all above-ground structures (pipes, etc.) will be dismantled. Scrap materials will be evaluated for potential sale to generate revenue or donated for the use of the local community.

Disposal of Fluid Pond: The geomembrane in the fluid pond will be disposed of in compliance with Waste Management Regulations, and the pond will be filled with excess excavation material. This step must be executed accurately to prevent water and soil contamination.

Removal of Concrete Flooring and Soil Deposition: For the integrity of the area with the surrounding environment, all concrete flooring will be removed. If necessary, the area will be reshaped, and grading will be applied. Excavation soil will be deposited over damaged sections, restoring the natural topography.

Seeding and Recontouring: The area will be recontoured with environmentally suitable vegetation, providing grading and topsoil placement. Planting operations will aim to recreate the natural plant cover of the region.

Extension of Permits: In the event of project success, permits will be extended to allow continued land use.

In the Case of Project Failure: If the project is deemed unsuccessful, the Beneficiary may still continue working in the area. However, in such a scenario, a relevant justification report will be submitted to the RPM Unit.

Recent photographs of drilling locations are given in respectively, Figure 4.8, Figure 4.9 and Figure 4.10. Figure 4.11 shows the land where the new connection road will pass. The road will pass through the wheel tracks in the photographs.



Figure 4.8. Photo showing Gaziemir-1 Location

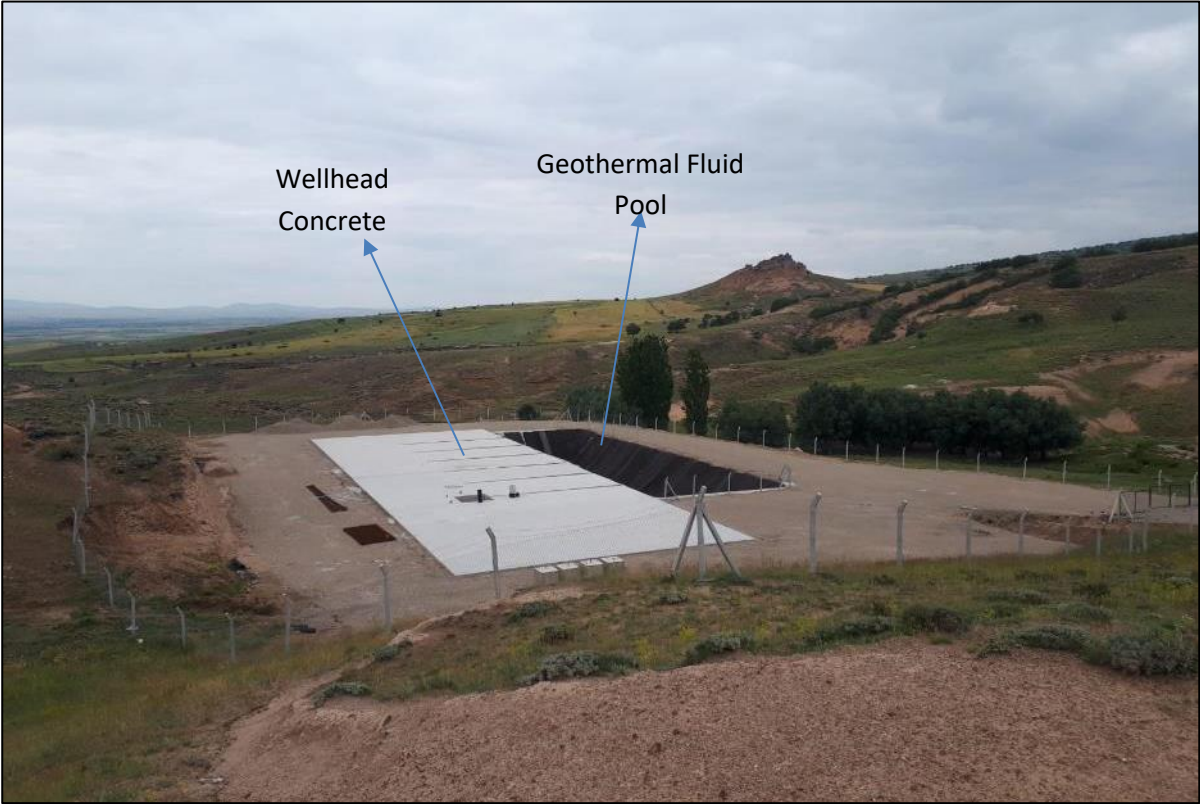


Figure 4.9. Photo showing AG-4 Location



Figure 4.10. Photo showing Gaziemir-5 Location



Figure 4.11. Photo showing 0 Block 616 Parcel through which the road will pass

4.3 Flora- Fauna-Ecosystem Diversity and Habitat Types

The results of ecological assessment obtained from field and literature research conducted in the area where the project site is located, including flora and fauna species, and habitat types, are presented below..

4.3.1 Flora

As a result of field and literature studies and questionnaire interviews, 62 plant taxa belonging to 19 families were identified in and around the project area. Of the 62 taxa; 20 were added from the literature and 42 were found in the literature and were also observed during field studies.

All of the identified taxa belong to Seed Plants [Magnoliophyta (Spermatophyta)]. All of the taxa belonging to Seed Plants [Magnoliophyta (Spermatophyta)] are closed-seeded [(Magnoliophytina (Angiospermae))] (See Table 8). List of plant taxa identified in the project area and its immediate vicinity is given in Table 9.

Table 8. Distribution of Identified Plant Taxa at Family and Taxon Level

	Family	Taxon
Total	19	62
Matchworts (Lycopodiophyta)	0	0
Ferns (Pteridophyta)	0	0
Seed Plants [Magnoliophyta (Spermatophyta)]	19	62
Open Seeded [Pinophytina (Gymnospermae)]	0	0
Closed Seeded Species [Magnoliophytina (Angiospermae)]	19	62

Among the 62 plant taxa identified in the project area and its immediate vicinity; Amaranthaceae is represented by 3 taxa, Amaryllidaceae by 2 taxa, Apiaceae by 6 taxa, Asteraceae by 18 taxa, Boraginaceae by 3 taxa, Brassicaceae by 4 taxa, Caprifoliaceae by 1 taxon, Caryophyllaceae by 1 taxon, Convolvulaceae by 1 taxon, Fabaceae by 7 taxa, Geraniaceae by 1 taxon, Lamiaceae by 2 taxa, Malvaceae by 1 taxon, Papaveraceae by 2 taxa, Plantaginaceae by 1 taxon, Plumbaginaceae by 1 taxon, Poaceae by 6 taxa, Ranunculaceae by 1 taxon, Resedaceae by 1 taxon (See Figure 4.12).

Of the identified plant taxa, 2 (3.23%) of them are from the Mediterranean, 1 (1.61%) from the Euro-Siberian, 8 (12.90%) from the Iran-Turanian phytogeographic region. The remaining 51 taxa (82.26%) have a multi-region or unknown phytogeographic region (See Figure 4.13).

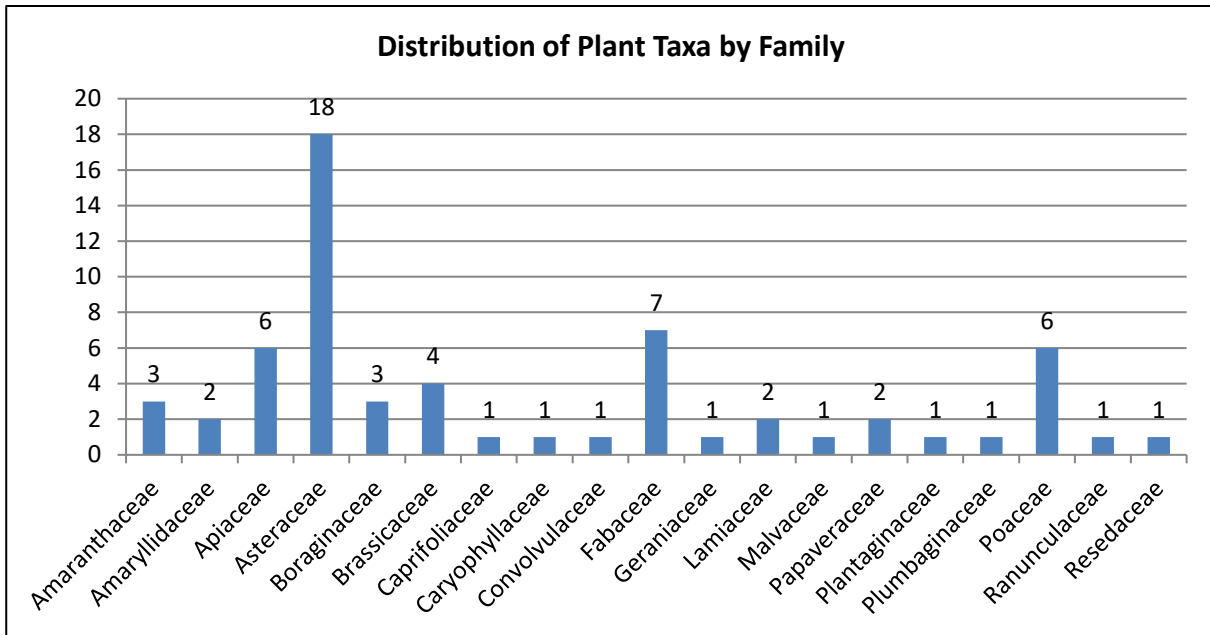


Figure 4.12. Distribution of Plants Identified in the Project Area and its Vicinity by Families Graphic

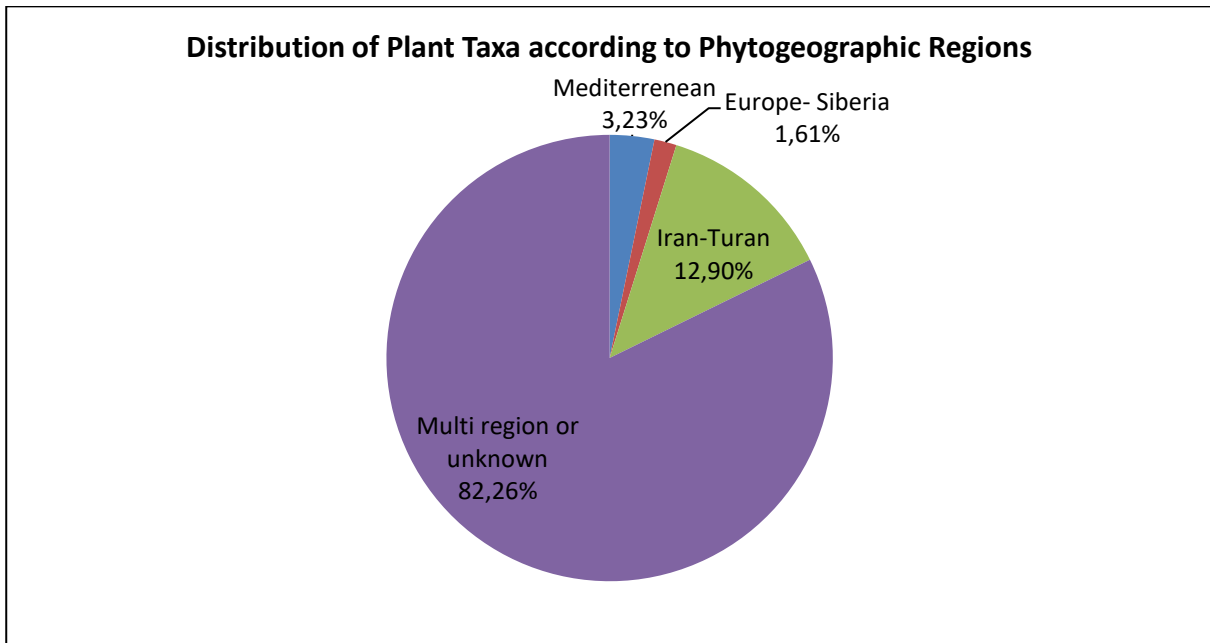


Figure 4.13. Graph of Phytoecographic Distribution of Plant Species Detected in the Project Area and its Vicinity

Table 9. Plant Taxa Identified in the Project Area and its Vicinity and their Threat Categories

Sequence No.	Family Name	Taxon Name	Turkish Name	Phytogeographic Region	Endemism	Relict	IUCN	BERN	CITES	Monitoring Indicator	Population Density	Form of Detection
1	Amaranthaceae	<i>Amaranthus albus</i>	Amaranthus	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
2	Amaranthaceae	<i>Chenopodium album</i> subsp. <i>album</i> var. <i>album</i>	Chenopodium	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
3	Amaranthaceae	<i>Chenopodium chenopodioides</i>	Goose Vinegar	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
4	Amaryllidaceae	<i>Allium atroviolaceum</i>	Fibrous Curmen	Multi-regional or unknown	Not Endemic	Not Relict	DD	Off List	Off List	Not Subject to Monitoring	Rare	Literature
5	Amaryllidaceae	<i>Allium scorodoprasum</i> subsp. <i>rotundum</i>	Leek	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
6	Apiaceae	<i>Astrodaucus orientalis</i>	Astrodaucus	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
7	Apiaceae	<i>Bifora radians</i>	Gisbana	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
8	Apiaceae	<i>Daucus carota</i>	Wild Carrot	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
9	Apiaceae	<i>Eryngium campestre</i> var. <i>virens</i>	Ground Chestnut	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
10	Apiaceae	<i>Scandix stellata</i>	Mountain Mishkishi	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
11	Apiaceae	<i>Torilis leptophylla</i>	Thin Leatherweed	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
12	Asteraceae	<i>Achillea millefolium</i> subsp. <i>millefolium</i>	Yarrow	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
13	Asteraceae	<i>Carduus nutans</i> subsp. <i>nutans</i>	Donkey thorn	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
14	Asteraceae	<i>Centaurea iberica</i>	Delicious Thistle	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
15	Asteraceae	<i>Centaurea solstitialis</i> subsp. <i>solstitialis</i>	Barnaby's thistle	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
16	Asteraceae	<i>Centaurea virgata</i>	Bitter Broom	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
17	Asteraceae	<i>Chondrilla juncea</i>	Blackbird	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
18	Asteraceae	<i>Cichorium intybus</i>	Chicory	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
19	Asteraceae	<i>Crepis foetida</i>	Kohum	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
20	Asteraceae	<i>Crupina crupinastrum</i>	Bridezilla	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
21	Asteraceae	<i>Cyanus depressus</i>	Cyanus	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
22	Asteraceae	<i>Echinops ritro</i>	Echinops	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
23	Asteraceae	<i>Filago davisii</i>	Sorrel	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
24	Asteraceae	<i>Lactuca serriola</i>	Oenothera biennis	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Literature
25	Asteraceae	<i>Picnomon acarna</i>	Pinchthorn	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
26	Asteraceae	<i>Senecio vernalis</i>	Canary grass	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
27	Asteraceae	<i>Xanthium spinosum</i>	Hiccup	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
28	Asteraceae	<i>Xanthium strumarium</i> subsp. <i>strumarium</i>	Big Hibiscus	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
29	Asteraceae	<i>Xeranthemum annuum</i>	Xeranthemum	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
30	Boraginaceae	<i>Anchusa azurea</i> var. <i>azurea</i>	azurea	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
31	Boraginaceae	<i>Echium italicum</i>	Wormtail	Mediterranean	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
32	Boraginaceae	<i>Heliotropium europaeum</i>	Heliotropium	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
33	Brassicaceae	<i>Alyssum desertorum</i>	Alyssum	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
34	Brassicaceae	<i>Capsella bursa-pastoris</i>	Capsella	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
35	Brassicaceae	<i>Lepidium draba</i>	Lepidium	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
36	Brassicaceae	<i>Microthlaspi perfoliatum</i>	Microthlaspi	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
37	Caprifoliaceae	<i>Scabiosa argentea</i>	Scabiosa	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
38	Caryophyllaceae	<i>Dianthus zonatus</i> var. <i>zonatus</i>	Dianthus	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
39	Convolvulaceae	<i>Convolvulus arvensis</i>	Field Ivy	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
40	Fabaceae	<i>Astragalus microcephalus</i> subsp. <i>microcephalus</i>	Anatolian microcephalus	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
41	Fabaceae	<i>Lotus corniculatus</i>	Lotus	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
42	Fabaceae	<i>Medicago sativa</i> subsp. <i>sativa</i>	Sativa	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
43	Fabaceae	<i>Melilotus officinalis</i>	Fragrant Clover	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
44	Fabaceae	<i>Securigera varia</i>	Securigera	Mediterranean	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Literature
45	Fabaceae	<i>Trifolium arvense</i> var. <i>arvense</i>	Arvense	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
46	Fabaceae	<i>Vicia cracca</i> subsp. <i>cracca</i>	Cracca	Europe-Siberia	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
47	Geraniaceae	<i>Geranium tuberosum</i>	Tuberosum	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
48	Lamiaceae	<i>Ajuga chamaepitys</i> subsp. <i>chia</i>	Chia	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
49	Lamiaceae	<i>Teucrium chamaedrys</i> subsp. <i>chamaedrys</i>	Chamaedrys	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature

Sequence No.	Family Name	Taxon Name	Turkish Name	Phytogeographic Region	Endemism	Relict	IUCN	BERN	CITES	Monitoring Indicator	Population Density	Form of Detection
50	Malvaceae	<i>Malva neglecta</i>	<i>Malva neglecta</i>	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
51	Papaveraceae	<i>Fumaria officinalis</i> subsp. <i>officinalis</i>	<i>Fumaria officinalis</i> subsp. <i>officinalis</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
52	Papaveraceae	<i>Papaver rhoeas</i>	<i>Papaver rhoeas</i>	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
53	Plantaginaceae	<i>Plantago lanceolata</i>	<i>Plantago lanceolata</i>	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
54	Plumbaginaceae	<i>Acantholimon acerosum</i> subsp. <i>acerosum</i> var. <i>acerosum</i>	<i>Acantholimon acerosum</i> subsp. <i>acerosum</i> var. <i>acerosum</i>	Iran-Turanian	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
55	Poaceae	<i>Aegilops cylindrica</i>	<i>Aegilops cylindrica</i>	Iran-Turanian	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
56	Poaceae	<i>Avena sativa</i>	<i>Avena sativa</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
57	Poaceae	<i>Bromus tectorum</i>	<i>Bromus tectorum</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Literature
58	Poaceae	<i>Cynodon dactylon</i> var. <i>dactylon</i>	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
59	Poaceae	<i>Hordeum bulbosum</i>	<i>Hordeum bulbosum</i>	Multi-regional or unknown	Not Endemic	Not Relict	LC	Off List	Off List	Not Subject to Monitoring	Rare	Literature
60	Poaceae	<i>Poa bulbosa</i>	<i>Poa bulbosa</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
61	Ranunculaceae	<i>Adonis aestivalis</i> subsp. <i>aestivalis</i>	<i>Adonis aestivalis</i> subsp. <i>aestivalis</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
62	Resedaceae	<i>Reseda lutea</i> var. <i>lutea</i>	<i>Reseda lutea</i> var. <i>lutea</i>	Multi-regional or unknown	Not Endemic	Not Relict	NE	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature

4.3.1.1 Endemic, Rare or Threatened Plant Taxa

There are no endemic plant taxa among the 62 plant taxa identified in and around the project area as a result of field and literature studies and survey interviews. **There are also no non-endemic rare and endangered plant taxa in the area.**

4.3.1.2 Threat Categories (IUCN, Bern, Cites)

IUCN Red List

IUCN Red List Classes are a system for classifying species at high risk of extinction. IUCN Risk Classes are summarized below (See [Figure 4.14](#)).

Of the plant taxa identified in the project area and its immediate vicinity, **12 are in the "LC (Low Risk)" category, 1 is in the "DD (Data Deficient)" category, and the remaining 49 are in the "NE (Not Evaluated)" category.**

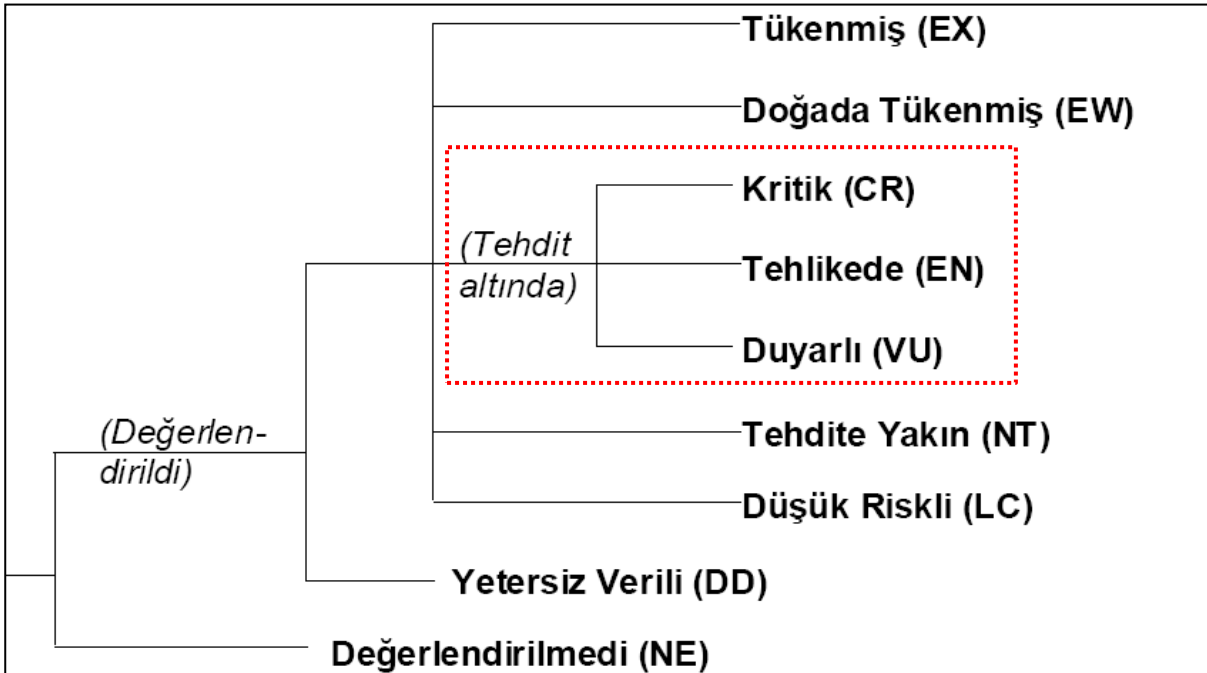


Figure 4.14. IUCN Risk Classes

Convention for the Conservation of Wildlife and Habitats in Europe (Bern)

The Bern Convention is a convention to protect wild flora and fauna and their habitats, to ensure that they take the necessary measures for endangered or extinction species, and to ensure the dissemination of wild flora and fauna education. Annex lists and descriptions of the Bern Convention is given in [Table 10](#).

None of the 62 taxa identified in the project area and its immediate vicinity is listed **in the annexes of the Bern Convention**

Table 10. Bern Convention Annex Lists and Explanations

Annex I	Strictly protected flora species
---------	----------------------------------

Annex II	Strictly protected fauna species (SPFS- Strictly Protected Fauna Species)
Annex-III	Protected fauna species (PFS- Protected Fauna Species)

Convention on International Trade in Endangered Species of Wild Fauna and Flora (Cites)

The Cites Convention is a convention that binds the import and export of wild animal and plant species between the countries party to the convention, in short, international trade, to certain permits and documents. Cites Convention Annex lists and descriptions are given in [Table 11](#).

None of the 62 taxa identified in the project area and its immediate vicinity is listed in the annexes of the Cites Convention..

Table 11. Cites Convention Annex Lists and Explanations

Annex I	It covers all species threatened with extinction that are or may be affected by trade. Trade in specimens of these species must be subject to particularly stringent legislation and only permitted in exceptional circumstances to avoid further jeopardizing their continued extinction.
Annex II	(a) species that are not currently threatened with absolute extinction, but may become extinct unless trade in specimens is subject to strict regulations to prevent uses incompatible with their continued extinction; and (b) other species that need to be subject to legislation in order to effectively control trade in specimens of certain species referred to in subparagraph (a).
Annex-III	It covers all species that any Party indicates are subject to regulation within its jurisdiction for the purpose of preventing or restricting their use and that it needs to cooperate with other Parties in controlling their trade.

The national and international endangerment categories of the plant taxa identified in the project area and its immediate vicinity are shown graphically (see [Figure 4.15](#), [Figure 4.16](#), [Figure 4.17](#))

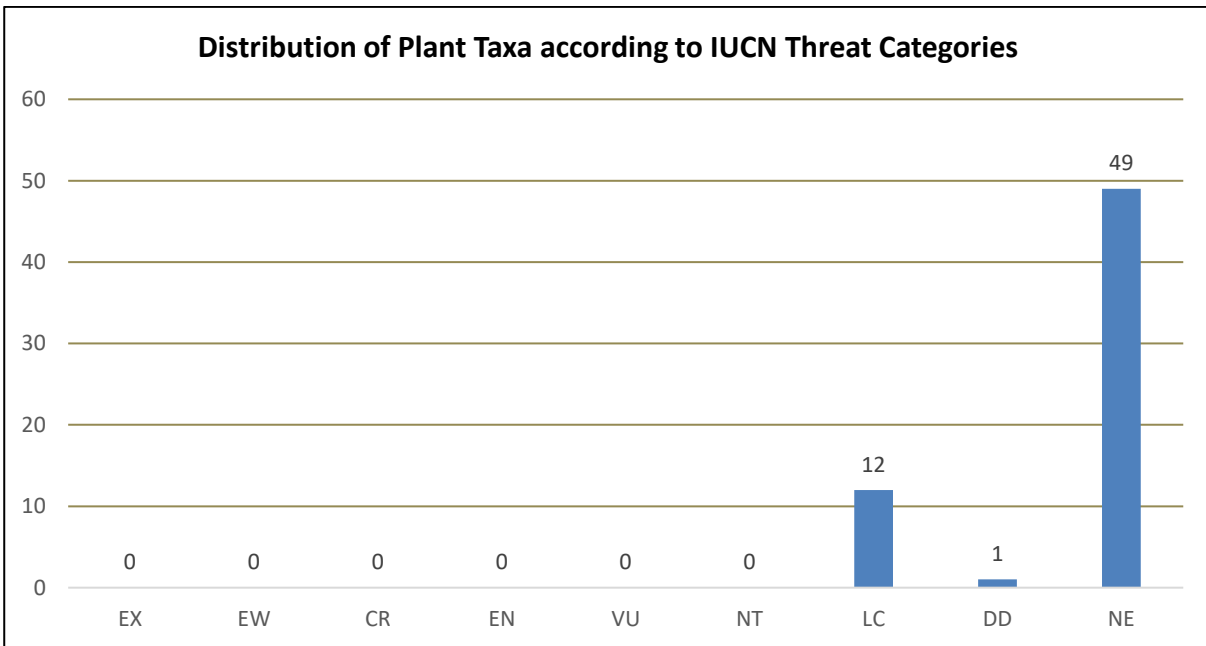


Figure 4.15. Distribution Chart of Plant Taxa Identified in the Project Area and its Vicinity According to IUCN Threat Categories

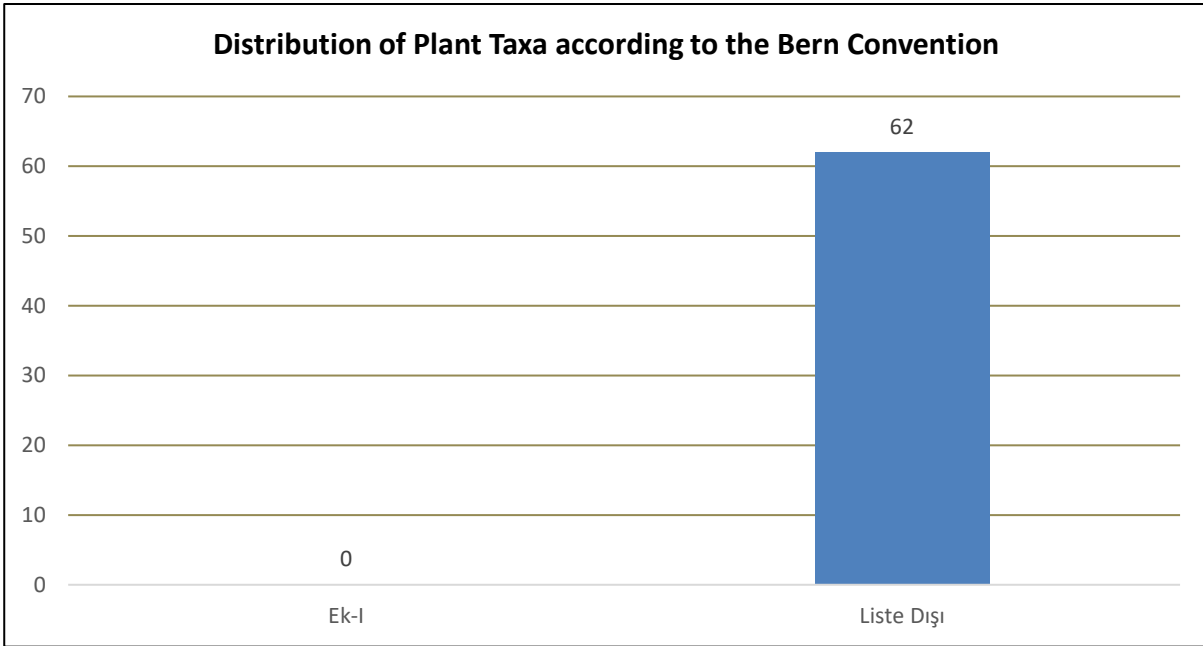


Figure 4.16. Graph of Distribution of Plant Taxa Identified in the Project Area and its Vicinity According to the Bern Convention

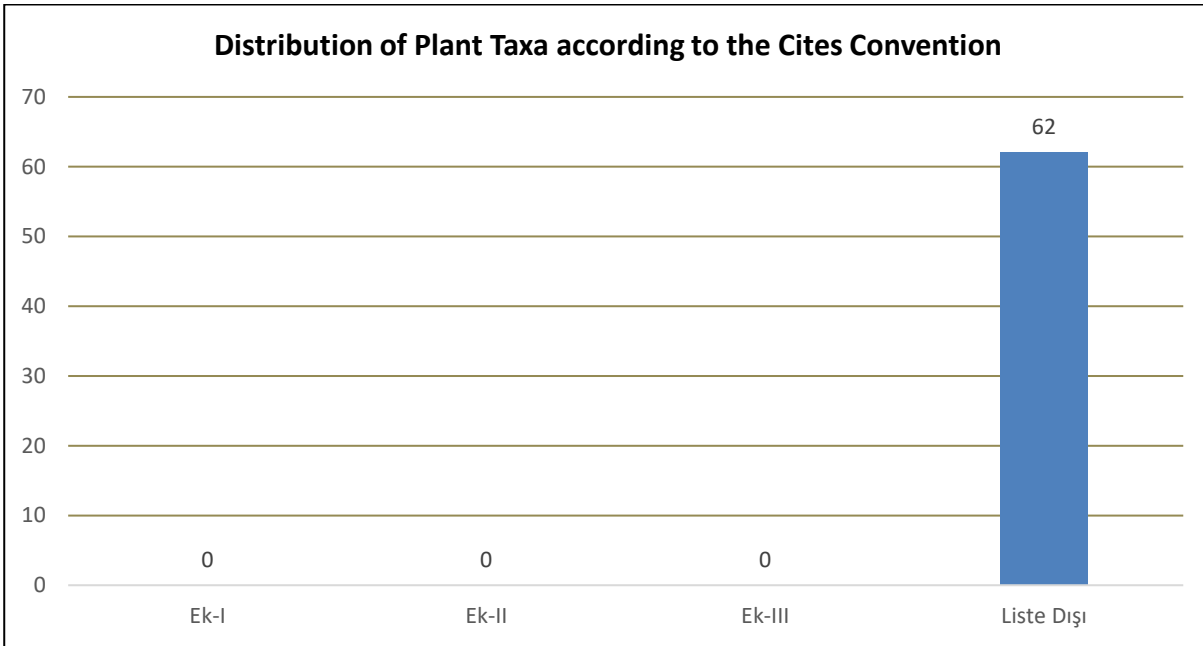


Figure 4.17. Graphic of Distribution of Plant Taxa Identified in the Project Area and its Vicinity According to the Cites Convention

4.3.2 Fauna

4.3.2.1 Frogs (Amphibia)

No frog species were encountered in the studies conducted in the project area and its immediate vicinity. The project area has a weak structure in terms of frogs. The reason for this is that there is no wetland in and around the project area for frogs to feed and especially for breeding.

4.3.2.2 Reptilia (Reptiles)

As a result of field and literature studies and questionnaire interviews, 3 reptile species belonging to 2 families [Spiny Cats (*Stellagama stellio*), Cappadocian Lizard (*Apathya cappadocica*), Field Lizard (*Ophisops elegans*)] were identified in and around the project area (See Table 10).

There are **no endemic species** among the reptiles identified in the Project area and its immediate vicinity.

According to IUCN endangerment criteria, all 3 species are in the "LC (Low Risk)" category [Spiny Cats (*Stellagama stellio*), Cappadocian Lizard (*Apathya cappadocica*), Field Lizard (*Ophisops elegans*)].

According to the Bern Convention, 2 species are listed in Annex-II [Spiny gecko (*Stellagama stellio*), Field lizard (*Ophisops elegans*)] and 1 species is listed in Annex-III [Cappadocian lizard (*Apathya cappadocica*)].

According to the Cites Convention, all 3 species are **not on the annex lists**.

According to the Central Hunting Commission Decisions (CHCD), all 3 species are not included in the additional lists.

There is no species recommended to be monitored among the reptiles identified in the Project area and its immediate vicinity.

Table 12. Reptile (Reptilia) Species and Endangerment Categories Detected in the Project Area and its Vicinity

Sequence No.	Family Name	Taxon Name	Turkish Name	Endemism	IUCN	BERN	CITES	Central Hunting Commission Decisions	Monitoring Indicator	Population Density	Form of Detection
1	Agamidae	<i>Stellagama stellio</i>	Prickly Caterpillar	Not Endemic	LC	Annex II	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
2	Lacertidae	<i>Apathya cappadocica</i>	Cappadocia Lizard	Not Endemic	LC	Annex-III	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature
3	Lacertidae	<i>Ophisops elegans</i>	Field Lizard	Not Endemic	LC	Annex II	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature

ABBREVIATIONS USED IN THE REPTILES TABLE

IUCN

- EX Extinct
- EW Extinct in Nature
- CR Critical
- EN Endangered
- VU Vulnerable
- NT Close to the Threat
- LC Low Risk
- DD Insufficient Data
- NE Not Evaluated

Bern Convention

Annex 2 Animal Species under Strict Protection

Annex 3 Protected Animal Species

Cites Convention

Annex 1 Covers all species threatened with extinction that are or may be affected by trade. Trade in specimens of these species must be subject to particularly stringent legislation to avoid further jeopardizing their continued extinction and must only be permitted in exceptional circumstances.

Annex 2 Covers species that are not currently in imminent danger of extinction, but could become extinct unless trade in their specimens is strictly regulated to prevent uses incompatible with their continued extinction.

Annex 3 - Covers all species that any Party regulates within its jurisdiction in order to prevent or restrict their use, and for which it has indicated the need for cooperation with other Parties in controlling trade.

4.3.2.3 Birds (Aves)

As a result of field and literature studies and questionnaire interviews, 15 bird species belonging to 13 families were identified in and around the project area (see Table 13).

The distribution of the birds according to their seasonal status is as follows: **8 species (53.33%) Native, 4 species (26.67%) Summer Visitor, 2 species (13.33%) Winter Visitor, 1 species (6.67%) Transit Migrant** (see Figure 4.18). The Red List of Birds of Turkey (Kiziroğlu, İ., 2008) was taken into consideration when evaluating the seasonal status of birds.

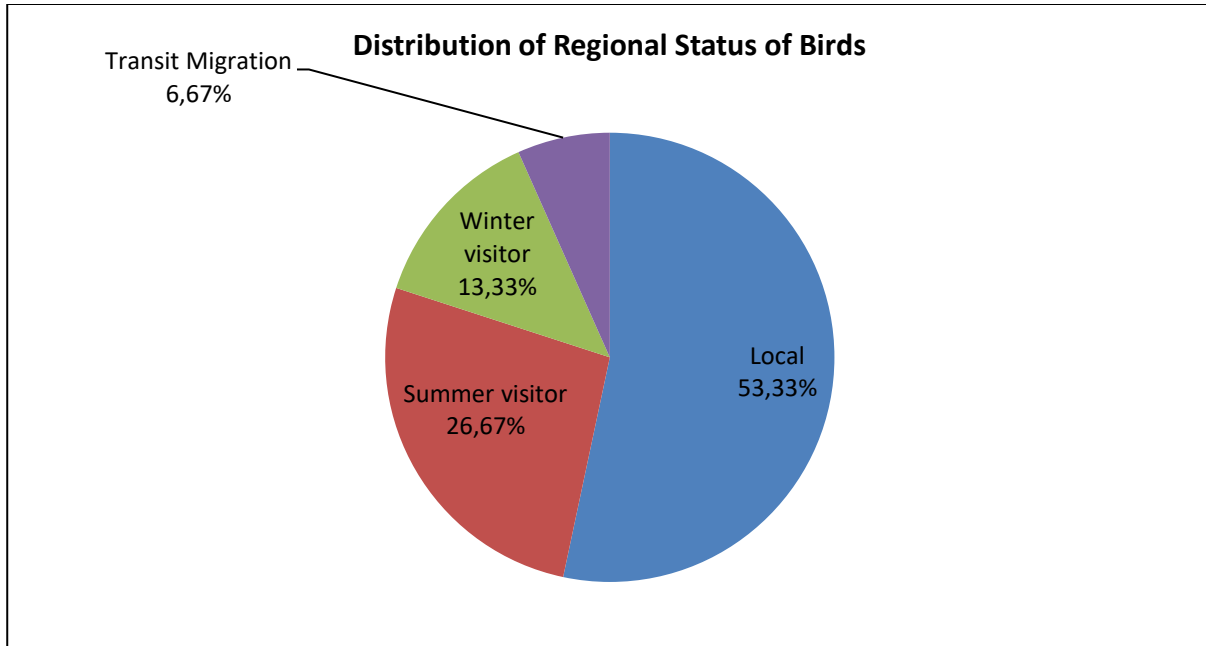


Figure 4.18. Distribution Chart of Seasonal Status of Birds Detected in the Project Area and its Vicinity

There are no endemic species among the birds identified in the Project area and its immediate vicinity.

According to IUCN endangerment criteria, **all 15 species are in the "LC (Low Risk)" category.**

According to the Bern Convention, **8 species are on the Annex-II list and 3 species are on the Annex-III list.** The remaining **4 species are not included in the annex lists.**

According to the Cites Convention, **3 species are on the Annex-II list** [Hawk (*Accipiter nisus*), Red Hawk (*Buteo rufinus*), Kestrel (*Falco tinnunculus*)]. The remaining **12 species are not included in the annex lists.**

According to the Central Hunting Commission Decisions (CHCD), **3 species are in the Annex-1 list and 3 species are in the Annex-2 list.** The remaining **9 species are not included in the annex lists.**

There is no species recommended to be monitored among the birds identified in the Project area and its immediate vicinity.

Table 13. Bird (Aves) Species and Threat Categories Detected in the Project Area and its Vicinity

Sequence No.	Family Name	Taxon Name	Turkish Name	Status	Red Data Book (Kızıroğlu, I.)	Endemism	IUCN	BERN	CITES	Central Hunting Commission Decisions	Reproduction	Observed Regions in Turkey	Monitoring Indicator	Population Density	Form of Detection
1	Accipitridae	<i>Accipiter nisus</i>	Sparrowhawk	Indigenous	A.3	Not Endemic	LC	Annex-III	Annex II	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Literature
2	Accipitridae	<i>Buteo rufinus</i>	Red Falcon	Indigenous	A.3	Not Endemic	LC	Annex-III	Annex II	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
3	Alaudidae	<i>Alauda arvensis</i>	Skylark	Winter Visitor	A.4	Not Endemic	LC	Annex-III	Off List	Annex 1	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
4	Corvidae	<i>Corvus frugilegus</i>	Crow	Indigenous	A.5	Not Endemic	LC	Off List	Off List	Annex-2	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
5	Corvidae	<i>Pica pica</i>	Magpie	Indigenous	A.5	Not Endemic	LC	Off List	Off List	Annex-2	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
6	Emberizidae	<i>Emberiza melanocephala</i>	Blackhead Chinte	Summer Visitor	A.4	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
7	Falconidae	<i>Falco tinnunculus</i>	Falco	Indigenous	A.2	Not Endemic	LC	Annex II	Annex II	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
8	Fringillidae	<i>Carduelis carduelis</i>	Carduelis	Indigenous	A.3.1	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
9	Hirundinidae	<i>Delichon urbicum</i>	House Swallow	Summer Visitor	A.3	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
10	Meropidae	<i>Merops apiaster</i>	Bee-eater	Transit	A.3.1	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
11	Motacillidae	<i>Motacilla alba</i>	Whitetail	Indigenous	A.3.1	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
12	Muscicapidae	<i>Oenanthe isabellina</i>	Gray Wagtail	Summer Visitor	A.3	Not Endemic	LC	Annex II	Off List	Annex 1	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
13	Passeridae	<i>Passer domesticus</i>	Sparrow	Indigenous	A.5	Not Endemic	LC	Off List	Off List	Annex-2	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
14	Sturnidae	<i>Sturnus vulgaris</i>	Starling	Winter Visitor	A.5	Not Endemic	LC	Off List	Off List	Annex 1	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature
15	Upupidae	<i>Upupa epops</i>	Upupa	Summer Visitor	A.2	Not Endemic	LC	Annex II	Off List	Off List	Not evaluated	BB	Not Subject to Monitoring	Rare	Field+Literature

ABBREVIATIONS USED IN THE BIRDS TABLE

IUCN

EX Exhausted
 EW Extinct in Nature
 CR Critical
 EN Endangered
 VU Vulnerable
 NT Close to the Threat
 LC Low Risk
 DD Insufficient Data
 NE Not Evaluated

Bern Convention

Annex 2 Animal Species under Strict Protection
 Annex 3 Protected Animal Species

Cites Convention

Annex 1 Covers all species threatened with extinction that are or may be affected by trade. Trade in specimens of these species must be subject to particularly stringent legislation to avoid further jeopardizing their continued extinction and must only be permitted in exceptional circumstances.

Annex 2 Covers species that are not currently in imminent danger of extinction but could become extinct unless trade in their specimens is strictly regulated to prevent uses that are incompatible with their continued extinction.

Annex 3 Covers all species that any Party regulates within its jurisdiction for the purpose of preventing or restricting their use and for which it has indicated the need for cooperation with other Parties in controlling their trade.

Red Data Book Categories of Birds of Turkey (Kızıroğlu, 2008)

A.1.0= Species that have disappeared beyond doubt and are no longer seen in their natural habitat.

A.1.1= Domesticated, domesticated species whose natural populations are now extinct or have not been seen in their natural habitat for at least the last fifteen to twenty-five years, but continue to live in voles, cages and other artificial conditions.

A.1.2= Populations of these species are very low throughout Turkey. They are represented by **1 individual - 10 pairs** (=1- 20 individuals) in the regions where they are monitored.

A.2= The numbers of these species range between **11-25 pairs** (22-50 individuals) in the areas where they are observed. They are significantly threatened with extinction.

A.3= Populations of these species in Turkey generally range between (52- 500) individuals in the regions where they are observed. These species are also vulnerable to extinction and have a high risk of extinction in the wild.

A.3.1= Populations of these species are declining in the areas where they are observed. The population of these species also varies between **251- 500 pairs** (502- 1000 individuals).

A.4= The densities of these species according to IUCN and ATS criteria are not yet threatened with extinction in the regions where they are observed, but there is a local decrease in their populations and they are candidates to become threatened with extinction in time. Populations of these species range from **501 to 5000 pairs** (=1002 to 10 000 individuals) in the areas where they are observed.

A.5= The observed populations of these species are not yet threatened with decline or extinction.

A.6= Includes species that have not been adequately researched and for which there is no reliable data. Since they are based on one or at most two observations only as "**incidental species= RT**", there is currently no chance of a reliable assessment and they need to be researched

A.7= It is not possible to make an assessment of these species at this time because the records of these species in Turkey are not complete and reliable. Species categorized as **NE: (not evaluated)** according to IUCN criteria are included in this group. These include species whose compliance with the above criteria has not been fully evaluated so far. they are marked with "*" in the relevant tables.

Species in group "B" are either winter visitors or transit migrants. These species are also significantly threatened with extinction and will be subject to the same assessment as in group 'A'. Therefore, the criteria in steps B.1.0 - B.7 will also be used for the species in group "B":

B1.0= There are no examples of species in this status that were previously recorded as wintering in Turkey but are now extinct.

B.1.1= These species use Turkey as a wintering or transit area, but their populations are threatened with significant extinction. The natural populations of birds in their wintering grounds are now extinct: they are domesticated species that survive in voliers, cages and other artificial conditions. These species have no chance of surviving in the wild. If they are released into the wild, it is no longer possible for them to adapt to natural living conditions.

B.1.2= The populations of these species are very low throughout Turkey and are represented by **1 individual - 10 pairs** (1- 20 individuals) in the regions where they are monitored. Since these species are under great threat of extinction, they must be protected throughout Turkey.

B.2= The numbers of these species range from **11 to 25 pairs** (22 to 50 individuals) in the areas where they are observed. These species are significantly threatened with extinction.

B.3= Populations of these species in Turkey generally range between **26-50 pairs** (52-500 individuals) in the regions where they are observed. Species in great danger of extinction in the wild. These species are also vulnerable to extinction and in great danger of extinction in the wild.

B.3.1= Populations of these species are declining in the areas where they are observed. Their population also ranges between **251- 500 pairs** (502- 1000 individuals). It includes species that tend to decline in the areas where they are observed, according to previous records.

B.4= Population densities of these species are not yet threatened with extinction in the areas where they are observed, but there is a localized decline in their populations. These species are candidates to be threatened with extinction in time. Populations of these species range between **501- 5000 pairs** (1002- 10 000 individuals) in the areas where they are observed.

B.5= The observed populations of these species are not yet in decline or threatened with extinction.

B.6= Includes under-researched and poorly recorded species. Since they are based on fewer than two observations as "**incidental species= RT**" only, there is currently no chance for a reliable assessment and need to be investigated.

B.7= It is not possible to make an assessment of these species at this time because their records are few, uncertain and unreliable.

Observed Regions in Turkey

A	Mediterranean Region
BB	All Regions
D	Eastern Anatolia
E	Aegean Region
G	Southeastern Anatolia
I	Central Anatolia Region
K	Black Sea Region
M	Marmara Region

4.3.2.4 Mammals (Mammalia)

As a result of field and literature studies and questionnaire interviews, **6 mammal species** belonging to 5 families [Red Fox (*Vulpes vulpes*), Mediterranean Vole (*Microtus guentheri*), Vole (*Microtus levis*), Hare (*Lepus europaeus*), Rock Marten (*Martes foina*), Anatolian Bay Rat (*Nannospalax xanthodon*)] were identified in and around the project area (See Table 11).

There is no endemic species among the mammals identified in the Project area and its immediate vicinity.

According to IUCN endangerment criteria, **5 species are in the "LC (Low Risk)" category** [Red Fox (*Vulpes vulpes*), Mediterranean Vole (*Microtus guentheri*), Field Mouse (*Microtus levis*), Hare (*Lepus europaeus*), Rock Marten (*Martes foina*)], and 1 species **is in the "DD (Data Deficient)" category** [Anatolian Bay Rat (*Nannospalax xanthodon*)].

According to the Bern Convention, **2 species are on the Annex-III list** [Hare (*Lepus europaeus*), Rock Marten (*Martes foina*)]. The remaining **4 species are not included in the annex lists**.

According to the Cites Convention, **all 6 species are not on the annex lists**.

According to the Central Hunting Commission Decisions (CHCD), **1 species is on the Annex-1 list** [Rock Marten (*Martes foina*)], **2 species are on the Annex-2 list** [Red Fox (*Vulpes vulpes*), Hare (*Lepus europaeus*)]. The remaining **3 species are not included in the annex lists**.

There is no species recommended to be monitored among the mammals identified in the Project area and its immediate vicinity.

Table 14. Mammalia Species Detected in the Project Area and its Vicinity and Their Conservation Status

Sequence No.	Family Name	Taxon Name	Turkish Name	Endemism	IUCN	BERN	CITES	Central Hunting Commission Decisions	Monitoring Indicator	Population Density	Form of Detection
1	Canidae	<i>Vulpes vulpes</i>	Red Fox	Not Endemic	LC	Off List	Off List	Annex-2	Not Subject to Monitoring	Rare	Field+Literature
2	Cricetidae	<i>Microtus guentheri</i>	Mediterranean vole	Not Endemic	LC	Off List	Off List	Off List	Not Subject to Monitoring	Rare	Literature
3	Cricetidae	<i>Microtus levis</i>	Fieldfare	Not Endemic	LC	Off List	Off List	Off List	Not Subject to Monitoring	Rare	Literature
4	Leporidae	<i>Lepus europaeus</i>	Hare	Not Endemic	LC	Annex-III	Off List	Annex-2	Not Subject to Monitoring	Rare	Field+Literature
5	Mustelidae	<i>Martes foina</i>	Rock Marten	Not Endemic	LC	Annex-III	Off List	Annex 1	Not Subject to Monitoring	Rare	Field+Literature
6	Spalacidae	<i>Nannospalax xanthodon</i>	Anatolian Gulf	Not Endemic	DD	Off List	Off List	Off List	Not Subject to Monitoring	Rare	Field+Literature

ABBREVIATIONS USED IN THE MAMMAL TABLE

IUCN

EX Exhausted
 EW Extinct in Nature
 CR Critical
 EN Endangered
 VU Vulnerable
 NT Close to the Threat
 LC Low Risk
 DD Insufficient Data
 NE Not Evaluated

Bern Convention

Annex 2 Animal Species under Strict Protection

Annex 3 Protected Animal Species

Cites Convention

Annex 1 Covers all species threatened with extinction that are or may be affected by trade. Trade in specimens of these species must be subject to particularly stringent legislation to avoid further jeopardizing their continued extinction and must only be permitted in exceptional circumstances.

Annex 2 Covers species that are not currently in imminent danger of extinction, but could become extinct unless trade in their specimens is strictly regulated to prevent uses incompatible with their continued extinction.

Annex 3 Covers all species that any Party regulates within its jurisdiction for the purpose of preventing or restricting their use and for which it has indicated the need for cooperation with other Parties in controlling their trade.

4.3.3 Ecosystem Diversity and Habitat Types

The classification of habitat types within the Project's location, including terrestrial and freshwater ecosystems, is based on the European Nature Information System (EUNIS) Habitat Classification. In accordance with the comprehensive evaluation conducted, the project area and its immediate surroundings (impact area) exhibit terrestrial and freshwater ecosystem types. **Terrestrial ecosystem consists of steppe ecosystem, agroecosystem (agricultural areas) and anthropogenic ecosystem; inland water ecosystem consists of river/stream ecosystem.**

The European Nature Information System (EUNIS) is a common habitat classification system established at the European Union scale to make efficient and regular use of natural resources, to identify existing resources and to establish databases. The aim of this system is to define European habitat types according to a standardized terminology enabling a broader analysis of habitats in connection with ecological regions, climate, soil, and environmental pressures, and allowing comparison of data with other countries. For EUNIS, a habitat is the place where plants or animals naturally live, defined firstly by its physical characteristics (topography, plant or animal physiognomy, soil characteristics, climate and water quality, etc.) and secondly by the species living there. The EUNIS Habitat Classification is a common habitat language on habitat types at the European scale, supported by the European Environment Agency (EEA). EUNIS is a combination of several habitat classifications (marine, terrestrial and freshwater).

The terrestrial and freshwater classification builds on previous work, notably the CORINE Biotope Classification, the Palearctic Habitat Classification, Annex I of the EU Habitats Directive, the CORINE Land Cover Classification and the Nordic Habitat Classification. The marine part of the classification is based on the BioMar Classification, which originally covered the North-East Atlantic.

When examining habitats within the project area and impact area, the **International Finance Corporation's (IFC) Performance Standard 6 for Biodiversity Conservation and Sustainable Management of Living Natural Resources** was adhered to. The habitats within the project area and impact area were classified as "**Modified/Modified Habitats**," "**Natural Habitats**," and "**Critical Habitats**".

EUNIS habitat classes within the Project area and impact area [Figure 4.19](#) is shown in Figure 4.18.

4.3.3.1 Altered / Modified Habitats

These are areas with poor biodiversity, where vegetation and wildlife have been substantially altered as a result of anthropogenic activities. The Project area and its impact area are represented by 2 different EUNIS habitat classes. These are;

➤ **I1 (Agricultural land and gardens):**

Encompasses annually harvested cultivable agricultural lands and fallow soil. Irrigable and dry farming lands, fallow lands, and orchards fall into this class. **Most of the AG-4 drilling area, the entire Gaziemir-5 drilling area and the new road route to be built are within this habitat class (Figure 4.19).**

➤ **J4.2 (Road networks):**

Artificial habitats covering all land transportation networks, including urban and interurban roads and village roads. All types of transportation roads, including asphalt and stabilized roads are included in this habitat class.

4.3.3.2 Natural Habitats

Areas where human activities are present, but natural vegetation and wildlife are significantly preserved. In the project area and impact area, two EUNIS habitat classes represent natural habitats:

➤ **E1.2E (Iran-Anadolu Stepi)**

Characterized by herbaceous and cushion-like plant forms, natural meadows with diverse flower compositions, shrublands with various plant species, and areas with no alternating systems. **Part of the AG-4 drilling site and the entire Gazimir-1 drilling site are located within this habitat class (Figure 4.19).**

➤ **H3.62 (Sparsely vegetated outcrops)**

Areas where 90% of the land is covered by rocks, lacking plant cover or having sparse vegetation (% 10 of land), including volcanic rocks, stable rocks containing limestone, and areas covered with rocks rolled down from mountains.

4.3.3.3 Critical Habitats

Critical Habitats are areas rich in biological diversity, with a high number of endemic, rare or endangered species. **No instances of "Critical Habitats"** were identified within the project area and impact area during the conducted studies.

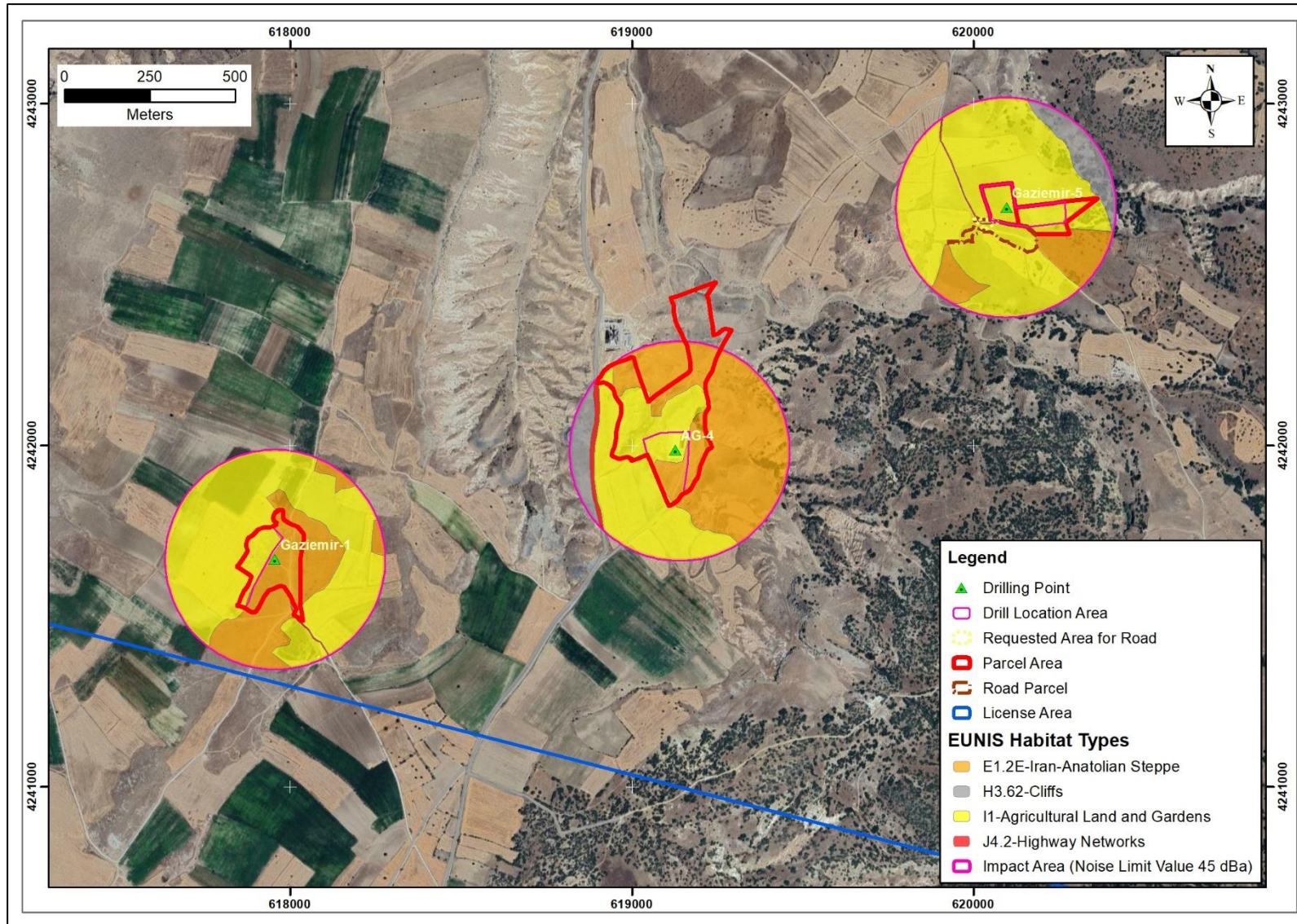


Figure 4.19 EUNIS Habitat Classes Map

4.3.4 Assessment of Habitats in the Region

Areal distribution and percentages of habitats within the Project area and impact area are given in Table 15. Within the Project area and impact area, Altered / Modified Habitats occupy 63.93% and Natural Habitats occupy 36.07%.

When we look at the areal and percentage distribution within the Altered/Modified Habitats, the EUNIS habitat class I1 (Agricultural land and gardens) (62.99%) ranks first. This is followed by EUNIS habitat class J4.2 (Road networks) (0.94%).

In terms of areal and percentage distribution within Natural Habitats, E1.2E (Iranian-Anadolu Stebi) (30.85%) EUNIS habitat class ranks first. The EUNIS habitat class H3.62 (Sparsely vegetated outcropping rocks) (5.22%) comes next.

Table 15. EUNIS Habitat Classes Distribution

Altered / Modified Habitats			
EUNIS Code	EUNIS Definition	Spatial Distribution (m) ²	Spatial Distribution (%)
I1	Agricultural land and gardens	613.474	62,99
J4.2	Road networks	9.130,06	0,94
Total		622.604,06	63,93
Natural Habitats			
EUNIS Code	EUNIS Definition	Spatial Distribution (m) ²	Spatial Distribution (%)
E1.2E	Iran-Anadolu Stebi	300.477,16	30,85
H3.62	Sparsely vegetated outcropping rocks	50.806,16	5,22
Total		351.283,32	36,07

Considering the Project area and impact area, there are "Altered / Modified Habitats and Natural Habitats" in the region. There are **no Critical Habitats** in the region. Gaziemir-1 drilling point and a small part of AG-4 drilling area are located within the habitat class E1.2E (Iran-Anadolu Stebi), which is a Natural Habitat. Most of the AG-4 drilling area, Gaziemir-5 and the new road route to be constructed are located in habitat class I1 (Agriculture and Gardens).

4.4 Vulnerable Areas (Sensitive Areas - Protected Areas)

In national legislation, the concept of "Vulnerable Region" is given in the Regulation on Environmental Impact Assessment. According to this regulation, the definition of the concept of vulnerable area (vulnerable region) is as follows:

Areas that are vulnerable to environmental impacts with their biological, physical, economic, social and cultural characteristics or whose existing pollution load has reached levels that are detrimental to the environment and public health, and areas deemed necessary to be protected in accordance with the legislation of our country and international conventions to which we are a party are called "Vulnerable Areas". The list of vulnerable regions is given in Annex-V of the Regulation on Environmental Impact Assessment.

According to national legislation (according to the first paragraph of Article 3 of the Law on the Protection of Cultural and Natural Assets No. 2863 dated 21.07.1983), the definition of the concept of protected area is as follows:

"Protected Areas" are land, water or sea areas with protection status such as national parks, nature parks, nature monuments, nature reserves, nature conservation areas, natural protected areas, wetlands, special environmental protection zones and similar protected areas managed in accordance with the relevant legislation in order to protect and ensure the continuity of biological diversity, natural and related cultural resources.

While evaluating the vulnerable regions and protected areas within the drilling locations, the Annex-V list of the Environmental Impact Assessment Regulation was taken into consideration. Accordingly, within the drilling locations;

a) There are no "National Parks", "Nature Parks", "Nature Monuments" and "Nature Protection Areas" as defined in Article 2 of the National Parks Law dated 09.08.1983 and numbered 2873 and designated in accordance with Article 3 of this Law.

b) There are no "Wildlife Protection Areas and Wild Animal Settlement Areas" designated by the Ministry of Environment and Forestry in accordance with the Land Hunting Law dated 01.07.2003 and numbered 4915.

c) There are no areas defined as "Cultural Assets", "Natural Assets", "Sites" and "Protected Areas" in sub-paragraphs 1, 2, 3 and 5 of paragraph (a) titled "Definitions" of the first paragraph of Article 3 of the Law No. 2863 dated 21.07.1983 on the Protection of Cultural and Natural Assets, and which are identified and registered in accordance with the relevant articles of the same law and the Law No. 3386 dated 17.06.1987 (Law No. 2863 on the Amendment of Certain Articles of the Law on the Protection of Cultural and Natural Assets and the Addition of Certain Articles to this Law).

ç) There is no Aquaculture and Breeding Areas within the scope of the Fisheries Law dated 22.03.1971 and numbered 1380.

d) Areas defined in Articles 17, 18, 19 and 20 of the "Water Pollution Control Regulation", which entered into force after being published in the Official Gazette dated 31.12.2004 and numbered 25687, the latest amendment of which was published in the Official Gazette dated 14.02.2018 and numbered 30332;

The project area is **not** within the "absolute protection area, short distance protection area, medium distance protection area and long-distance protection area" defined in Articles 17, 18, 19 and 20 of the Water Pollution Control Regulation. In addition, Articles 16, 17, 18, 19 and 20 of the Regulation were repealed by the Regulation Amending the Water Pollution Control Regulation published in the Official Gazette dated 14.02.2018 and numbered 30332.

e) There are no "Vulnerable Pollution Zones" as defined in Article 49 of the Regulation on the Protection of Air Quality published in the Official Gazette dated 02.11.1986 and numbered 19269.

f) Areas identified and declared as "Special Environmental Protection Zones" by the Council of Ministers pursuant to Article 9 of the Environmental Law dated 09.08.1983 and numbered 2872 and last amended by the Law dated 26.04.2006 and numbered 5491 **are not** in the activity area.

g) There are no areas under protection according to the Bosphorus Law dated 18.11.1983 and numbered 2960.

ğ) **There are no** areas considered as forest areas in accordance with the Forest Law dated 31.08.1956 and numbered 6831.

h) **There are no** areas where building bans are imposed in accordance with the Coastal Law dated 04.04.1990 and numbered 3621.

ı) **There are no** areas specified in the Law No. 3573 dated 26.01.1939 on the Breeding of Olive Groves and Grafting of Wild Olives.

i) Areas specified in the Pasture Law dated 25.02.1998 and numbered 4342:

The drilling locations to be used **are not pasture land**. Detailed information is given under the heading 4.2.

j) **It is not** within the scope of the areas specified in the Regulation on the Protection of Wetlands published in the Official Gazette dated 04.04.2014 and numbered 28962.

Areas to be protected in accordance with International Conventions to which Turkey is a Party

In and around the Drilling Location;

a) **There are no** "Important Sea Turtle Breeding Areas", "Important Sea Turtle Breeding Areas", "Important Sea Turtle Breeding Areas", "Protected Areas I and II", "Mediterranean Monk Seal Habitat and Breeding Areas" among the protected areas as per the "Convention on the Conservation of European Wildlife and Habitats" (BERN Convention) which entered into force after being published in the Official Gazette dated 20.02.1984 and numbered 18318.

b) **There are no** areas protected under the "Convention for the Protection of the Mediterranean Sea against Pollution" (Barcelona Convention), which entered into force after being published in the Official Gazette dated 12.06.1981 and numbered 17368.

i) As per the "Protocol for the Protection of Special Protection Areas in the Mediterranean" published in the Official Gazette dated 23.10.1988 and numbered 19968, **there are no** areas designated as "Special Protection Areas" in our country.

ii) **There are no** sites included in the list of "100 Coastal Historic Sites of Common Importance in the Mediterranean" published by the United Nations Environment Program, selected in accordance with the Genoa Declaration of 13.09.1985.

ii) **There are no** coastal areas that are habitats and feeding grounds for "Endangered Marine Species Specific to the Mediterranean" listed in Article 17 of the Genoa Declaration.

c) **There are no** cultural, historical and natural areas given the status of "Cultural Heritage" and "Natural Heritage" under protection by the Ministry of Culture in accordance with Articles 1 and 2 of the "Convention on the Protection of World Cultural and Natural Heritage", which entered into force after being published in the Official Gazette dated 14.02.1983 and numbered 17959.

ç) **There are no** areas under protection in accordance with the "Convention on the Protection of Wetlands of International Importance, Especially as Waterfowl Habitats" (RAMSAR

Convention), which entered into force after being published in the Official Gazette dated 17.05.1994 and numbered 21937.

d) There is no European Landscape Convention which entered into force after being published in the Official Gazette dated 27.07.2003 and numbered 25181.

Areas in Need of Protection

a) In the approved Environmental Plans, areas whose existing characteristics are determined as areas to be protected and where construction is prohibited (natural character to be protected, biogenetic reserve areas, geothermal areas and similar)

According to the environmental plan, **there are no** areas mentioned above in the vicinity of the project area.

b) Agricultural Areas: Agricultural development areas, irrigated, irrigable and land use capability classes I, II, III and IV, rainfall-dependent agricultural areas of class I and II and special crop plantation areas

The activity area **is not located** within the above mentioned areas.

c) Wetlands: All waters, marshes, reeds and peatlands, natural or artificial, permanent or temporary, stagnant or flowing, fresh, brackish or salty, covering depths not exceeding 6 meters during the ebb and flow of the tidal movement of the seas, which are important as a habitat for living creatures, especially water birds, and the places where these areas are ecologically wetlands from the coastal edge line to the land side;

The activity area **is not located** within the above mentioned areas.

ç) Lakes, rivers, groundwater operation areas

The activity area **is not located** within the above mentioned areas.

d) Areas that is important for scientific research and/or habitats of endangered or endangered species and species endemic to our country, biosphere reserves, biotopes, and biogenetic reserve areas, areas with unique geological and geomorphological formations.

There are no protected areas or vulnerable areas in and around the drilling site.

Ihlara Valley Special Environmental Protection Area is located approximately 2.62 km as the crow flies to the south of the drilling areas. No intervention will be made to this area during Project activities.

When the project area is evaluated according to INAs, it **is not** within any Important Nature Area (INA), Important Bird Area (IBA) and Important Plant Area (IPA) (**Figure 4.20**). The closest INA and/or IBA and/or IPA to the Project area;

Tuz Lake, located approximately 19.8 km as the crow flies, is a **INA**, **IBA** and **IPA** (**Figure 4.20**).

"Zero Extinction Areas" include one or more species that do not live anywhere else on earth and are most endangered here according to IUCN's red list criteria. There are currently 3 Zero

Extinction Areas in Turkey; these are Güllük Mountain, Bolkar Mountains and Lower Asi Basin (See [Figure 4.21](#)).

The Project area is not located within any Zero Extinction Sites when assessed according to the Alliance for Zero Extinction Sites (AZE).

Map showing protected areas and vulnerable areas around the license area is shown in [Figure 4.20](#).

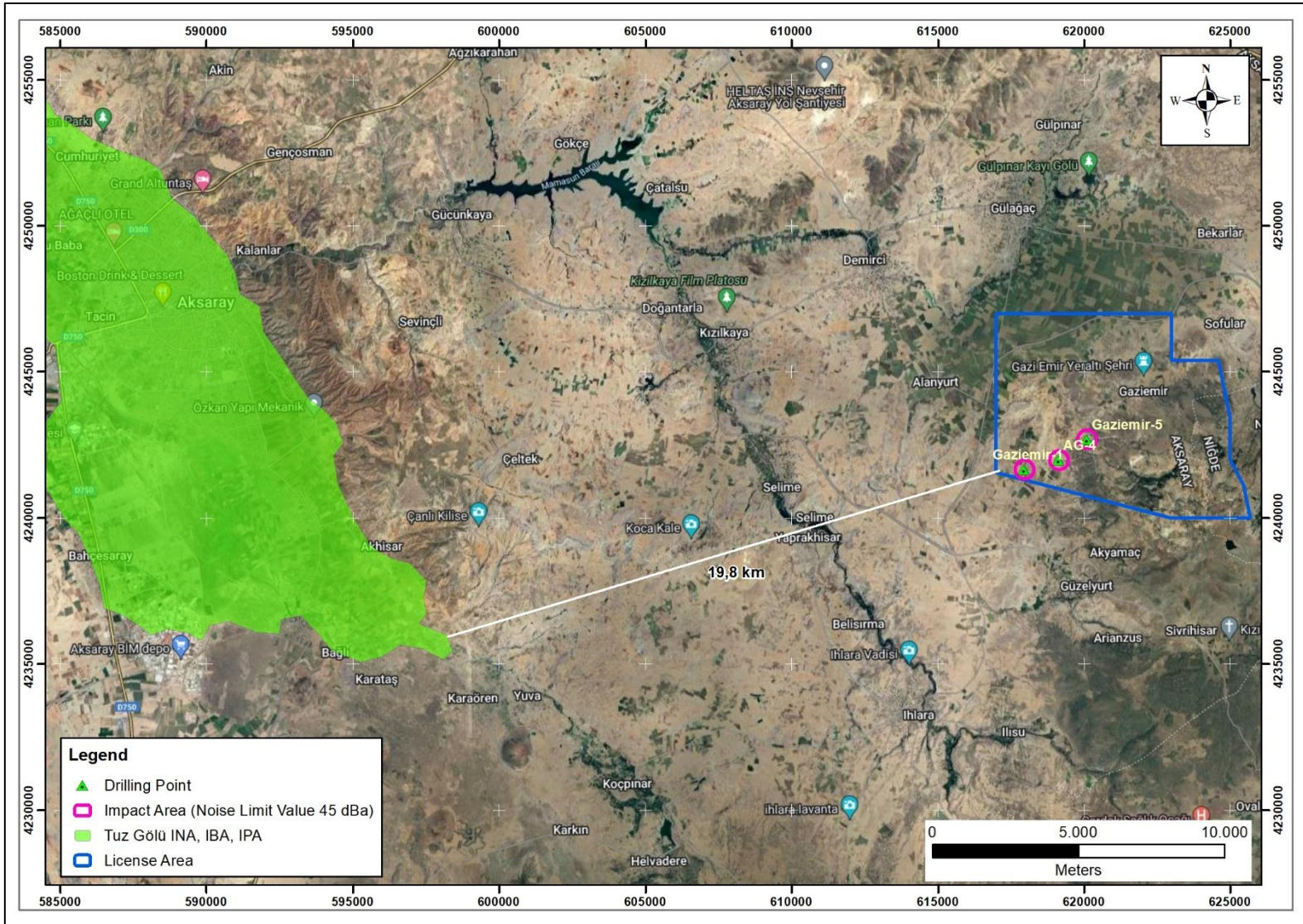


Figure 4.20 Map of Important Nature Areas (INA), Important Bird Areas (IBA), Important Plant Areas (IPA)

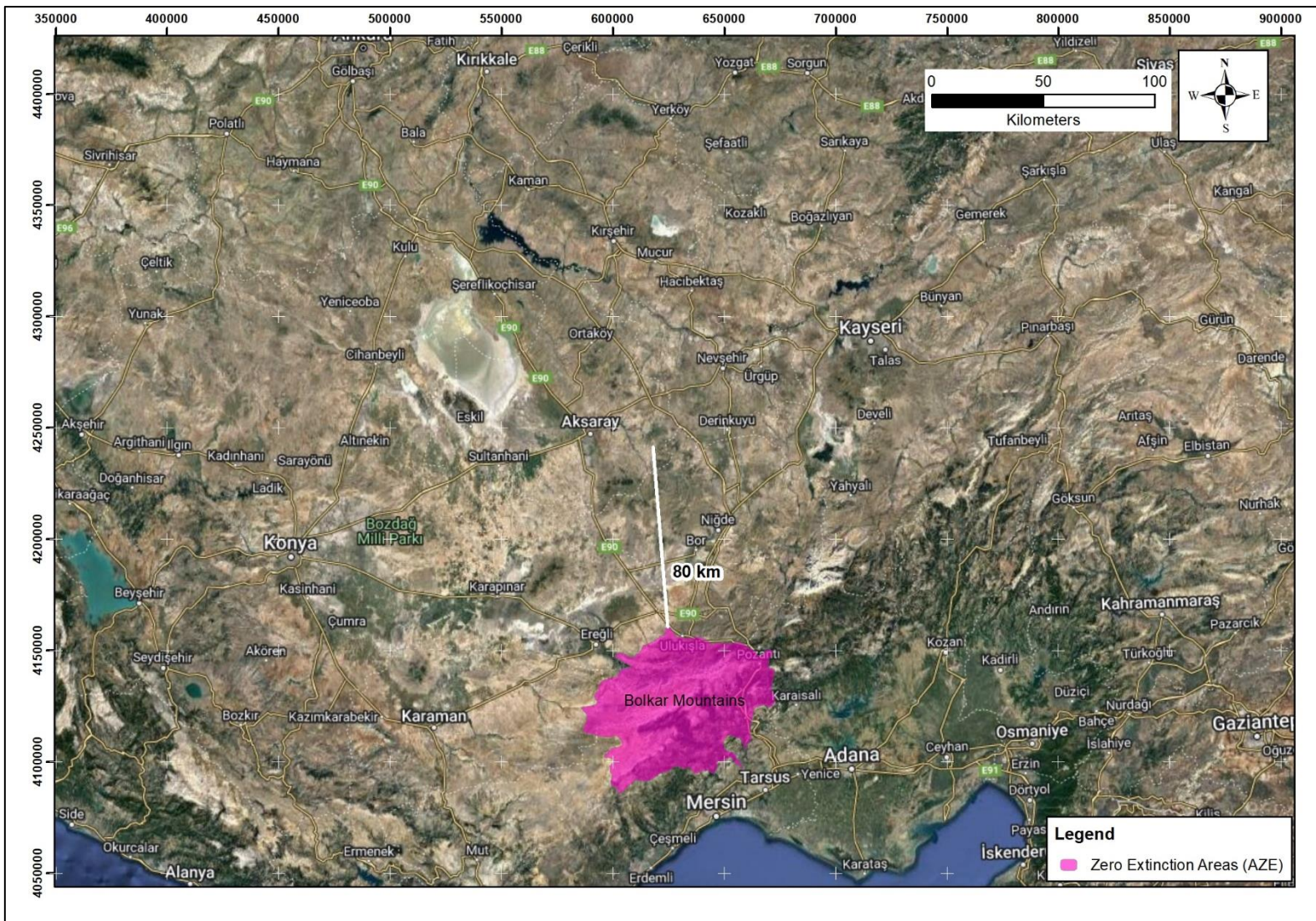


Figure 4.21 Zero Extinction Areas (AZE) Map



Figure 4.22. Map showing drilling locations and protected areas around the parcels where they are located

4.5 Socio - Economic Conditions of the Region

Agricultural activities in the region have decreased significantly due to intensive migration.

Population

The drilling locations to be studied in the project are located within Aksaray province borders.

According to 2022 data, the total population of Aksaray Province, where the project area is located, is 433,055 people. Of Aksaray provincial population, 216.983 people are men and 216.072 people are women. It is seen that the rate of rural population in the province has decreased while the urban population has increased (www.nufusune.com).

General Education Status in the Province: According to 2022 data, the literacy rate is 96.26%. The number of secondary schools is 136 and the number of students per classroom in secondary education is 28. The number of primary schools in the province is 199 and the number of students per classroom is 18. (<https://aksaray.meb.gov.tr>).

Table 16. Population Data of Aksaray Province (by Districts)

Year	District	District Population	Male Population	Female Population	Population Percentage
2022	Center	319.865	159.932	159.933	73,86%
2022	Ortakoy	31.818	15.720	16.098	7,35%
2022	Eskil	27.188	13.889	13.299	6,28%
2022	Gülağaç	19.158	9.672	9.486	4,42%
2022	Sultanhani	11.885	6.069	5.816	2,74%
2022	Guzelyurt	10.467	5.317	5.150	2,42%
2022	Agacoren	7.577	3.806	3.771	1,75%
2022	Sarıyahşi	5.097	2.578	2.519	1,18%

Table 17. 2022 Population Data of the Nearest Settlements

VILLAGE NAME	TOTAL POPULATION	MALE POPULATION	FEMALE POPULATION
Guzelyurt District	10.467	5.317	5.150
Bozcayurt Village	360	223	137
Gaziemir Village	915	485	430
Akyamac Village	428	221	207

Source: www.nufusune.com

There are Akyamaç, Güzelyurt, Bozcayurt and Gaziemir villages around the drilling areas and within the license area. Maps showing nearby settlements and distances are presented in Figure 2.10, Figure 2.11 and Figure 2.12 and a table with relevant distances is presented in Table 4.

Vulnerable groups in Areas of Impact:

The categories of vulnerable people listed below were included in the study process;

- Disabilities,
- Elderly
- People who are homebound due to illness, old age or disability
- Girls of school age but not attending school
- Those who cannot speak Turkish
- The poor living on aid
- Persons without any social security insurance
- Women, especially female-headed households
- Childless widows
- Migrants/refugees

So far, no specific information on vulnerable or disadvantaged groups has been provided by the headmen or community members during the meetings and interviews, but it has been identified that the majority of the village population consists of elderly people. Additional social investment projects are planned in Gaziemir village, Akyamaç village, Bozcayurt village, Alanyurt village, and especially in Gaziemir village, Akyamaç village, Bozcayurt village and Alanyurt village, if the drilling is successful and the project reaches the next stages.

5.0 Potential Impacts

The impacts of a project should be analyzed by considering the components of the project. The project under scrutiny is focused on the exploration of geothermal resources through the implementation of drilling activities, which encompasses phases such as land preparation, drilling of exploration wells, well production tests, and the restoration of the site through land rehabilitation. Potential impacts are analyzed below by impact source.

The initial stages of the project involve land preparation, including activities such as vegetation clearance, land arrangement, infrastructure placement, and the excavation of impermeable pits for storage purposes. During the drilling phase, it is anticipated that up to 50 personnel will be engaged in the project, working both day and night shifts. The subsequent testing and land rehabilitation phases are expected to involve a workforce of a maximum of 20 individuals.

Environmental impacts of an activity are generally caused by wastes from the activity and operational processes related to the activity. The environmental and social impacts of the drilling activities and their components have been meticulously assessed, taking into consideration impact pathways and levels. During the assessment; national and international standards, how the impact issue is effective, mitigation methods are also indicated. A table showing potential impacts, impact route and level is provided at the end of Section 5.

The Project will comply with the World Bank Operational Policies (OP) and IFC Performance Standards. The World Bank Operational Policy triggered by this project is OP 4.01 Environmental Assessment. Policies OP 4.12 Involuntary Resettlement and OP 4.11 Physical Cultural Resources are not applicable, as there is neither involuntary resettlement nor physical cultural resources (cultural heritage sites) in the area or its immediate vicinity.

O.P.4.01 Environmental Assessment considers the natural environment (air, water and soil), human health and safety, social aspects (involuntary resettlement, indigenous peoples and physical cultural resources), and transboundary and global environmental aspects in an integrated manner.

Under the World Bank's operational policy on Environmental Assessment (O.P.4.01), projects are classified into categories A, B, C according to the degree of potential impacts on the environment. This categorization is based on the type, location, sensitivity, scale, and nature and extent of potential impacts.

According to Environmental Assessment OP 4.01, the project is classified under Category B. Projects in Category B have fewer potential negative impacts on human communities or environmentally important areas - such as wetlands, forests, green spaces and other natural habitats - than projects in Category A. However, like Category A projects, the potential negative and positive environmental impacts of the project are tested and recommendations are made to avoid, minimize, mitigate or compensate for a negative impact and to improve its environmental performance. Preventive measures are preferred over mitigation or compensation measures where possible. Category-B projects require the preparation of an ESMP under OP 4.01.

There are no physical cultural resources (cultural heritage sites) in the Project area and its immediate vicinity. Although OP 4.11 Physical Cultural Resources policy is not triggered, an incidental find procedure will be implemented which will alert site supervision consultants and contractors of the steps to follow in the event of cultural artifacts discovered by chance or found

by chance. In addition, all official correspondence (regarding cultural artifacts if any) before or during construction works will be recorded and included in periodic monitoring reports.

The Project will be carried out in compliance with the WBG's General EHS Guidelines and the EHS Guidelines for Geothermal Power Plants. It is also the commitment of the Beneficiary that in case of differences between the Turkish legislation/requirements and the measures and requirements specified in the WBG's EHS guidelines, the more restrictive/stringent requirements will be applied. The Beneficiary is responsible for carrying out the environmental and social assessment.

The International Finance Corporation (IFC) applies Performance Standards (PS) to manage social and environmental risks and impacts and to enhance development opportunities in the private sector financing it provides in eligible member countries.

IFC Performance Standards will also be complied with during the Project.

Performance Standard 1 (PS 1): Assessment and Management of Environmental and Social Risks and Impacts) covers all projects where environmental and social risks and impacts are involved. It sets out the importance of (i) conducting a comprehensive assessment to identify the environmental and social impacts, risks and opportunities of projects, (ii) ensuring effective engagement by publicizing project-related information and consulting with local communities on issues that directly affect them, and (iii) managing the client's environmental and social performance throughout the life of the project.

In addition, clients, i.e. beneficiaries, must comply with the requirements set out in the Performance Standards, as well as with domestic law, including the laws of the country in which the project is implemented that implement their obligations under state law. If clients identify environmental or social risks and impacts, they must manage these risks and impacts through an Environmental and Social Management System in accordance with PS 1.

PS 2: Work and Labor Standard aims to ensure safe and healthy working conditions and employee health; promote fair treatment, non-discrimination and equal opportunity for employees; maintain and improve the employee-management relationship; ensure compliance with national employment and labor laws; and prevent forced labor.

PS 3: Resource Efficiency and Pollution Prevention aims to avoid or minimize adverse impacts on human health and the environment by preventing or reducing pollution from Project activities, promote more sustainable use of resources, including energy and water resources, and reduce project-related greenhouse emissions.

PS 4: Community Health, Safety and Security Standard aims to anticipate and prevent adverse impacts of routine and non-routine situations on the health and safety of affected communities during the project period, and to ensure the safety of personnel and movable/immovable property in accordance with relevant human rights principles and in a manner that avoids or reduces risks to affected communities.

5.1 Potential Impacts from Waste

In this project, tracking charts approved by the RSM Unit will be used within the scope of the project in order to keep a record of all wastes to be generated at the site (date, time of collection

from the site, by whom, where they are taken, and the method of disposal) and will be presented in full in monthly reports.

In addition, a waste storage area will be created for the storage of other wastes (such as hazardous waste, scrap waste, waste oils). Sizes of the waste storage areas to be created are presented in Table

2. **Spatial Sizes of Main Components**

National and International Standards/Conditions

The only national regulation on waste management in Turkey is the Waste Management Regulation.

In addition, there are other regulations for specific waste types and waste management procedures. These include waste generated by excavation, construction, oils, packaging, batteries, accumulators, medical supplies, electrical and electronic materials, as well as waste from transportation. The legal national waste regulations that the Project will comply with are given under each heading (waste heading).

The Project will comply with the Waste Management Regulation, Waste Oil Management Regulation, Packaging Waste Control Regulation, World Bank Operational Policies and the World Bank Group's General Environmental, Health and Safety Guidelines as well as the World Bank Group's Geothermal Power Generation Environmental, Health and Safety Guidelines.

Both our national legislation and international standards (World Bank Environmental and Social Standards, EU Legislation, etc.) state that waste generation should be prevented at source, and in cases where it cannot be prevented; it should be reused, reduced and recovered.

This project will comply with national legislation and international standards. It will be aimed to prevent all wastes to be generated at the source. If it cannot be prevented, it will be aimed to be reused and reduced.

Current Situation in the Province

In Turkey, landfills are designed as Class II Landfills in accordance with the Regulation on Landfilling of Wastes. These sites have systems to prevent surface water from entering the facility, appropriate impermeable liners, leakage collection systems and systems for treatment of collected leakage in accordance with relevant legislation.

Domestic waste in the provinces is collected by district municipalities and brought to the provincial solid waste landfills via transfer centers before being disposed of in landfills.

There is one solid waste storage facility in the province and it is located in Somuncubaba Neighborhood of Central District. There are 3 transfer stations throughout Aksaray. Domestic wastes collected in these stations and domestic wastes collected in the center are regularly stored in this facility. The facility was built to operate on an area of 108.000 m² with a solid waste storage capacity of 910.000 m³. There is no wild storage in the province.

Waste leachate in the sanitary landfill belonging to Aksaray Provincial Local Authorities Service Union is collected in ponds and evaporated by recirculation. There is no discharge. Energy is produced from landfill gas in the sanitary landfill facility.

5.1.1 Domestic Solid Wastes

Impact Definition and Causes

Domestic solid waste is generated from the personnel working in geothermal drilling activities. Domestic solid waste will be generated at every stage of the Project.

If precautions are not taken for municipal solid waste and waste management is not done well, it will lead to Visual and Environmental pollution. Image pollution will cause negative social impacts, while environmental pollution will affect soil, air, water, living creatures in the environment, community and worker health. Depending on the type of solid waste, air quality can be affected if it dissolves and mixes with the air. If not collected and stored properly, it leads to deterioration of soil, surface and groundwater quality.

In addition, if there is food residue on the solid waste, it attracts wild animals to the area. This can have negative impacts both for the personnel working in the activity area and for wild animals.

Impact Mitigation Methods

Regarding the management of solid wastes, the provisions of the "Waste Management Regulation", which entered into force after being published in the Official Gazette dated 02.04.2015 and numbered 29314 (amendment: Official Gazette dated 23.03.2017 and numbered 30016), will be strictly complied with.

Disposal of Municipal Solid Waste (waste code 200108) in this region will be carried out as follows:

Prior to commencement of the activity, correspondence will be made between the Beneficiary and the relevant municipality for the collection of domestic solid waste by the Municipality for a fee. As of land preparation, the Municipality vehicle will come to the drilling location and collect domestic waste. The Municipality vehicle is expected to visit the location 1-3 times a week for waste collection. The collected waste will be taken to the solid waste transfer station by the Municipality.

A domestic waste storage area will be constructed at the entrance of the location for the storage of domestic solid waste. In accordance with the provisions of the "Waste Management Regulation", household solid wastes that will be released within the scope of the activity will be stored separately from other wastes in leak-proof garbage containers.

Personnel and related persons will be warned that it is forbidden to dump domestic solid wastes that will be released within the scope of the activity in question into ground and surface waters, lakes and streams, similar receiving environments, streets, roads, open areas and necessary trainings will be organized.

5.1.2 Packaging Waste

Impact Definition and Causes

Within the scope of the Project, packaging wastes will be generated from personnel and from the works and operations to be carried out during the works. Packaging waste can also be classified as solid waste. Therefore, the impacts given under the heading "Domestic Solid Wastes" above are also in question here. Packaging wastes will be generated at every stage of the Project.

Impact Mitigation Methods

Packaging wastes that will be released within the scope of the activity in question, regardless of the material used and the source of generation, will be collected separately from other wastes where they are generated in order to reduce environmental pollution, to make maximum use of landfill facilities and to contribute to the economy, and will be stored in containers to be placed in the area for recyclable wastes, and will be disposed of by giving them to companies that have obtained environmental licenses or to the municipal collection system in accordance with the Regulation on the Control of Packaging Wastes, which entered into force after being published in the Official Gazette dated 26.06.2021 and numbered 31523.

There are 16 licensed Packaging Waste Collection and Sorting Facilities and 20 Recycling Facilities operating in the province. Municipality has a Packaging Waste Management Plan.

While packaging wastes are collected separately from other wastes, collection and accumulation will be carried out in accordance with Article 25 of the "Regulation on Control of Packaging Wastes". According to this article, in order to separate packaging wastes according to their types in the activity area, piggy banks will be placed according to the types of packaging wastes (glass, metal, plastic, paper/cardboard and wood). The type of waste to be collected in the bins will be written on the bins.

Necessary information and training will be provided to the personnel on packaging waste and separation at source.

Packaging wastes collected according to their types will be collected separately according to their types in larger containers to be placed in the temporary waste storage area in case the containers are full. These wastes will be disposed of by giving them to companies with environmental licenses or to the municipality's packaging waste collection system.

Packages that are not caused by the personnel and that are large in volume (too large to fit in the waste containers) will be stored in an area reserved in a container in the temporary waste storage area to be created.

Separate storage of domestic wastes and recyclable wastes will be ensured and recyclable wastes will not be disposed of together with domestic wastes.

5.1.3 Hazardous Waste

Hazardous waste is likely to be generated at each stage of the project.

Impact Definition and Causes

Hazardous wastes such as contaminated packaging wastes over wear wastes, cleaning cloths, absorbent pads and fluorescent wastes may contaminate soil, surface water and groundwater if not stored properly. In the long term, this will cause adverse effects on humans and living organisms such as poisoning and disease. If left uncontrolled in nature, they may cause negative effects on animals and plants as a result of contact with them.

Impact Mitigation Methods

Hazardous wastes will be collected separately from other wastes according to their types. They will be temporarily stored in a temporary waste storage area that is sealed and will not be affected by weather conditions. Appropriate fire response equipment (fire extinguishers) against possible fires and spill kits against possible leaks will be available in the temporary waste storage area. Hazardous wastes that are likely to cause leakage (contaminated packaging, overalls, cleaning cloths, absorbent pads, etc.) will be collected in sealed storage containers. It will be ensured that such wastes are contained in a secondary container to prevent spillage. The area where each waste is located will be marked with labels indicating the waste code, date of storage and type of waste.

These wastes will be disposed of by licensed carriers and licensed companies. Disposal operations will be carried out through MOTAT. All waste records will be recorded in the waste log and will be monitored.

Hazardous Waste Compulsory Financial Liability Insurance will be taken out.

Personnel responsible for hazardous wastes will be identified and will be given relevant trainings.

All personnel will be informed about the management of hazardous wastes through trainings.

5.1.4 Medical Waste

Medical waste is likely to be generated at every stage of the project.

Impact Definition and Causes

In geothermal drilling activities, occupational accidents are not frequent as heavy machinery is generally not used in the main activity (during drilling). Therefore, medical waste generation is almost non-existent. However, if medical waste is generated and not disposed of, it can cause significant environmental pollution, especially health problems. If not collected and stored properly, it leads to deterioration of soil, surface and groundwater quality. On the other hand, it causes health problems as it causes bacterial growth in its environment.

First aid materials will be kept ready in the activity area against possible work accidents. If a work accident occurs and on-site medical intervention is performed, medical waste will be generated.

In case of serious injuries that may occur in the activity area, the nearest health institutions of the district and the province will be used after the first aid to be provided in the field.

Impact Mitigation Methods

The medical wastes that will be generated in this activity will not be mixed with other wastes in any way and will be collected in sealed medical waste bags in a red container. The medical waste container will be located in a safe area.

Cutting and piercing wastes will be collected separately from other medical wastes in medical waste boxes or containers that are resistant to puncturing, tearing, breaking and explosion.

Medical waste bags are kept in a medical waste container or bucket during the accumulation period. New bags and containers will be kept ready for use at the source of the waste or in the nearest area.

If medical waste is generated (under 50 kg), it will be delivered to the nearest Public Health Center. When the waste is delivered to the Public Health Center, a certificate of delivery will be received.

The provisions of the "Regulation on the Control of Medical Wastes" published in the Official Gazette dated 25.01.2017 and numbered 29959 will be strictly complied with.

5.1.5 Waste Batteries and Accumulators

Waste batteries and accumulators will not be generated at all stages of the Project. It may be generated only during the drilling activities and well testing phase. They will not be generated during the land preparation and rehabilitation phase.

Impact Definition and Causes

Nowadays, the use of mobile and mobile devices is very common not only in geothermal drilling activities but in all activities. Therefore, waste batteries are generated. Batteries are substances containing metal and chemical substances. If waste batteries are not stored and disposed of under appropriate conditions, the substances in the batteries can mix with water and soil. Water and soil quality deteriorates and creates environmental pollution.

Impact Mitigation Methods

In the activity, "waste prevention" and "reuse" will be prioritized. The use of rechargeable batteries will be prioritized in the use of machines such as mobile radios, flashlights, mobile radios, etc. The use of rechargeable batteries generally prevents the generation of waste batteries.

If waste batteries are generated within the scope of this activity, they will be collected separately from other wastes in the waste battery collection box in the administrative offices in the project area and delivered to the collection points to be established by the enterprises that distribute and sell battery products or by the municipalities. Disposal of batteries to soil and sea will be strictly prevented.

Waste accumulators will not be generated in the activity area. Battery replacements will be made at authorized services with adequate infrastructure and waste accumulators will be delivered to the authorized service. The provisions of the Regulation on the Control of Waste Batteries and Accumulators published in the Official Gazette dated 31.08.2004 and numbered 25569 (amendment: Official Gazette dated 23.12.2014 and numbered 29214) will be strictly complied with.

5.1.6 End-of-Life Tires

End-of-life tires are likely to be generated at every stage of the project. However, since the use of construction machinery is limited in geothermal drilling activities in general, there is no or very little waste tire generation.

Impact Definition and Causes

Although there are mostly non-renewable resources in the structure of the tire, natural rubber, synthetic rubber, carbon black, steel, oils and various chemicals constitute the components of the tire. If scrap tires are not disposed of properly; there are two important environmental damages. These are the possibility of severe fires occurring in areas where tires are collected uncontrolled and the spread of diseases that are highly threatening to society due to insects that have the opportunity to multiply easily in these uncontrolled piles.

Impact Mitigation Methods

Within the scope of the activity in question, maintenance and tire changes of the vehicles will be carried out with the relevant services, but in case of end-of-life tires in the activity area, they will first be temporarily accumulated in the temporary waste storage area to be created. Afterwards, they will be delivered to licensed companies. The provisions of the Regulation on the Control of End-of-Life Tires published in the Official Gazette dated 25.11.2006 and numbered 26357 (amendment: Official Gazette dated 11.03.2015 and numbered 29292) will be strictly complied with.

5.1.7 Other Non-Hazardous Wastes (Scrap Metals, Broken Glass, Pieces of Wood, Excavation and Construction Waste, etc.)

Other non-hazardous wastes are likely to be generated during drilling activities and well testing. During the land preparation and rehabilitation phase, it is expected to be generated from activities such as installation and demolition. During rehabilitation, all above ground structures (pipes etc.) on the well location will be dismantled and the concrete floor will be removed.

Although no excavation waste will be generated in the Project, concrete wastes may be generated due to installation/construction. These wastes will not be stored permanently on site. They will be taken to the excavation storage area of the Municipality and disposed of. The relevant provisions of the "Regulation on the Control of Excavation Soil, Construction and Demolition Wastes" will be complied with regarding the construction wastes to be generated at the site.

Impact Definition and Causes

In geothermal drilling activities, office and accommodation areas are located within the drilling locations. Metals, glass shards, pieces of wood can be generated from accommodation units. In addition, scrap metals can also be generated from machine parts. Scrap metals include aluminum parts, brass, copper, chrome and iron parts.

The chemicals contained in scrap metals enter the water resources by dissolving the heavy metals in the acid metal composition and the dissolved heavy metals reach rivers, lakes and groundwater. The heavy metals transported into the water become extremely diluted and partially form solid compounds as carbonate, sulfate, sulfide and precipitate to the water table and become enriched in this region. They negatively affect water quality and soil quality.

Impact Mitigation Methods

Scrap materials can be recycled like packaging waste. These wastes will be temporarily stored covered on a solid, impermeable, secure ground. Storage areas will be labeled to indicate the type of waste stored. Collected wastes will be given to companies with environmental licenses and will be recorded.

5.2 Potential Impacts from Liquid Waste

The Project will comply with World Bank Operational Policies and IFC Performance Standards and local regulations.

National and International Standards/Conditions

- Regulation on the Protection of Groundwater against Pollution and Degradation - Ministry of Agriculture and Forestry, 2012
- Regulation on Water Intended for Human Consumption (ITASHY), Chemical Parameters and Indicator Parameters - Ministry of Health, 2005;
- Regulation on Surface Water Quality, Quality Criteria of Inland Surface Water Resources by Classes - Ministry of Agriculture and Forestry, 2012;
- World Bank Group General and Sector Specific Environmental, Health and Safety Guidelines ;
- Drinking Water Quality Guidelines - World Health Organization (WHO), 2011;
- Directive 2006/118/EC of the European Parliament and of the Council of December 12, 2006 on the Protection of Groundwater against Pollution and Degradation;
- European Union Quality Criteria for Water for Human Consumption - Council Directive 98/83/EC of November 3, 1998;
- Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on Environmental Quality Standards (amending and subsequently repealing Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council);
- The Water Framework Directive 2000/60/EC of 23 October 2000 is the main legal instrument for the protection and improvement of the quality and quantity of all water bodies in the European Union, based on integrated basin management and public participation in resolution-making.

Geothermal drilling activities give rise to a significant waste stream, with liquid waste being the predominant concern. Liquid waste, originating from personnel and operational activities, poses

the most substantial potential impact on the environment. Due to the rapid environmental effects of these liquid wastes compared to other forms of waste, proper disposal is crucial, ideally before they accumulate to quantities that could pose a threat.

Liquid wastes, if not properly managed, have the potential to easily seep into soil and groundwater. This can adversely affect the quality of soil and groundwater. Improper storage conditions may also result in the mixing of liquid wastes with surface waters, causing negative environmental impacts on both surface and groundwater. These environmental impacts negatively affect everything and everywhere the water reaches. Additionally, the evaporation of liquid wastes can contribute to air quality degradation. Therefore, effective waste management is imperative to mitigate these risks.

In this project, liquid wastes are categorized into two main sources: personnel-generated and operationally-generated.

5.2.1 Personnel Sourced Liquid Wastes:

Throughout all stages of the Project, liquid waste will be generated from personnel due to personnel activities. Water will be provided for personnel by water tankers, and each location will be equipped with leak-proof septic tank for domestic liquid wastes.

Impact Mitigation Methods

To minimize the impact of personnel-generated liquid wastes, domestic liquid wastes will not be discharged into the receiving environment or natural surroundings. The following approach will be adopted for the disposal of domestic wastewater:

The investor company will submit a written application to the relevant municipality, seeking approval for the removal of domestic wastewater using a municipality-owned vacuum truck. A written confirmation of the wastewater removal will be obtained from the municipality.

Leak-proof septic pits will be excavated for the disposal of domestic liquid wastes, and leak-proof septic tanks will be installed. When the tank reaches 80% capacity, it will be emptied by a vacuum truck. The fill levels will be regularly monitored by an on-site environmental supervisor (hired the Beneficiary Company).

Prior to drilling, a containers will be established to to serve as restroom facilities. During the operation period, the wastewater will be collected by the municipality-owned vacuum truck or the vacuum truck leased by the Beneficiary. Wastewater collected from the town municipalities will be treated and discharged at Aksaray Municipality Wastewater Treatment Plant. Payment for this service will be invoiced periodically (monthly or bi-monthly).

Throughout the project stages, records of the withdrawal of domestic wastewater by vacuum trucks will be recorded with the Waste Tracking Schedule.

In order to store the wastewater generated due to the personnel who will work for the drilling subject of the activity, a leak-proof pit (tank will be placed) will be constructed in accordance with the principles specified in the "Regulation on Pits to be Constructed in Places Where It is Not Possible to Construct Sewage Pits" published in the Official Gazette dated 19.03.1971 and numbered 13783.

5.2.2 Liquid Wastes from Processes:

The characteristics of process-based liquid wastes in geothermal drilling projects vary according to the purpose of the well. In other words, wells used for exploration purposes produce drilling mud and geothermal fluid, while wells used for operational purposes produce only geothermal fluid. This project involves only geothermal fluid exploration drilling.

During the drilling stage, the liquid waste extracted from the well will be drilling mud.

Following the completion of drilling, a well-cleaning operation will be conducted, involving water injection into the well. As a result of this injection, the well is expected to produce drilling mud, water and geothermal fluid. Initially, drilling mud will be generated and stored in tanks. Subsequently, when watery mud starts to emerge, the liquid will again be stored in tanks.

No drilling fluid with acid is planned for the geothermal exploration wells. Therefore, associated environmental and social impacts have not been assessed under this ESMP. If any decision is made to conduct operations not evaluated in the ESMP, such as drilling fluid including acid etc., this ESMP will be updated by the Beneficiary to include the associated environmental and social risks and impacts, practices and measures. The updated ESMP will be submitted for approval of the RSM Unit. Implementation of such operations will be possible only after obtaining approval.

During the well testing stage, the process-generated liquid waste will consist solely geothermal fluid, which will be directed to the geothermal fluid pool.

Impact Definition and Causes

Improper disposal of process-based liquid wastes in geothermal drilling projects poses a risk of contamination to receiving environmental bodies, i.e. surface water, groundwater, and soil. It is not only the disposal but also the storage location, the half-moon tanks, that must comply with regulations.

Impact Mitigation Methods

Reasons for Using Drilling Mud and Properties of the Mud to be Used:

Drilling muds: Drilling muds serve various purposes in the drilling process, including removing cuttings, cooling and lubricating the drill and drilling string, creating a filter cake in the well, and controlling pressures during drilling. The use of drilling mud also ensures the stability of the well wall, prevents liquid loss during drilling, and creates an impermeable layer to prevent aquifer contamination.

Four main types of drilling mud are used in geothermal drilling today. These are water-based mud, plain water, gas mud or foam with water and air.

For this project, the type of drilling mud used in exploration drilling will vary based on the depth and formation. Generally, a mixture of bentonite and freshwater mud will be used, but to avoid pollution when encountering reservoir-forming formations, calcium carbonate-based drilling mud will be prepared. The water needed for preparing the drilling mud will be supplied via tanker trucks.

Initially, spud-type mud usage is anticipated, especially where the wellbore diameter is largest. It is one of the water-based mud types and one of the reactive muds, with bentonite being the main additive.

Before use, drilling mud will be kept in impermeable tanks to prevent it from contaminating surface and groundwater sources. Mud production will be done in tanks.

Approximately 80 m³ of mud that will be continuously kept available in the surface tanks belonging to the drilling rig. For example, for a 100-meter 26" borehole, approximately 35 m³ of mud will be used. Additional mud quantities of 55 m³ for 100-450 meters 17.5" drilling, will need to be prepared, 65 m³ for 450-1,300 meters of 12.25" drilling, and 45 m³ for 1300-2500 meters of 8.5" drilling will be prepared.

The management and characteristics of drilling mud using the dry-location method for drilling process are given below.

Dry-Location Construction and Features:

The dry-location system will function in integration with the rig floor control system and comprises high speed centrifugal pumps (with back-ups) and dewatering units (see [Figure 5.1](#) and [Figure 5.2](#))

The primary component of the system is the decanter, a crucial purification equipment designed to separate the fluid waste into solid and water phases. Its biggest advantage over other treatment equipment is its ability to operate continuously for a long time.

It is designed to separate liquid/solid suspensions into their phases. As the low-density liquid separates from the entering product at high drum speeds, the solid is continuously extracted utilizing high conveyor torques, taking advantage of the speed difference between the drum and the conveyor.

Within the scope of the system, the goal is to achieve the highest possible removal of solids from the drilling mud and to dewater the collected waste mud, combined with other drilling wastes (pump and rig wash water, etc.), separating it into moist solids and clean water. In the applied the obtained clean water can be reused in preparing new mud or diluting mud. With the use of the **Dry-Location** system, the following 5 (five) main elements are targeted:

1. **Reduction of the amount of waste mud** is achieved by treating the system mud with the help specifically assigned high-speed decanter centrifuge.
2. **Overflowing mud** from the screens and/or **qualified mud** accumulated in the cellar pit is collected, cleaned in half-cylindrical tanks, and **returned to the system**.
3. **Dewatering of unqualified waste mud** is achieved by collecting the unqualified mud mixed with rig washing, pump and drawworks wastewater in the waste mud tank. After physical and chemical treatments, the mud is dewatered through the dewatering decanter, separating the solids from water.

4. **Reuse of the clean water** exiting the dewatering decanter for mud preparation after necessary addition of drilling chemicals.
5. **Reduction of the solid waste** volume is achieved through high-speed decanter centrifuges generating high G-forces and a chemical preparation unit, ensuring maximum solid material dewatering.

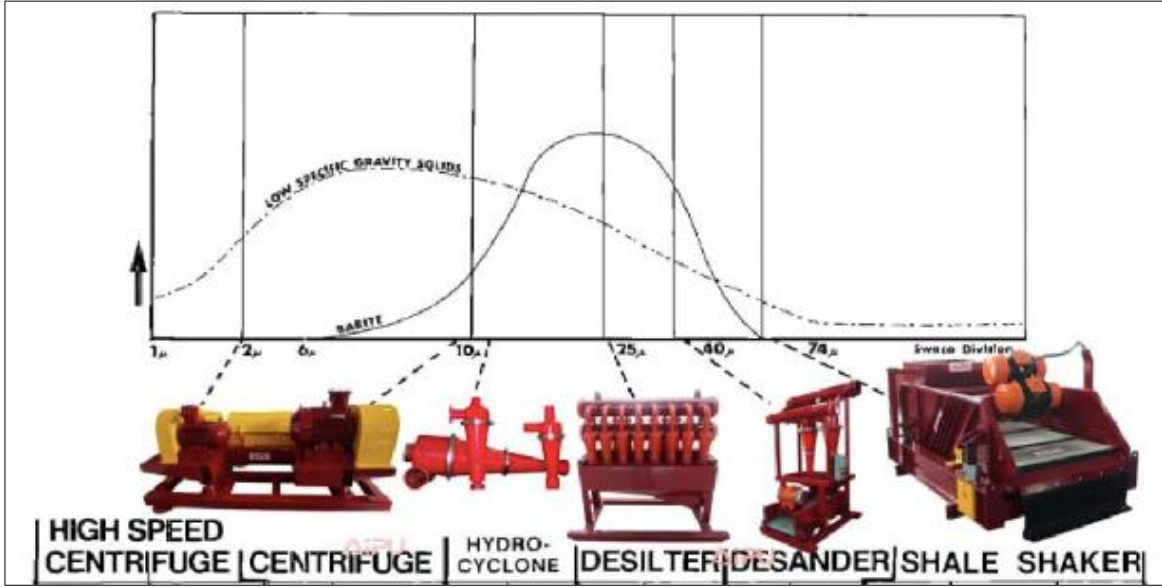


Figure 5.1. Separation up to 1-2 micron sized grains with high speed centrifugal decanters

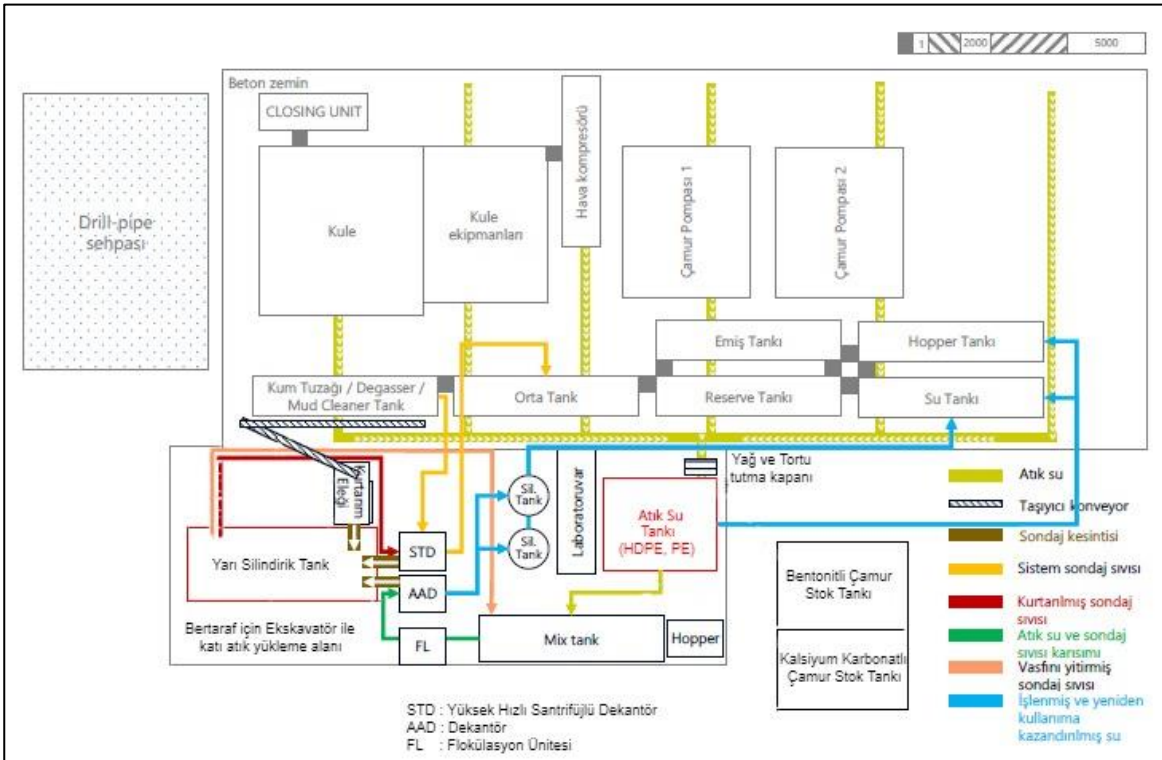


Figure 5.2. Representative layout of Dry-location system integrated into rig rig solid control system (without mud-pit)

The dry-location system, through its advanced features and integrated components, aims to not only reduce environmental impact by minimizing waste but also enhance the efficiency and sustainability of the

geothermal drilling project. Continuous operation and the ability to recycle and reuse resources contribute to a more responsible and eco-friendly drilling process

In the Drilling Waste Management System, the operation and equipment requirements vary according to the needs and capacity of the project. The system designed for the planned drilling works is based on the solids control of the drilling fluid (drilling mud), ensuring the drying of the cuttings and recovery of the drilling fluid on the cuttings. The operation is summarized below:

- Drilling activities involve continuous mud circulation, bringing cuttings to the surface. The mud, mixed with cuttings, undergoes primary solid waste control through vibrating screens, largely removing solids (drilling cuttings) and continuing circulation. As a secondary solid waste control, mud cleaner and hydrocyclones work to separate smaller-sized solids (up to 10 microns) that vibrating screens cannot separate. While these two pieces of equipment separate solids, some mud is discharged along with the solids.
- The muddy solids separated by these two equipment are transferred to the drying shaker either through conveyor belts or channels.
- In the drying shaker, the muddy solids exposed to vibration are separated from the mud and transferred to the half-moon tank. The drying performance may vary depending on the structure of the drilled formation and the type of vibrating screen in the mud system.
- The drilling fluid recovered from the the drying shaker is collected in the underflow recovery tank then reintroduced to the system through the mud cleaner.
- Since mud systems do not operate with 100% efficiency, fine cuttings cannot be separated from the mud, and some of these cuttings accumulate over time in the tank under the screen. Therefore, the screen tank (sand trap) will be periodically emptied and cleaned.

The quality of the mud-water mixture collected in the cellar pit and waste mud tank is tested by mud and system engineers. If qualified, it undergoes treatment with a decanter and returned to the system. The required chemical addition to the mud is planned by the mud engineer.

- The high-speed decanter is connected to the first compartment of the tower settling tank and continuously serves as the third solid waste control equipment in the mud system. It removes unwanted 1-2 micron-sized solids from the mud system that cannot be discarded by vibrating screens and mud cleaners, providing processed mud to its second compartment. This continuous rehabilitation of the mud system extends or completely prevents the mud disposal period.

In addition to processing drilling cuttings and recovering mud, water used daily in the rig can be collected and recovered. Specifically designed tower base concrete collects oil and sediment-separated wastewater in the waste water tank. The water undergoes immediate on-site analysis, and if it is suitable, it is reused for mud preparation. If there is doubt about its suitability, it will be tried to be rehabilitated. However, if deemed necessary, it will be sent for disposal. Additionally surface water and wastewater will be recovered as much as possible.

- The chemical and physical properties of drilling mud, cleaned mud and recovered water are continuously analyzed by laboratory equipment. Decanter speeds and mud compositions are managed based on detailed laboratory analysis.

➤ Dewatered and stabilized drilling solids are accumulated in 35m³ half-moon tanks and transferred to licensed waste transport truck using excavators or similar vehicles as needed, complying with environmental legislation and promptly sent for disposal.

The ultimate volumes of drilling waste vary according to the depth of the drillings. A 2,500-meter well has a volume of about 230 m³ and a 3,000-meter well has a volume of 242 m³.

Accordingly, each of the wells to be drilled, Gaziemir-5 and Gaziemir-1 will have a volume of 230 m³ and AG-4 will have a volume of 242 m³.

Drilling Mud Management and Disposal:

During the drilling of a well, the solids that come to the surface with the drilling fluid are treated with the use of mechanical systems, known as primary treatment method or solids control systems. These mechanical systems include gas separators (degassers), shale shakers, hydrocyclones (decanders and desilters) and centrifuges. On the other hand, water dilution, which is commonly used to reduce the solids concentration in the drilling fluid, greatly increases the amount of waste generation on the rig, leading to an increase in the overall cost of drilling. However, primary reclamation methods alone are insufficient for the disposal of mud wastes. Hence, methods allowing waste disposal along with effective waste management are required. Increased waste generation through dilution with water, commonly used to reduce solid concentration in drilling fluid, significantly raises the overall drilling cost. Therefore, minimizing waste production can substantially reduce well costs.

Waste management will be done using the globally preferred strategies. The International Oil and Natural Gas Producers (IOGP) recommend applying the "5R" strategy (Reduce, Reuse, Recycle, Recover, Residue Disposal) for waste management. The figure below shows how the process works in the "5R" strategy. In addition, the European Union waste management hierarchy is one of the main sources of reference for waste management and waste method selection. The determination of whether waste drilling muds are hazardous or not and the associated waste code is made in accordance with the provisions of the "Waste Management Regulation (WMR), 2015", which constitutes the basic framework of our country's waste legislation. In all three approaches, the first priority is to identify, classify and quantify the waste. It is also emphasized to treat the wastes according to their content and then to dispose of them. It is seen that the step before disposal is the recovery and reuse of waste. Another important fact is the separation of non-waste materials from waste and their recycling. For this purpose, while ensuring maximum drilling performance, waste management will be ensured so that our environmental footprint is minimized.



Figure 5.3. IOGP's 5R waste management strategy

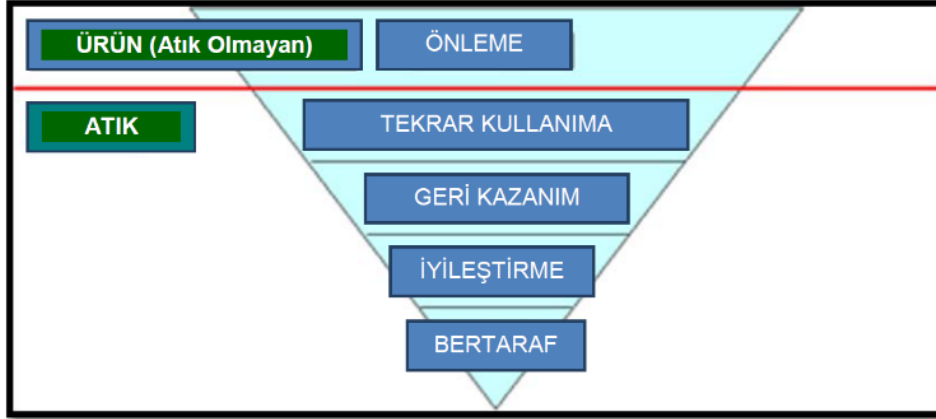


Figure 5.4. European Union waste management hierarchy

Disposal of Drilling Mud:

After the completion of drilling activities and test operations, the physical and chemical analyses of the drilling mud will be conducted. If the mud is suitable for reuse, it will be reused in the next well drilling under the RSM project. Until then, the mud will be stored in tanks.

In case the drilling mud is not suitable for reuse, the waste class will be determined according to the criteria of the Waste Management Regulation. It will then be evaluated based on whether it is hazardous or inert, and disposal will be carried out in accordance with relevant regulations (Waste Management Regulation and Regulation on Landfilling of Wastes).

Determination of Hazardousness of Drilling Mud:

For Drilling Mud, the analysis of the parameters in Annex-3/B of the Waste Management Regulation (WMR) and Annex-2 of the Regulation on Landfilling of Wastes (RLWR) will be carried out. Waste drilling mud analyses are officially conducted through MELBES to determine whether it is hazardous and suitable for landfilling.

WMR Annex-3 analysis determines the hazardousness of the waste. After the sample is taken by licensed companies, the analysis is carried out by TUBITAK.

RLWR Annex-2 analyses are carried out to determine whether it can be stored in sanitary landfill, and if so, in which class facilities it can be stored, i.e. disposed of.

Hazardousness of the Waste:

If the analysis result is found to be hazardous, the waste will be sent to licensed waste disposal facilities (by licensed transport vehicles) with the waste code 010506*. The provisions of the Communiqué on the Transportation of Wastes by Road will be applied.

In case it is sent to the Landfill, it will be stored according to its hazardousness class.

Inert wastes are stored in Class III Storage Facilities, non-hazardous wastes in Class II Storage Facilities and hazardous wastes in Class I Storage Facilities. Non-reactive and stable hazardous wastes can also be stored in the Class II Storage Facility if they meet the limit values in Annex-2 of the relevant regulation.

If the waste is hazardous, it can also be sent to incineration if it cannot be stored in the storage facility.

Drilling waste can also be accepted by cement factories if it is deemed appropriate. The decisions on whether it can or cannot be taken is taken after the cement plant itself analyzes and evaluates the results.

Drilling waste can also be received by waste derived fuel (ATY or RDF) preparation plants. In these facilities, drilling mud is mixed with a certain amount of fuel, taking into account its calorific value.

If it is directly accepted that drilling mud waste is hazardous, there is no need for WMR Annex-3 analysis. It is evaluated with 010506 waste code and one of the alternatives of sending to incineration, sending to cement plant or storage in landfill is evaluated. Sending to a waste treatment plant is another alternative.

If the waste is not hazardous:

If the analysis result is not hazardous, the waste is either inert waste or non-hazardous waste. In this case it will be stored in a landfill facility.

NOTE: Documents such as "date and time of sampling, photograph of sampling, relevant screenshots and analysis forms" will be included in the Analysis Report.

Mitigation Measures:

In the Drilling Waste Management System, the operation and equipment requirements vary according to the needs and capacity of the project. The system designed for the planned drilling works is based on the solids control of the drilling fluid (drilling mud), drying of the cuttings and recovery of the drilling fluid on the cuttings, and its operation is summarized below:

- Drilling activities involve continuous mud circulation, bringing cuttings to the surface. The mud, mixed with cuttings, undergoes primary solid waste control through vibrating screens, largely removing solids (drilling cuttings) and continuing circulation. As a secondary solid waste control, mud cleaner and hydrocyclones work to separate smaller-sized solids (up to 10 microns) that vibrating screens cannot separate. While these two pieces of equipment separate solids, some mud is discharged along with the solids.
- The muddy solids separated by these two equipment are transferred to the drying shaker either through conveyor belts or channels.
- In the drying shaker, the muddy solids exposed to vibration are separated from the mud and transferred to the half-moon tank. The drying performance may vary depending on the structure of the drilled formation and the type of vibrating screen in the mud system.
- Since mud systems do not operate with 100% efficiency, fine cuttings cannot be separated from the mud, and some of these cuttings accumulate over time in the tank under the screen. Therefore, the screen tank (sand trap) will be periodically emptied and cleaned.
- The quality of the mud-water mixture collected in the cellar pit and waste mud tank is tested by mud and system engineers. If qualified, it undergoes treatment with a decanter and returned to the system. The required chemical addition to the mud is planned by the mud engineer

➤ The high-speed decanter is connected to the first compartment of the tower settling tank and continuously serves as the third solid waste control equipment in the mud system. It removes unwanted 1-2 micron-sized solids from the mud system that cannot be discarded by vibrating screens and mud cleaners, providing processed mud to its second compartment. This continuous rehabilitation of the mud system extends or completely prevents the mud disposal period.

In addition to processing drilling cuttings and recovering mud, water used daily in the rig can be collected and recovered. Specifically designed tower base concrete collects oil and sediment-separated wastewater in the waste water tank. The water undergoes immediate on-site analysis, and if it is suitable, it is reused for mud preparation. If there is doubt about its suitability, it will be tried to be rehabilitated in the flocculation unit. However, if deemed necessary, it will be sent for disposal. Additionally surface water and wastewater will be recovered as much as possible.

As part of the dry location service agreement, the waste water collection tank will be provided by the company responsible for the job, and will be installed by excavating a pit in the ground. The tank material will be made of HDPE or PE material. Tank volume will be 5 m³ volume. Upon completion of the tank's function, it will be lifted by holding the lifting lugs and removed from its location, and the pit where the tank was located will be filled. Under normal operating conditions, the wash water coming from the drainage channels in the drilling site will be transferred to this tank after the collection channel and will be continuously transferred to the mud preparation or flocculant unit via a submersible pump preventing overflow and allowing rapid rehabilitation.

➤ 2 extra semi-cylindrical tanks will be kept on site throughout the drilling to avoid operational disruption and mitigate the potential risks.

➤ The chemical and physical properties of drilling mud, cleaned mud and recovered water are continuously analyzed by laboratory equipment. Decanter speeds and mud compositions are managed based on detailed laboratory analysis.

➤ Dewatered and stabilized drilling solids are accumulated in 35m³ half-moon tanks and transferred to licensed waste transport truck using excavators or similar vehicles as needed, complying with environmental legislation and promptly sent for disposal.

Semi-cylindrical tanks, made of steel and resistant to lateral stresses, are utilized as auxiliary equipment in the drilling waste management system when deemed necessary. These tanks, capable of accumulating waste mud and solids, serve as an alternative to mud pits eliminating the need of waste pit.

The tanks are variable in number based on requirements, each having a capacity of 35 m³ with two compartments. The Semi-Cylindrical Tank, in this regard, functions as a tank for collecting solid wastes. (See [Figure 5.5](#))



Figure 5.5. Half Moon Tanks

During drilling of reservoir-type rocks, the drilling mud with bentonite in circulation will be replaced with a water-based mud containing calcium carbonate to avoid clogging of formation pores. The bentonite mud produced by cycling in the well will be removed and kept in the stock tank so that it can be utilized as spud mud in another well. In this instance, less water and mud-making ingredients will be used to make mud again, which will lessen its negative effects on the environment. In a similar manner, calcium carbonate mud will be kept in a stock tank for potential use in another well. These tanks can also be used for possible emergencies. As auxiliary equipment of the dry location system, two 20 m³ vertical cylindrical tanks will be kept on-site to store extra water and/or mud volume when deemed necessary. (See [Figure 5.6](#))

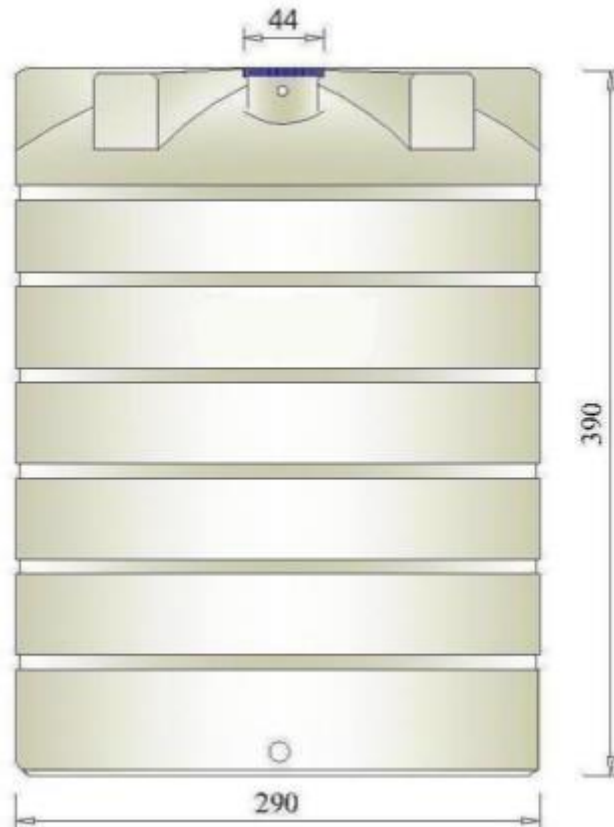


Figure 5.6. Vertical Cylindrical Tank

Drilling solid wastes accumulated in half-moon tanks will be analyzed to determine whether they are hazardous wastes. RSM Unit will be informed with the analysis plans before the analyses are performed and the approval of RSM Unit will be obtained.

Mud analysis will be carried out by accredited laboratories authorized by the Ministry of Environment, Urbanization and Climate Change.

After the mud analyses, the Beneficiary will conduct research on potential disposal methods and submit to the RSM Unit, including the disposal methods, their compliance with the legislation and project requirements, and 5 bidding documents received for disposal (including use as alternative feedstock in compliance with the Communiqué on Refuse Derived Fuel, Additional Fuel and Alternative Feedstock). The RSM Unit and the Beneficiary will decide together on the method of disposal. The aim is to implement the most economical and effective disposal method in line with the Beneficiary Agreement.

Upon determining the hazardous characteristics of the drill mud in accordance with the analysis results, it will be sent to disposal/regular storage facilities holding a Temporary Activity Certificate or Environmental License. Preference will be given to the alternative use of mud following the Communiqué on Refuse Derived Fuel, Additional Fuel and Alternative Raw Materials.

Drilling wastes to be generated during the Well Testing phase

During the well testing phase, if geothermal fluid emerges from the well, and when test waters are utilized, these fluids will be collected in geothermal fluid pools. These pools are planned to be constructed at each location, with the AG-4 drilling site currently having a waterproof membrane-covered pool surrounded by a wire fence.

The proposed volume of Gaziemir-1 and Gaziemir-5 pools is 3,350 m³ with approximate dimensions of 30 m * 48 m * 2.5 m. However, these dimensions may vary depending on the rig layout at the drilling locations, and any changes will be communicated to the RSM Unit in advance. After the approval of the RSM Unit, operations will be started in the site.

The volume of the existing AG-4 pool is 1,228.5 m³ dimensions are 9 m * 39 m * 3.5 m. Areal sizes of geothermal fluid pools are given in [Table 2](#). A sample figure showing the dimensions and design of the geothermal fluid pool planned to be constructed is given below in [Figure 5.7](#). In addition, the design drawing of the currently constructed AG-4 geothermal fluid pool is presented in [Figure 5.8](#). The AG-4 geothermal fluid pool was constructed with a lower volume than the pools at other locations. This is because there is another drilling located 350 meters away from the location (Gaziemir-2) and this drilling can be injected with test water and geothermal fluid if needed. Since the aforementioned Gaziemir-2 drilling belongs to the Beneficiary, no additional permit is required. The actual drilling of Gaziemir-2 well was completed at 2004 meters. Well production-injection tests were conducted within the scope of well completion tests. However, the actual reinjection capacity of the well is not known since the tests could not be carried out for a long time and with high capacity pumps. According to the preliminary information obtained, a flow rate of 60 tons/hour could be reinjected. However, it is not possible to be sure of this flow rate for a long-term reinjection test. At this stage, no commitment can be made for reinjection to Gaziemir-2 well in the ESMP. If a longer term flow test is desired in AG-4 well production tests, reinjection to Gaziemir-2 well under the current conditions will be reported to RSM experts as an

alternative suggestion and their opinion will be obtained. During the tests, impermeable storage tanks will be readily available on site to contain the fluid.

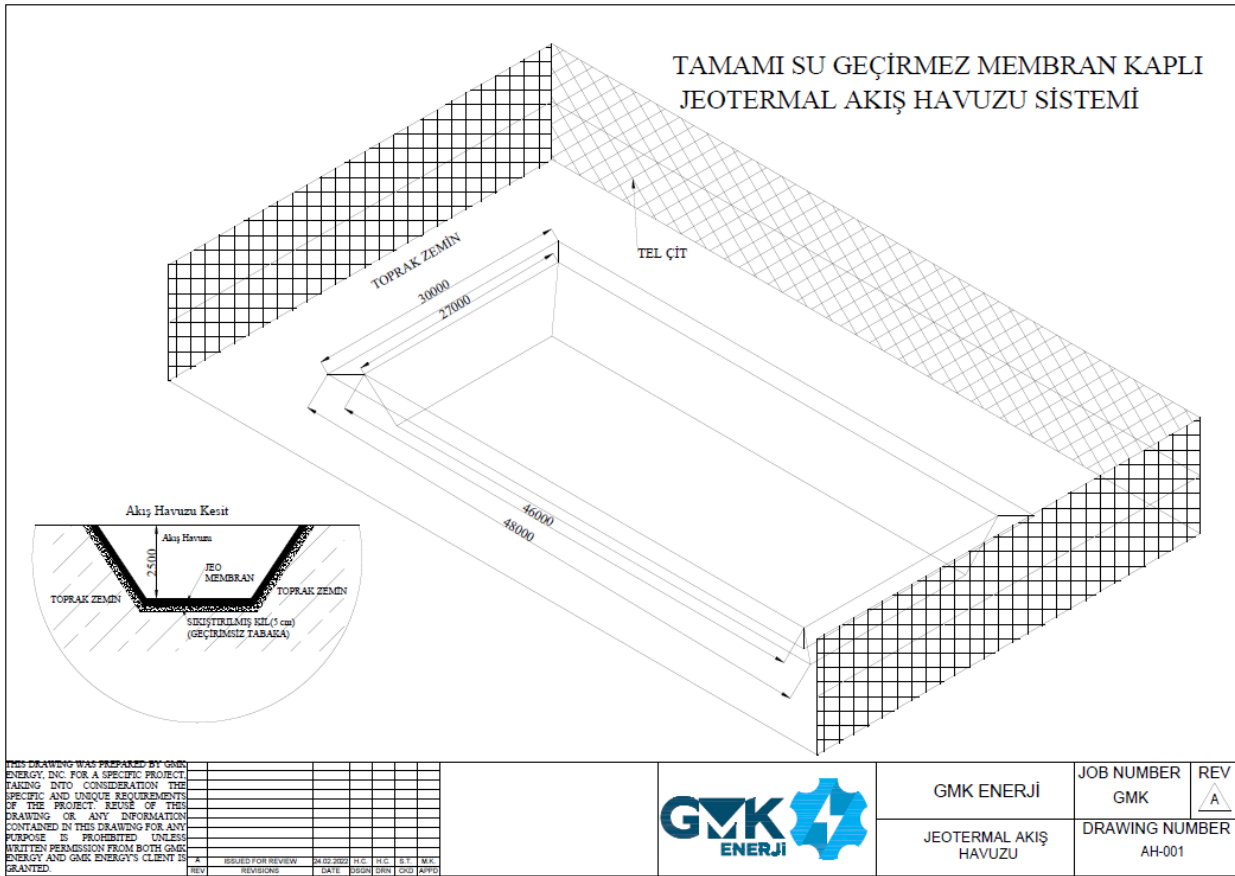


Figure 5.7. Figure Showing the Geothermal Fluid Pool Planned to be built at Drilling Locations

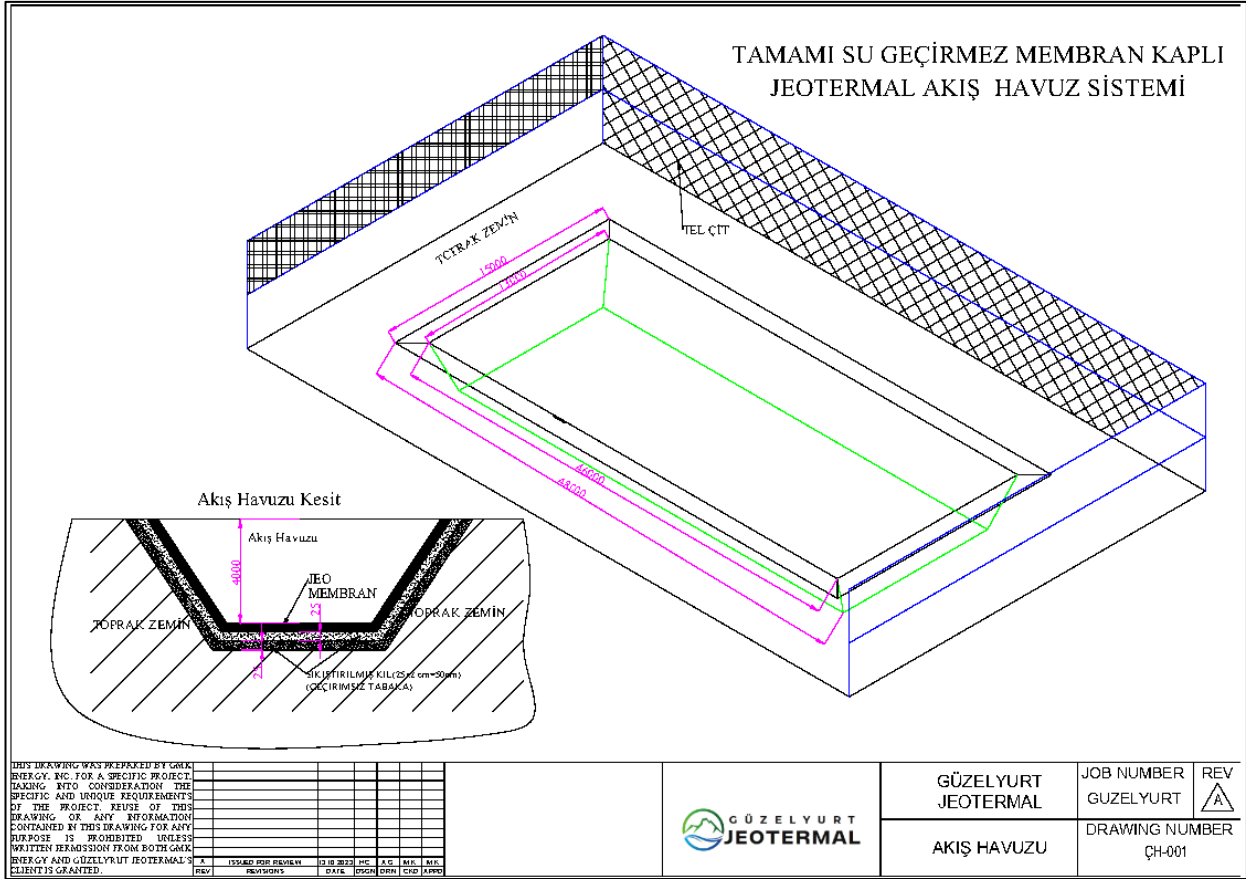


Figure 5.8. Figure Showing the Geothermal Fluid Pool Available at AG-4 Drilling Location

In case the drilling is successful and the well starts to flow, the geothermal fluid will be directed to these impermeable (leak-proof) membrane-covered geothermal fluid pools. With an average flow rate of 200 tons/hour from the well, the pool with a volume of 3,000 m³ will be filled in approximately 15 hours or in approximately 30 hours if the average flow rate is 100 tons/hour. The pool's capacity and the time it takes to fill the pool are inversely proportional. It is essential to note that with an assumed wellbore volume of 200 m³ at a depth of 2,500 meters, the planned capacity of the geothermal fluid pool should be capable of storing at least 15 equivalent wellbore volumes of geothermal fluid. This time frame allows for the well to be cleaned, production channels to be opened, and the well to warm up adequately. Additionally, considering the existing geothermal fluid pool at the AG-4 drilling site with a volume of 2,400 m³, it will fill in approximately 12 hours at an average flow rate of 200 tons/hour and 24 hours at 100 tons/hour.

The geothermal fluid pools will be closed to prevent overflow, and the accumulated fluid and, if used, test waters will be left to cool and evaporate within the geothermal fluid. During this waiting period, if there are suspended solids, they will be allowed to settle to the bottom. For the evaluation of the hazardous nature of suspended solids, accredited laboratories authorized by the Ministry of Environment, Urbanization, and Climate Change will conduct analyses, and based on the results, disposal will be facilitated through licensed firms. The analysis plans will be informed to the RSM Unit before the analyses are conducted and the approval of the RSM Unit will be obtained. Geothermal fluid and test waters, if used, will not be discharged to nature.

Within the scope of Short Term Production/Injection Tests (Water Loss Test or Injectivity Test) to be planned in the next stage, geothermal waste fluid will be pumped into the same well and applied as an alternative disposal method.

The balance of the well during the initial flow will be monitored, and for this purpose, a silencer/weirbox (noise suppressor) system capable of carrying at least 600 m³/hour flow per well will be installed. The representative image is given in the figure below (Figure 5.9).

The so-called silencer acts like the exhaust of a vehicle and acts as a muffler. It is designed to attenuate the high-frequency noise associated with the release of high-pressure steam into the atmosphere.

The structural element called Weirbox is used to volumetrically measure the amount of fluid passing through a certain area under atmospheric pressure.

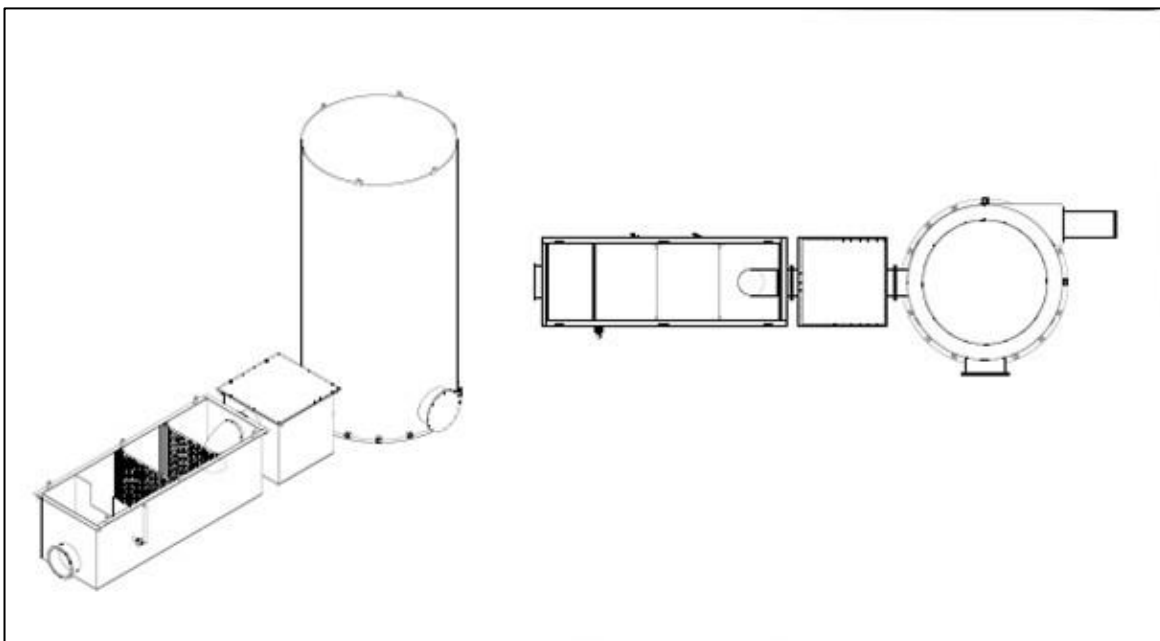


Figure 5.9. Representative image of the silencer-weirbox system

If the geothermal fluid pool capacity is sufficient, and the well exhibits a balanced flow, Dynamic PT/PTS logs will be obtained. Before closing the well, a pressure build-up test will be applied by setting up a PT tool at an appropriate depth. All information obtained here will be the initial production values of the well under dynamic conditions. If a balanced flow is not achieved, these tests may not be applied. The well will be allowed to flow into the geothermal fluid pool up to its capacity and will be closed to prevent overflow.

If there is doubt about the success criteria of the well during the first cleaning flow described above and short-term flow tests are foreseen, it may be necessary to flow above the limit of the geothermal fluid pool capacity. In case of short-term flow tests; ESMP will be updated and well flow tests will be planned and submitted to RSM unit as specified in RSM Beneficiary Handbook. If deemed appropriate, the plan will be implemented according to RPM Unit approval.

If the well does not flow spontaneously (artesian) the well will be lifted with air compressor or nitrogen gas to ensure continuous production. The lifting method to be used will be determined according to the behavior of the well. In this case, ESMP will be updated and flow test will be

planned within the scope of short term well production tests and submitted to RSM Unit for approval. After the approval of the RSM Unit, implementation will be started in the field.

5.2.3 Waste Oils (Mineral Waste Oils-Machinery Oils)

Impact Definition and Causes

Oil changes of the construction machinery and vehicles to be used during the land preparation and rehabilitation phases will be carried out regularly at authorized services with adequate infrastructure. Therefore, waste oil is not expected to be generated at the Project location during the land preparation and rehabilitation phase. Waste oil will be generated during drilling activities and well tests.

These oils consist of equipment, parts or fixtures (such as engines) used in construction machinery. Gasoline engines, diesel engines, differential and transmission, grease and other special vehicle oils and hydraulic systems, turbine and compressor heat transfer, insulation, transformer, mold, steam cylinder, insulation are sources of mineral waste oil. Special industrial oils and industrial greases are also included in this class (i.e. mineral waste oil class).

If the storage and disposal of waste oils are not carried out in accordance with the legislation, they can have serious impacts on water, air and soil. Oils spilled on the water surface (i.e. water sources such as the sea, rivers, sewage, drains) reduce photosynthesis by forming a layer on the water that blocks sunlight in the environmental cycle. This disrupts the oxygen cycle and prevents the oxygen feedback that allows microorganisms to reproduce and grow. Accordingly, the lives of fish, microorganisms and other living things in the food chain in the aquatic environment are negatively affected as the oxygen they need is consumed.

Waste oil poured into the soil causes pollution by mixing with groundwater. Since used oil contains high amounts of heavy metals such as lead, arsenic, cadmium and chromium, plants absorb the heavy metals accumulated in the soil after spilling. Waste oil spilled into the soil destroys plants. Plants cannot grow in soil contaminated with waste oil.

When waste oils are burned in inappropriate ways, heavy metals are mixed into the air, causing pollution and disrupting the oxygen balance.

Impact Mitigation Methods

According to Article 5 of the Waste Oil Management Regulation,

- a) It is forbidden to discharge waste oils into soil, sewage, seas, lakes, rivers and similar receiving environments, to mix them with fuel oil, to use them as fuel oil, to allow them to be used and to recover, incinerate and/or dispose of them by inappropriate methods.
- b) It is essential that waste oils are not mixed with waste oils in different groups in Annex-1 and other wastes, collected separately at the source and temporarily stored under appropriate conditions.
- c) It is essential not to add water, solvents, toxic, hazardous and/or other substances to waste oils.
- ç) It is essential that waste oils in different groups are not mixed with each other.
- d) Waste oils shall be collected and transported by waste oil refining facilities and authorized institutions authorized by the Ministry.

Also according to Article 8,

Waste oil producers are obliged to;

- a) Take necessary measures to minimize the generation of waste oil,
- b) Not to mix waste oils of different groups with each other, water, solvents, toxic, hazardous and/or other substances/wastes,
- c) To collect waste oils separately at the source according to the groups in Annex-1 and establishing a temporary storage area in accordance with the provisions of Article 13 of the Waste Management Regulation,
- ç) Use barrels or tanks with the phrase "waste oil" on them that can be easily filled and emptied in the temporary storage area, taking measures to prevent overflow, spillage, leakage and similar situations in the equipment used,
- d) Deliver waste oils to authorized institutions or refining facilities authorized by the Ministry for collection.

According to this,

- Activities will be carried out to minimize waste oil generation.
- Drilling activity generates a single type of waste machine oil. Waste oil will not be mixed with water, solvents, toxic, hazardous and/or other substances/wastes.
- Water, solvents, toxic, hazardous and/or other substances will not be added to the waste oil.
- Waste oils will be collected separately at the source, in barrels labeled "waste oil" and on impermeable ground (waste storage area). As given in the approved Project Introduction File, waste oils in the activity area will be stored in sealed containers (tanks/containers with floor sealing, coated with epoxy paint, geo-membrane etc. isolation materials to ensure impermeability against spills, on reinforced concrete floor with a thickness of at least 25 cm, red in color and with the word "waste oil" on it, with the necessary device for cleaning solid or muddy sediments that may be collected at the bottom). The area where waste oils are kept will be covered. Appropriate fire response equipment (fire extinguishers) against possible fires and spill kits against possible leaks will be available in the area.
- Mineral Waste Oils will be delivered to PETDER after the end of the drilling activity. A certificate of delivery will be obtained during delivery. Waste oils will be disposed of by sending to environmentally permitted and licensed disposal or licensed recycling facilities. Different categories of oils will not be mixed and will be given to waste oil collectors, facilities or collection points that have obtained environmental license.

5.3 Potential Impacts from Hazardous-Chemical Substances

Impact Definition and Causes

This impact will occur at all stages of the activity. It will occur during land preparation, drilling activity, well testing and rehabilitation.

When exposure to the effects of hazardous chemicals is not prevented or controlled by appropriate methods, serious occupational accidents and occupational diseases and even permanent damage and death can occur.

Chemicals are toxic, irritating, carcinogenic, etc. in terms of human health; they can be classified as dust, gas, liquid, and vapor according to their physical properties. These chemicals enter the body in three ways: inhalation through the lungs, absorption through the skin or eyes and digestion through the mouth. Chemicals entering the body through these routes can cause local and systemic effects in the body depending on the type of agent and the route of exposure. The effects of hazardous chemicals can occur suddenly (acute) or in the long term (chronic). These effects can range from eye irritation to lung diseases.

Safety management is essential to protect employees from the negative effects of chemicals and to provide a safe working environment, and safety management is the responsibility of the employer in all enterprises. The basic principles and rules of safety management in chemical hazards and the works to be carried out within this scope are defined in the "Regulation on Health and Safety Measures in Working with Chemical Substances" issued in accordance with Article 30 of the Occupational Health and Safety Law No. 6331.

Impact Mitigation Methods

A Chemical Storage Area will be established in each drilling area. The floor of this area will be impermeable concrete, a collection channel around the area against leaks and a blind well at the end of the channel will be formed and the top and at least 3 walls of the area will be covered to keep the risk of increased contamination distribution under control due to rainfall etc. This area will be 49 m² for all drilling. The precautions to be taken when working with Hazardous and Chemical Substances are specified in Article 7 of the "Regulation on Health and Safety Measures in Working with Chemical Substances" published in the Official Gazette dated 12.08.2013 and numbered 28733.

The precautions to be taken when working with hazardous chemicals are given below and all of these precautions shall be complied with.

ARTICLE 7 - (1) Risks to the health and safety of workers working with hazardous chemicals shall be eliminated or minimized by the following measures:

- a) Appropriate arrangement and work organization is made in the workplace.
- b) Work with hazardous chemicals is carried out with the minimum number of employees.
- c) It is ensured that the amount of substances to which workers will be exposed and the duration of exposure are kept to the minimum possible level.
- ç) The amount of chemicals to be used in the workplace is kept to a minimum.
- d) Workplace buildings and annexes will always be kept tidy and clean.
- e) Suitable and sufficient conditions are provided for the personal hygiene of employees.
- f) Necessary arrangements are made for the most appropriate processing, use, transportation and storage of hazardous chemicals, wastes and residues in the workplace.
- g) By applying the substitution method, the chemical substance that is non-hazardous or less hazardous to the health and safety of workers is used instead of the hazardous chemical

substance. If the substitution method cannot be used due to the nature of the work, the risk is reduced by taking the following measures according to the result of the risk assessment and in order of priority:

1) Appropriate process and engineering control systems are selected and appropriate machinery, materials and equipment are used in working with hazardous chemicals, including maintenance and repair works that may pose a risk to the health and safety of employees, taking into account technological developments.

2) In order to prevent the risk at the source; collective protection measures such as proper work organization and the establishment of an adequate ventilation system are applied.

3) In cases where the measures taken for the collective protection of employees from the adverse effects of hazardous chemicals are not sufficient, personal protection methods are applied together with these measures.

ğ) Adequate control, audit and surveillance are provided to ensure the effectiveness and continuity of the measures taken.

i) Without prejudice to the provisions of the Regulation on the Protection of Workers from the Dangers of Explosive Atmospheres published in the Official Gazette dated 30/4/2013 and numbered 28633, the employer takes technical measures and makes administrative arrangements in accordance with the nature of the work performed, including the processing, storage, transportation of these substances and the prevention of contact between chemicals that may affect each other, in order to protect workers from hazards arising from the physical and chemical properties of chemical substances, based on the results of risk assessment and risk prevention principles, in accordance with the following order of priority:

1) Hazardous concentrations of flammable and explosive substances and hazardous quantities of chemically unstable substances shall be prevented in the workplace. If this is not possible,

2) The presence of ignition sources that may cause fire or explosion in the workplace is prevented. Conditions that may cause harmful effects of chemically unstable substances and mixtures are eliminated. If this is not possible,

3) Necessary measures are taken to prevent or minimize the damage to workers in case of fire or explosion caused by flammable and/or explosive substances or by the harmful physical effects of chemically unstable substances and mixtures.

j) The design, manufacture and supply of work equipment and protective systems provided for the protection of workers shall be carried out in accordance with the legislation in force in terms of health and safety. The employer ensures that all equipment and protective systems to be used in explosive atmospheres comply with the provisions of the Regulation on Equipment and Protective Systems Used in Potentially Explosive Atmospheres (94/9/EC) published in the Official Gazette dated 30/12/2006 and numbered 26392 4th Repeated.

k) Arrangements are made to reduce the effect of the blast pressure.

l) It is ensured that the plant, machinery and equipment are kept under constant control.

Spillage and Spread

Please find below content of response activities in case of spills, releases or other chemical emergencies:

- Internal and external notification procedures
- Specific responsibilities of individuals or groups
- Decision process for assessing the severity of the pollutant release and determining appropriate actions
- Facility evacuation routes
- Post-incident activities such as cleanup and disposal, incident investigation, employee re-entry and restoration of spill response equipment.

Transportation

- Use of transfer equipment designed to ensure safe transfer in accordance with the characteristics of the materials being transported
- Regular inspection, maintenance and repair of fittings, pipes and hoses
- Provision of secondary containment, drip trays or other overflow and drip containment measures for hazardous material containers at connection points or other possible overflow points.

Storage

- Use of automatic pressure loss detectors on pressurized or long-distance pipes
- Use of approved or certified integrity testing methods on pipe or tank systems to be used in drilling equipment at regular intervals
- Considering the use of SCADA if financially feasible

Emergency Preparedness and Response

- When dealing with hazardous materials, procedures and practices should be developed that allow for quick and efficient responses to accidents that could result in human injury or environmental damage. An Emergency Preparedness and Response Plan, incorporated into and aligned with the facility's overall EH/OHS management system, should be prepared to cover the following:
- Planning Coordination: Procedures should be prepared for the following:
 - Informing the public and emergency response agencies
 - Documentation of first aid and emergency medical treatment
 - Taking emergency response measures
 - Review and update the emergency response plan to reflect changes and ensure that employees are made aware of these changes

Emergency Equipment: Procedures should be prepared for the use, inspection, testing and maintenance of emergency response equipment.

Training: Employees and contractors will be trained on emergency response procedures.

5.4 Potential Impacts on Surface Water and Groundwater

National and International Standards/Conditions

The Project will comply with World Bank Operational Policies, IFC Performance Standards and local regulations;

- Regulation on the Protection of Groundwater against Pollution and Degradation - Ministry of Agriculture and Forestry, 2012
- Regulation on Water Intended for Human Consumption (ITASHY), Chemical Parameters and Indicator Parameters - Ministry of Health, 2005;
- Regulation on Surface Water Quality, Quality Criteria of Inland Surface Water Resources by Classes - Ministry of Agriculture and Forestry, 2012;
- Directive 2006/118/EC of the European Parliament and of the Council of December 12, 2006 on the Protection of Groundwater against Pollution and Degradation;
- World Bank Group General and Sector Specific Environmental, Health and Safety Guidelines
- Drinking Water Quality Guidelines - World Health Organization (WHO), 2011

Impact Definition and Causes

In geothermal drilling projects, the potential effects on surface and groundwater can vary in magnitude and type, largely depending on the causes. One significant cause is the generation of waste, both personnel and operational, as explained in the preceding sections regarding how waste can affect surface and groundwater. These impacts occur when proper and necessary measures are

not taken in compliance with regulations. Implementing required measures for disposal in accordance with regulations can significantly reduce or eliminate these potential effects.

Another potential cause of impacts on surface and groundwater during the project is spillage/leakage under unexpected circumstances. Inadequate casing practices during geothermal drilling may lead to contamination of aquifers. Cracks or fractures in the casing pipes placed along the wellbore may result in potential contamination of the groundwater reservoir throughout the depth of the well.

Point SWS01, which was determined on parcel 3809 where the AG-4 location is located (Figure 4.4) is a seasonal flowing stream and the AG-4 drilling location is within the impact area. Implementation of the measures given below and in the Impact Mitigation Plan given in Section 6 will prevent or minimize the potential impact due to the activities.

Impact Mitigation Methods

All generated waste within the Project will be collected and disposed of per the measures and precautions outlined in Sections 5.1 and 5.2 of this Plan and in the Mitigation Table (Section 6). This approach ensures that the potential impacts on surface water and groundwater from wastes are minimized and/or eliminated.

Chemical management procedures will be followed to prevent chemical spills or leaks. Chemicals will be stored in impermeable areas with sealed tops to prevent seasonal exposure. Secondary containment will be placed under containers/dredges/barrels containing liquid chemicals. In the event of spillage or leakage, immediate action will be taken, to identify and stop the source, and absorbent pads will be address the leakage preventing the spread of contaminants to the soil. If the leakage occurs in the soil, the same procedure will be applied. The source will be stopped, impregnated with absorbent pads and contaminated soil will be collected and deposited in the hazardous waste storage area.

During geothermal drilling, in order to determine the impact on groundwater, samples will be taken from the nearest underground (GWS) water source with the risk of contamination, as identified in Section 4.1 and illustrated in Figure 4.3. The samples will be analyzed according to the parameters given in Annex 3 Article 7 and Annex 5 Article 2 of the Regulation on the Protection of Groundwater against Pollution and Degradation. Approval of the RSM Unit will be obtained prior to sampling. Throughout the drilling operation, with the approval of the RSM Unit and RSM Consultant, monthly groundwater sampling will be carried out from the same GWS sample point for the same parameters. Approval of the RSM Unit will be obtained before each sampling. The results of the sampling will be compared with the results of the baseline assessment and will be interpreted and reported in the monthly monitoring reports.

The groundwater aquifer will be monitored throughout drilling and logged when reached. All work along the groundwater aquifer will be carried out with the utmost care. The bottom of the groundwater aquifer will also be logged as appropriate. The RSM unit will be continuously informed throughout the GWS aquifer as soon as the GWS aquifer is reached.

In case of leakage into the formation, the RSM Unit will be immediately informed and impact assessment studies will be carried out as appropriate in cooperation with the RSM Unit.

During test operations, the test services contractor will be provided with the depth information of the GWS aquifer and will work with utmost care along the aquifer.

If geothermal drilling activities are carried out in accordance with best practices for drilling fluids and well casing, geothermal water is unlikely to contaminate groundwater aquifers.

To prevent any leakage, the casing of wells must be flawless and leak-proof. Specialized contractors will be employed, and their practices will be supervised to ensure the integrity of well casings. If the groundwater aquifer is encountered during well drilling, its depth will be recorded in environmental and social monitoring reports and appended to the relevant well log in the monitoring report.

During drilling mud circulation, the wellbore will be lined to create an impermeable cake layer, preventing any collapse in the borehole. Casing pipes lowered into the well will be cemented up to the reservoir, minimizing the possibility of drilling mud or geothermal fluid mixing with groundwater. Additionally, the casing and cementing processes will prevent geothermal fluid from diverting into geological units with less durability or containing cracks and fractures. However, with the aforementioned piping and cementing operations, the geothermal fluid extracted from the underground will be prevented from being directed into these units instead of the well head while passing through geological units with less strength or fractured structure.

The fluids (such as domestic wastewater, test fluids and geothermal fluids) can only be discharged to the receiving environment if the standards given in the World Bank Group's General Environmental, Health and Safety Guidelines are met, the conditions given in the World Bank Group's Geothermal Power Generation Environmental, Health and Safety Guidelines are met, the commitments given in the PTD are met and the necessary permits are obtained. Requirements and planning for the discharge of wastewater and fluids to the receiving environment are not included in this ESMP. In case of discharge of wastewater and fluids to the receiving environment, this ESMP will be updated to include the relevant impacts, requirements, management actions and measures, and the updated ESMP will be submitted to the RSM Unit for approval. No discharge will be made to the receiving environment without approval. Therefore, surface and/or groundwater will not be adversely affected in this scope.

In order to prevent rainwater from entering the drilling area, diversion channels will be installed around the drilling area to prevent surface water from entering the drilling site.

Water collection channels will be constructed on the surface of the tower area for the regulation and removal of surface water and these channels will be connected to a leachate collection pond.

5.5 Potential Impacts from Emissions

In geothermal energy exploration projects, during the land preparation phase, noise, and dust and gas emissions will occur during the operation of construction machinery while stripping topsoil, creating units such as geothermal fluid pools, and constructing access roads.

During drilling activities; noise emissions from the drilling rig and dust emissions from transportation activities may occur. There are also exhaust emissions from vehicles traveling to and from the location. However, gas and exhaust emissions are negligible. Dust emissions are negligible if the roads providing access to the location are asphalted or if measures are taken such as irrigation on the roads and the use of dust binding agents.

During well tests, if the roads providing access to the location during transportation activities are asphalted or if measures are taken such as irrigation on the roads and the use of dust binding agents,

dust emission is negligible. If agricultural lands are used, the product price and/or usage fee will be compensated to the land owner and/or user with a registered document by making a valuation for the cultivated lands. Any damage that may occur to neighboring parcels, agricultural products on these parcels and any structure such as fences, walls, etc. due to dust or vehicle movement will be compensated by the Beneficiary to the land owner and / or user at the current market price of that day and the transactions to be made will be mutually recorded.

During rehabilitation activities, like other phases, dust emission may occur during transportation activities, if the roads providing access to the site are asphalt or if measures are taken such as irrigation on the roads and the use of dust binding agents, dust emission will be negligible. In addition, while rehabilitation is being carried out, dust emission may occur from vehicles working in the location (from activities such as filling, leveling activities). During these activities, if the works are carried out in a controlled manner and irrigation is practiced, dust emission will be reduced.

5.5.1 Noise Emission

National and International Standards/Conditions

Noise limits given in the Environmental Noise Control Regulation (ÇGKY) and international Good International Industry Practice documents (e.g. World Bank Group General EHS Guidelines)) have been assessed to determine the noise limits of the Project during construction and operation phases. Of all the existing legislation, standards and international good industry practice, only the ÇGKY sets a specific noise limit value for the construction phase.

According to Article 13, paragraph 1 of the "Environmental Noise Control Regulation", which entered into force after being published in the Official Gazette dated 30.11.2022 and 32029; "Construction site activities that cause environmental noise in residential areas are carried out within the framework of the provisions in Annex-2." According to Table 1 in Annex-2 of the Regulation, the noise level should not exceed 65 dBA in the nearest vulnerable structure during daytime hours.

In the World Bank Group General EHS guidelines, these values are 55 dBA for daytime and 45 dBA for nighttime. The guidelines also state that the existing background noise level cannot be increased by more than 3 dB.

The World Bank Group General EHS Guidelines define daytime as 07:00-22:00 and nighttime as 22:00-07:00. The national "Environmental Noise Control Regulation" defines daytime as 07:00-19:00, evening as 19:00-23:00 and nighttime as 23:00-07:00. In addition, the absolute low limit of 45 dBA for nighttime is based on World Health Organization guidelines to ensure that people sleeping indoors are not disturbed when windows are open.

In addition, the Environmental Noise Directive 2002/49/EC of 25 June 2002 provides for the assessment and management of environmental noise. The Directive requires the preparation of strategic noise maps and noise action plans for residential areas with more than 250,000 inhabitants, main roads with more than 6 million vehicles per year, main railways with more than 60,000 trains per year, airports with more than 50,000 movements per year.

Within the scope of the Project, there is a difference between local legislation and WB standards for noise emission limit values, in which case the more stringent limit value will be determined as

the project requirement. Therefore, WB Group General EHS guideline values will be taken as reference and the noise level will be ensured to be 55 dBA during the day and 45 dBA at night.

Impact Definition and Causes

The most important sources of noise emission are drilling rig and equipment, mud pump and generator. On the other hand, during land preparation and rehabilitation operations, construction equipment also causes noise. However, since the land preparation process is much shorter than drilling, this impact will be of short duration.

A table showing the approximate noise levels that may occur at sensitive receptors at each well location during drilling activities is given in Table 18 and the related graph is given in Figure 5.9. As can be seen from the table, the noise value at the nearest sensitive receptor, which is 120 meters away from Gaziemir-1 well, is expected to be 54.60 dBA, which is below the WBG General EHS guideline value of 55 dBA..

Table 18. Approximate Noise Values at Vulnerable Receivers for Each Well

Well Name	Nearest Vulnerable Receiver Distance (m)	Noise (dBA)
Gaziemir-1	120 (Vineyard house not in use)	54,60
AG-4	250 (Vineyard house not in use)	47,46
Gaziemir-5	320 (Vineyard house not in use)	44,98

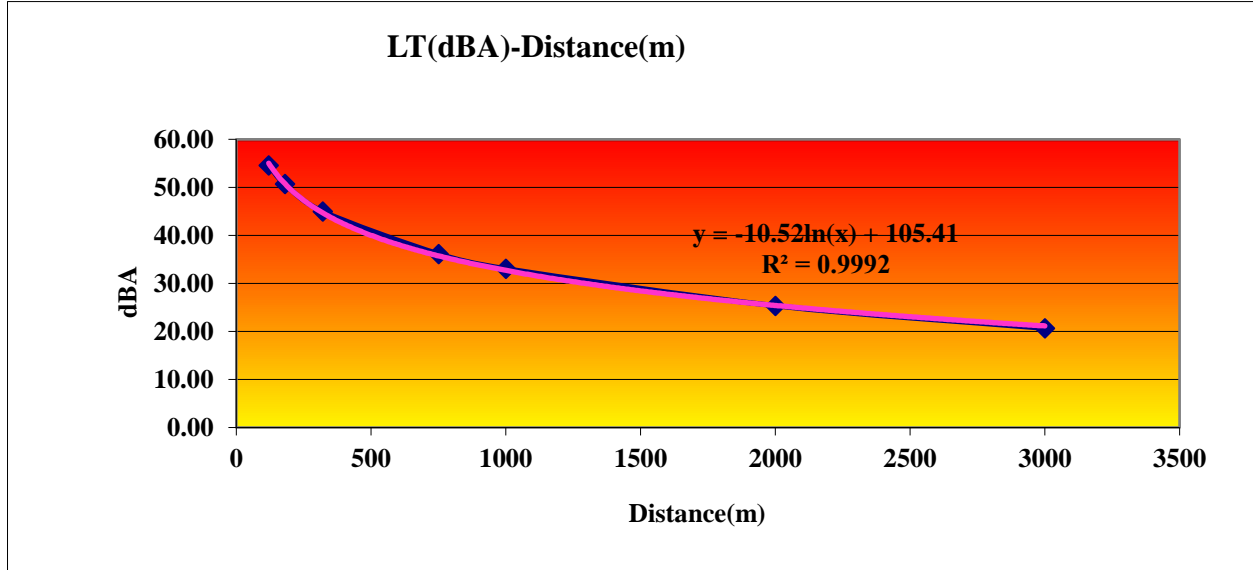


Figure 5.10. Graphic of Noise Values that may occur during Operations at Drilling Locations

In order to reach the above results, the guideline "Principles of Preparation of EIA Reports and Project Introduction Files within the Scope of the Regulation on Environmental Noise Assessment and Management" published by the Republic of Turkey Ministry of Environment and Urbanization General Directorate of EIA, Permitting and Inspection in 2018 was taken into consideration. The atmospheric absorption values specified in this guideline were calculated with the formula $A_{atm} = 7.4 \cdot 10^{-8} (f^2 \cdot r/Q)$, the net sound level in 4 octave band was calculated with the formula $L = L - A_{atm}$, and the equivalent noise levels ($L_{day} = L_{eq}$) were calculated with the formula $L_{eq} = 10 \text{Log} \sum 10^{L_{T(i)}/10}$. Noise emission calculations are given in Annex-3.

Impact Mitigation Methods

In geothermal drilling, silencers will be used on the drilling rigs and the sound level will be reduced. After drilling, there may also be noise from the machines working in the well testing phases. However, the equipment to be used in the well testing phase is much less than in the drilling phases (only CTU, silencer and sluice). Therefore, the noise level will be lower than during drilling. Appropriate conditions can also be provided during well testing with the use of silencers.

Periodic control of all construction machinery and equipment used within the scope of the Project will be carried out. Periodic control records will be available on site. Maintenance and repairs will be carried out regularly in certain periods. Noise from equipment will be reduced through inspections and maintenance/repair. Project vehicles will be ensured to comply with speed limits.

Background noise level measurement at the receptor closest to the drilling locations will be carried out with the approval of the RSM unit before the start of field works. In case of any complaint due to Project activities, 24-hour noise measurement will be taken at the point where the complaint is received, with the approval of the RSM unit. The RSM Unit will be informed about the complaint and the parameters and measurement points to be measured will be presented to the RSM Unit before the measurement work and the approval of the RSM Unit will be obtained. If the measurement results exceed the project requirements, the drilling activity will be examined and necessary actions will be taken to reduce the noise source. In this context, additional/advanced measures such as sound barriers, noise shields/curtains and/or acoustic walls will be taken if necessary. In case of such a need, the approval of the RSM Unit will be obtained. The received complaint will be evaluated in accordance with the Complaint Mechanism; the complaint will be recorded, evaluated and responded to in a timely and appropriate manner.

Measures that can be taken against noise can be summarized as follows;

- If necessary, noise curtains will be used, this equipment reduces noise.
- It will be checked whether the maintenance of the machinery and equipment to be used is carried out regularly.
- It will be ensured that vehicles do not have noise-reducing silencers.
- The load and transportation limits on the axle weights of the vehicles shall not be exceeded.
- Work machines and vehicles shall not be equipped with light and sound equipment that will disturb the environment and distract attention.
- Moving parts of construction machinery, vehicles and machinery-equipment will be regularly lubricated and noisy engine parts will be isolated.

No blasting activities will be carried out as part of the Project activities. Therefore, no vibration impact is expected, but there is a negligible vibration impact due to drilling in the very close vicinity of the drilling sites and this is not a noticeable vibration.

Within the scope of this project, the provisions specified in national ("Environmental Noise Control Regulation" published in the Official Gazette dated 30.11.2022 and 32029) and international legislation (WBG's General EHS Guidelines) will be complied with.

5.5.2 Air Quality (Dust - Gas - Exhaust Emissions)

National and International Standards/Conditions

Air Quality Assessment and Management Regulation (HKDYY).

Regulation on the Control of Industrial Air Pollution (SDHKKY)

World Bank Group General and Sector Specific Environmental, Health and Safety Guidelines

Directive on Outdoor Air Quality and cleaner air for Europe 2008/50/EC.

WHO (World Health Organization) Guidelines for Ambient Air Quality

The Air Quality Framework Directive 2008/50/EC of 21 May 2008 contains regulations on the reduction of ozone depleting substances, emissions of volatile organic compounds (VOCs) and fuel quality. The Air Quality Framework Directive introduces rules on the assessment of air quality through common methods for all pollutants, monitoring requirements and methods, clean air plans and programs.

Directive 406/2009/EC dated April 23, 2009 on effort-sharing against greenhouse gases that cause climate change; there are EU regulations on monitoring the emission of greenhouse gases, emissions trading system and reduction of greenhouse gas emissions from sectors outside the emissions trading system, carbon capture and storage, control of F-gases and protection of the ozone layer. In this context, the EU aims to reduce greenhouse gas emissions by 20% by 2020 compared to the level in 1990, which it considers as the reference year, and by 40% by 2030 compared to 1990.

Air quality standards in Turkey are defined in the Regulation on Air Quality Assessment and Management published in the Official Gazette dated 06.06.2008 and numbered 26898 and in the Regulation on Control of Industrial Air Pollution published in the Official Gazette dated 03.07.2009 and numbered 27277.

The air quality limit values given in Annex-2 Table 2-2 of the Regulation on the Control of Industrial Air Pollution No. 27277 dated 03.07.2009 for various pollutants are given in the table below.

Table 19. Air Quality Limit Values Defined in National Legislation

Parameter	Duration	Unit	YEAR	
			2019-2023	2024 and beyond
Airborne Particulate Matter (PM 10)	24 hours (Not exceeded more than 35 times in a year)	µg/m ³	50	50
	Annual		40	40
Settling dust	KVS	mg/m ² day	390	390
	UVS		210	210
SO ₂	24 hours	µg/m ³	125	125
NO ₂	Hourly	µg/m ³	250	200
H ₂ S	Hourly	µg/m ³	100	100
	KVS		20	20

The WBG's Environmental, Health and Safety Guidance recommends the World Health Organization (WHO) Outdoor Air Quality Guideline values for Air Emissions and Air Quality, which are given in Table 20 below.

Within the scope of the Project, there are some differences between the local legislation for dust (air quality) emission limit values and the standards set out in the World Bank Group General EHS guidelines (such as the annual limit value for PM10), in which case the more stringent limit value will be determined as the project requirement. Therefore, within the scope of the Project, the WBG General EHS guidelines will be taken as reference and for example, the air quality limit values for PM10 will be 45 $\mu\text{g}/\text{m}^3$ for 24 hours and 15 $\mu\text{g}/\text{m}^3$ for the annual average.

Table 20. World Health Organization (WHO) Guideline values for Ambient Air Quality, 2021

Parameter	Duration	Value($\mu\text{g}/\text{m}^3$)
SO ₂	24 hours	40
NO ₂	24 hours	25
	Annual	10
PM10	24 hours	45
	Annual	15
PM2.5	24 hours	15
	Annual	5
O ₃	Maximum 8 hours a day	100

❖ Dust Emissions:

In geothermal drilling activities, dust emission occurs during the stripping of topsoil, excavation activities and road construction works during land preparation works to be carried out at the drilling location before drilling. A connection road will be constructed for transportation to Gaziemir-5 drilling site, which will be separated from the existing road. If stabilized roads are used, these roads will be reinforced with stabilized pavement according to the need.

How much topsoil will be stripped from each drilling location, how it will be temporarily stored, and storage conditions and how the excavated material will be used are given in Section 2.4.

In geothermal drilling activities, during drilling, dust emission occurs for a short period of time only when starting the drilling process. After the drill top table limit reaches the same level with the ground level, there is no dust emission. Since drilling fluid is used in the drilling process, there is no dust formation from the drill.

Impact Mitigation Methods

The following mitigation measures will be taken in case of dust emission:

- All works will be carried out in a controlled manner during land preparation.
- If excavation material is to be transported from the site, the top of the vehicles will be covered with suitable material (tarpaulin, etc.) to prevent environmental pollution that may occur during transportation.
- If necessary, dust binding agents will be used during transportation.
- Vehicles will not be loaded over capacity.

- On the stabilized roads to be used for transportation, irrigation will be provided with a watering can and dust will be suppressed. In addition, during the land preparation and rehabilitation phase, spraying with water will be carried out in the location with an all-terrain vehicle in order to prevent dust emissions from the movements of construction machinery and activities (such as stripping, filling, leveling) within the location.
- During the discharge of the topsoil stripped from the site to the storage place, care will be taken to ensure that the soil removed during the opening of the geothermal flow pool is spread for site leveling.
- Speed limits will be imposed on vehicles traveling in and around the drilling location and on the surrounding roads. The vehicles used will be equipped with a tracking system and the vehicles will be monitored by the contractors. The driver will be warned if the speed limit is exceeded. Vehicle drivers will be trained before activities commence.
- In case the access road to the site is a stabilized road, periodic water spraying and washing the wheels of the vehicles to prevent dust emissions during the transportation of chemical materials to be used in drilling/nitrogen etc. materials and tanker water to the site will be carried out before the vehicles leave the location.

Within the scope of the activity, the provisions of the Regulation on the Control of Industrial Air Pollution will be fulfilled. In Annex-1 of the Regulation on the Control of Industrial Air Pollution, it is stated that "Measures to ensure air quality (other measures in Annex-1, such as pressurized pulverized water or chemical dust suppression systems, etc.) should be taken in facilities that operate for less than one year at the place of establishment".

Background air quality measurement at the nearest receptor to the drilling locations will be carried out with the approval of the RSM unit before the field works start. When there is a complaint due to dust, 24-hour PM10 measurements will be made at the nearest receiving environment / complaint point with the approval of the RSM unit. The RSM unit will be informed about the complaint and the parameters and measurement points to be measured before the measurement work will be presented to the RSM unit and the approval of the RSM unit will be obtained. When limit exceedance is observed in the results of the measurements, dust emission measures applied at the site will be reviewed and measures will be improved.

❖ Gas Emissions:

No gas emissions will occur during the site preparation phase of drilling operations and/or during the placement of containers/drilling rig.

Gas emission formation (CH_4 , CO , CO_2 , H_2S and O_2) is possible during the drilling activity phase, at this stage gas measurements (parameters such as CH_4 , CO , CO_2 , H_2S , HCN , NO_2 , SO_2 and O_2) are performed instantaneously from the mudlogging unit. In addition, contractor companies have portable multi gas detectors. One of these detectors is generally located at the wellhead and one at the screens. Detectors give a warning if they read above certain limits.

There may be an odor from H_2S and this odor is similar to the smell of rotten eggs. However, H_2S gas is not expected to be released during drilling; only a limited amount of H_2S gas is expected to be released during the testing phase.

The greenhouse emissions caused by geothermal projects during the electricity generation phase are generally lower compared to projects burning fossil fuels. (Source: Turkey Geothermal Development Project Environmental and Social Management Framework, 2016)

Impact Mitigation Methods

A sufficient number of fixed H₂S detectors that can operate independently of each other, which can alarm when 5, 10 and 50 ppm H₂S is measured at the drilling site, will be available in working condition and continuous monitoring will be carried out throughout the drilling and production test.

Working personnel will be informed about the H₂ S monitoring system and the measures to be taken in case of a release and the system will be kept under the continuous monitoring and supervision of an occupational safety expert and a competent engineer.

One of the most important tasks during drilling is Mudlogging: Keeping a Drilling Log Record. Identification of the drilled rocks under microscope and determination of their lithological properties, taking and storing dry/wet samples of drilling interruptions, recording actual drilling and circulation parameters, drilling mud outlet-inlet temperatures, mud weight, mud tank levels, gas readings (CO, CO₂, CH₄, C₁, C₂, C₃, iC₄, nC₄, iC₅, nC₅, C₇₊, H₂S, Total Gas) and other drilling services (rig service, directional drilling service, mud service, etc.) and other drilling services (rig service, directional drilling service, mud service, etc.) and the ability to report all collected data in a specific format are among the remarkable features of the Mudlogging System.

With Mudlogging, mud circulation times and cavity volumes in the well can be calculated, and the time it takes for drill cut rocks to reach the surface can be tracked. It ensures rock sampling at the right moment. Both drilling parameters and mud parameters can be monitored and recorded instantaneously. It also enables rapid reflexes to be given to uncontrolled gas-water arrivals or sudden downhole leakage. Historical data can be checked and reported as often as desired from all recorded data.

Well safety is among the most important features of the mudlogging system. With high sensitivity sensors, level meters, gas detectors and alarm systems placed in the relevant parts of the drilling rig and at the entrance and exit of the well, it ensures that the problem is detected and interpreted before it occurs and warns all rig personnel for necessary measures. In addition, with the live camera system placed around the tower, it provides continuous recording to see the drilling operation from many angles.

Basic Components of a Mudlogging System

1. Engineer and Technical Staff
 - Engineers and technical personnel competent to use the system
2. Mudlogging Unit (Container)
 - Binocular Microscope (with Camera) for geological studies
 - Sample Catch Sieves,
 - Auto-Calcimeter, Fluoroscope, Chemicals
 - Sample storage bags and pouches, envelopes, tweezers, porcelain plates, petri dishes
 - Sample Drying Oven
 - Personal Protective Equipment
 - Calibration Gases for Chromatograph

3. Drilling and Mud Parameters Sensors
 - Actual Drilling Depth, Drill Depth, Drilling Speed (ROP)
 - Total Load (Hook Load) Sensor
 - Pressure (Stand Pipe Pressure) Sensor
 - Torque Sensor
 - Casing Pressure Sensor
 - Pump Stroke Sensor
 - Rotary Speed Sensor
 - Mud Tanks Level Sensors
 - Flow Line Sensor
 - Mud Weight Sensor (Inlet/Outlet)
 - Mud Temperature Sensor (Inlet/Outlet)
 - Mud Conductivity Sensor

4. Gas Detection System Sensors
 - Posumbeli Gas Trap
 - Gas Chromatograph
 - Total Combustible Gas Detector
 - CO₂ Detectors (0-300K ppm)
 - H₂ S Detectors (0-100ppm/0-500ppm)

5. Livecam System
 - Live camera system
 (Continuous monitoring is carried out with many cameras placed in and around the tower)

6. Data Collection and Computer Systems
 - Licensed Data Collection Software
 - Real-Time Computer Systems with High Data Processing Capacity
 - Mud Log Software (Well Log Preparation)
 - Real-time Data Recording and Reporting
 - Full integration with other drilling services via W.I.T.S.
 - Remote desktop connection and intervention when needed
 - Closed circuit high security internet/intranet
 - Monitor sharing to other services

All critical information about the drilling is collected in the mudlogging unit and monitored instantly with many screens. It is continuously monitored for 24 hours for drilling and well safety. Well logs and related reports including geological log and drilling information of the drilled formations are created daily. At the end of the well, all reports are combined and the work is completed by creating a **drilling master log**. Images related to mudlogging, investigation of rocks cut by drilling and sample well log are given in Figure 5.10, Figure 5.11 and Figure 5.12.



Figure 5.11. A view inside the mudlogging unit. All critical information about the drilling is collected in this unit and monitored instantly with many screens



Figure 5.12. Rock fragments cut by drilling are examined under microscope. Lithologic well log is processed

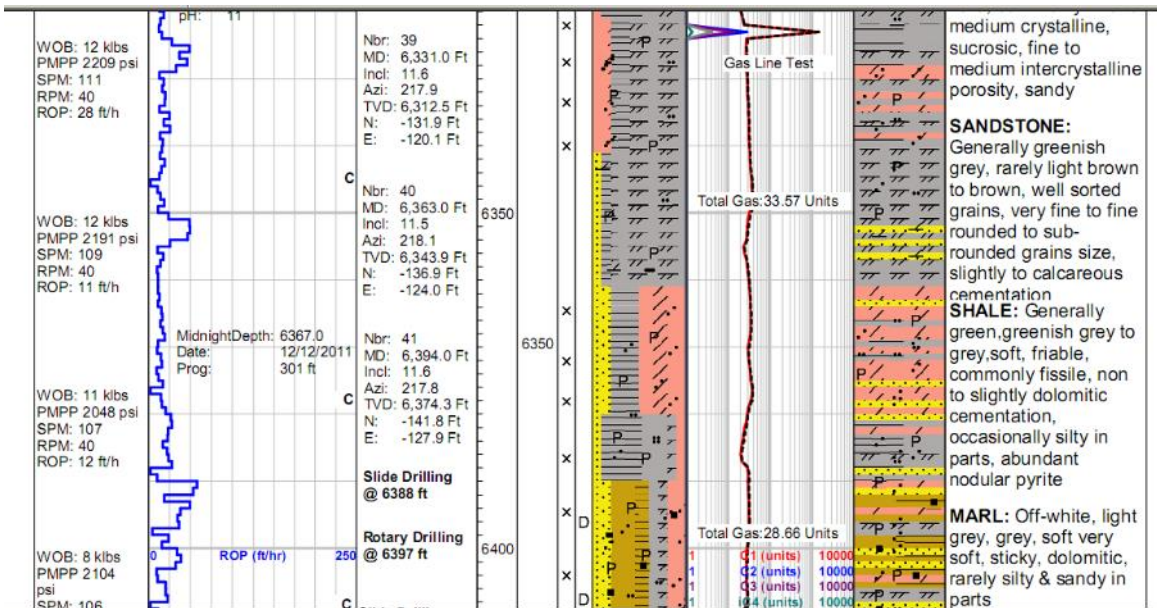


Figure 5.13. Sample Well log

During drilling, the well must be carefully monitored to prevent excessive irregular pressures and uncontrolled flows (formation kick) from the reservoir. Gas detectors connected to the muglogging unit are vital for such uncontrolled flow. Sudden drilling advances may indicate a fault zone or reservoir. All drilling and mud parameters should be carefully monitored with the muglogging unit. In the unlikely event, rig engineers and drillers are notified immediately. In such cases, Blowout Preventer equipment (BOP) is used on the rig as a drilling safety measure.

Blowout Preventer (BOP)

The BOP is a safety device placed at the wellhead to prevent blowout (see Figure 5.13). It is special equipment used to temporarily or permanently seal the well for sudden gas-water-oil developments while the drill string is in the well. It seals the well by creating a seal in the space between the drill string and the annulus. After the pressure in the well is controlled, it can be reopened and drilling can continue. In special cases, if the well cannot be brought under control, if contact with the well needs to be completely cut off, the drill string in the well is cut by using steel cutting material in the BOP and full sealing is performed.

A sudden kick from the formation can lead to a potentially catastrophic event known as an explosion. The BOP can be controlled from outside the rig via a hydraulic system and is critical for the safety of rig personnel in emergency situations. Control tests of such equipment are carried out regularly during drilling.

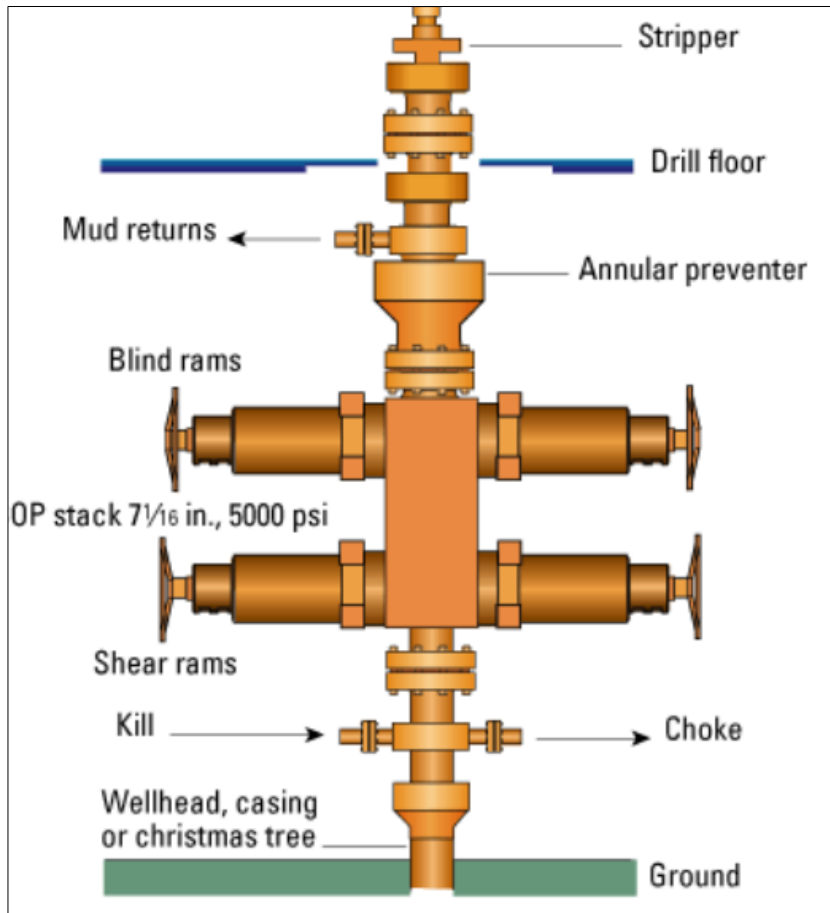


Figure 5.14. Blowout Preventer-Blowout Preventer (BOP) representative view

- These systems will be regularly maintained and calibrated.
- Staff will be trained on this issue.
- An Emergency Action Plan will be prepared for safety planning and control of uncontrolled gas releases.

Gas emissions will be monitored by the contractor who will work on site through a detector. The relevant personnel of the Beneficiary will continuously monitor gas emissions.

Exhaust Emissions:

During land preparation activities (including road construction works) in geothermal drilling, NOx, CO and SOx emissions occur due to the use of diesel fuel in construction equipment.

In addition, NOx, CO and SOx emissions are caused by the use of diesel fuel during both land opening activities and drilling activities with the use of generators.

For these emissions, the lower limits for modeling in national legislation (given in Table 2.1 of Annex-2 of the "Regulation on Control of Industrial Air Pollution") are given in Table 21 below.

Table 21. Annex-2 Table 2.1 Hourly Mass Flow rates of the Regulation on Control of Industrial Air Pollution

Emissions	Mass Flow rates (kg/hour) for operating hours under normal operating conditions and weekly working days
	From Places Other Than Chimney

Dust	1
Carbon Monoxide	50
Nitrogen Dioxide [NO _x (in NO ₂)]	4
Total Organic Compounds	3

Exhaust emission calculations that will occur during drilling activities are detailed below.

The number, power and exhaust emission flow rates of the construction equipment to be used in the Project are given below for each vehicle separately. The mass exhaust emission flow rates to be released are compared with the values given in Annex-2 Table 2.1 of the Regulation on the Control of Industrial Air Pollution (Last amendment: RG-6/11/2020-31296) published in the Official Gazette dated 03.07.2009 and numbered 27277 and presented in the relevant table.

Table 22. Engine Power and Numbers of All Machinery and Equipment to be used in the Drilling Phase

Construction Machinery to be Used in the Project	Quantity	Power (kW)
Drilling rig	1	145 kW
Generator	1	490 kW
Compressor	1	15 kW
Mud Pump	1	22 kW

Table 23. Emission Factors from Diesel Oil Use

Vehicle Power	PM (gr/kW-hr)	NOX (gr/kW-hr)	HC (gr/kW-hr)	CO (gr/kW-hr)
kW < 19	0,80	9,5	9,5	9,5
19 ≤ kW < 37	0,03	4,7	4,7	5,5
130 ≤ kW < 560	0,02	0,4	0,19	3,5

Formulas

for kW < 19;

NOX: 9.5 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 PM : 0.8 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 CO : 9.5 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 HC : 9.5 gr/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr

For 19 ≤ kW < 37;

NOX : 4.7 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 PM : 0.03 gr/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 CO : 5.5 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 HC : 4.7 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr

For 130 ≤ kW < 560;

NOX : 0.4 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 PM : 0.02 gr/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 CO : 3.5 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr
 HC : 0.19 g/kW-hr x Vehicle Power x Number of Vehicles x kg/1000 gr

Table 24. Exhaust Emission Flows from the Equipment to be used in the Drilling Phase

Exhaust Emission Flow Calculations from the Equipment to be Used in the Drilling Phase		
Generator Welded (kw=490) for 130 ≤ kW < 560		
Emissions	Formula	Emission Amount (kg/hour)
NOX	0.4 g/kW-hr x 490 kW x 1 x kg/1000 gr	0,196
PM	0.02 g/kW-hr x 490 kW x 1 x kg/1000 gr	0,0098
CO	3.5 g/kW-hr x 490 kW x 1 x kg/1000 gr	1,715
HC	0.19 g/kW-hr x 490 kW x 1 x kg/1000 gr	0,0931
Drilling Machine Welded (kw=145) for 130 ≤ kW < 560		
Emissions	Formula	Emission Amount (kg/hour)
NOX	0.4 g/kW-hr x 145 kW x 1 x kg/1000 gr	0,058
PM	0.02 g/kW-hr x 145 kW x 1 x kg/1000 gr	0,0029
CO	3.5 g/kW-hr x 145 kW x 1 x kg/1000 gr	0,5075
HC	0.19 g/kW-hr x 145 kW x 1 x kg/1000 gr	0,02755
Compressor Welded (kw=15) (for kW < 19)		
Emissions	Formula	Emission Amount (kg/hour)
NOX	9.5 g/kW-hr x 15 kW x 1 x kg/1000 gr	0,1425
PM	0.8 g/kW-hr x 15 kW x 1 x kg/1000 gr	0,012
CO	9.5 g/kW-hr x 15 kW x 1 x kg/1000 gr	0,1425
HC	9.5 g/kW-hr x 15 kW x 1 x kg/1000 gr	0,1425
Mud Pump Welded (kw=22) (for 19 ≤ kW < 37)		
Emissions	Formula	Emission Amount (kg/hour)
NOX	4.7 g/kW-hr x 22 kW x 1 x kg/1000 gr	0,1034
PM	0.03 g/kW-hr x 22 kW x 1 x kg/1000 gr	0,00066
CO	5.5 g/kW-hr x 22 kW x 1 x kg/1000 gr	0,121
HC	4.7 g/kW-hr x 22 kW x 1 x kg/1000 gr	0,1034

The cumulative mass exhaust emission flow rates (see Table 24) that will be released due to the use of diesel fuel in the construction equipment to be used within the scope of the Project have been compared with the values given in Annex-2 Table 2.1 of the Regulation on the Control of Industrial Air Pollution, which entered into force after being published in the Official Gazette dated 03.07.2009 and numbered 27277 (Last amendment: RG-6/11/2020-31296). The cumulative mass exhaust emission flow rates that will be released due to the use of diesel fuel in the construction equipment to be used within the scope of the project meet the limit values specified in the regulation.

Impact Mitigation Methods

- It will be ensured that the vehicles used have exhaust gas emission measurements and emission stamps. Records of the vehicles will be kept on site.
- New and well-maintained vehicles will be used to control the gas emissions that will occur within the scope of the activity.
- Exhaust gas measurements of all work machines to be used will be made in certain periods.
- Unnecessary use of emission-causing machinery and equipment will be prevented.
- Unnecessary idling of vehicles will be prevented.

Regarding the exhaust emissions that will be released within the scope of the activity in question; the provisions of the "Regulation on Exhaust Gas Emission Control", which entered into force

after being published in the Official Gazette dated 11.03.2017 and numbered 30004, will be strictly complied with.

5.6 Impacts on Soil and Land Use

There will be impacts on the existing soil structure (such as loss of vegetation cover) due to land preparation. At the same time, land use status will change. Therefore, there is also an impact of land loss/acquisition. The total areas of the drilling locations are given above in Section 2.4.

Among the locations, Gaziemir-1 is treasury land, AG-4 drilling area and connection road is pasture, Gaziemir-5 drilling area and connection road are pasture land. For access to Gaziemir-5 location, a connection road will be constructed separated from the existing road. This road is planned to be 65 m long and 5 m wide in total and the existing dirt road route will be followed. The soil properties of 28 meters of the access road are class IV and 37 meters are class VI. In the area where Gaziemir-5 drilling area is located, 327 m² is Class IV and the remaining part is Class VI in terms of soil properties. The parcel where the connection road is located is a pasture land in the nature of a threshing floor. Among the drilling locations, Gaziemir-1 and a part of the connection road are Class IV and AG-4 drilling area is Class VII land and it is stony and rocky. Gaziemir-5 drilling location is located in the sixth class land. The existing vegetation cover is widespread. In the light of this information, the impact of vegetation loss will be minimal. In addition, the impact will be temporary by stripping the topsoil, keeping it within the location and using it for rehabilitation purposes later.

In AG-4, in December 2022, the Beneficiary carried out topsoil stripping in the areas of wellhead concrete, cellar pool and fluid pool in an area of 5.000 m², wide enough for a MR-7000 or ZJ30 type tower, and the mentioned structures were constructed. In this context, a total of 290 m³ of topsoil was stripped at a thickness of 10 cm (varying between 5 cm and 7 cm on the land surface). Some of the removed topsoil (approximately 95 m³) was left at the AG-4 location, while the remaining 195 m³ was stored in the area rented by Güzelyurt Geothermal. A 1250m² area of wellhead concrete measuring 21mx60m, a concrete cellar pool measuring 2.5mx2m, and a 2400m³ volume geothermal fluid pool measuring 46mx13mx4m covered with impermeable geomembrane with a bottom of 50 cm clay was prepared.

An iron gate was built at the entrance of the location and the location was completely surrounded by a wire fence to ensure the security of the location.

When the AG-4 well site was included in the previous ESMP revisions, it was reported by the RSM consultants that part of the land appeared to be under occupation and the beneficiary was asked.

As can be seen from the past aerial photographs, it has been determined that agricultural activities were carried out by an illegal user in the past in a section within the pasture land. It is seen that there was no cultivation-planting activity on the land during the period when the permission for the land was obtained, only some of it was plowed in the old satellite images (See Figure 2.1). In order to make the necessary explanations in the ESMP, the person(s) who illegally used the occupation part of the parcel at that time were investigated by the beneficiary. With the help of the headman of Akyamaç village, it was learned that the land in the pasture was plowed by a person named ---- ---- in the past. Again through Akyamaç Village Headman, the person was contacted by phone and the situation was explained. Aksaray officer named ---- ---- ---- conducted these interviews on behalf of the beneficiary. In the interview, the beneficiary was asked whether he had any claim on the land, and the beneficiary stated that he had not planted any crops in that area for

a while, that he did not have any claim on the land, and that he had already quit farming, that he had no livelihood problems, and that he was engaged in contracting and trade. The beneficiary requested a face-to-face follow-up to this phone call and was asked if he could provide a written statement of what he said. The beneficiary responded negatively that he had already illegally cultivated the pasture area and that if he gave a written document, this would turn into evidence and the state could impose sanctions on him, and ended the interview by saying that he should not be involved in this matter and asked not to be bothered about this issue again.

There is currently no illegal use on the site. In the 2023 satellite images, it can be seen that there is no impact on the previously occupied parts of the parcel outside the beneficiary use permit, although there is no impact (See Figure 2.1 and Figure 2.2).

For Gaziemir-5 land it was understood that the owner of the ----- parcel entered and occupied the pasture / threshing ground. He was contacted and the situation was explained. The person stated that he did not have any claim and that this land was not important for his livelihood. The beneficiary also informed the person that the land will not be entered until the crops planted for the summer of 2023 are harvested in the summer and stated that they will help him. The person in question also stated in writing in his own handwriting that he did not have any claim under the witness of the headmen. This writing is given in Annex-1-8.

No impact on land use is expected on the parcels where the drilling locations are located and on the connection road parcels to be built for access to Gaziemir-5.

Impact Mitigation Methods

Topsoil will be stripped to the depth given in the soil survey report and stored in designated areas. Topsoil will be stored at a maximum height of 3 m and the slope will not be above 30 degrees. The slope will be lightly compacted with a backhoe. The area to be stored will not have more than 5% slopes.

Land leveling and landscaping will involve excavation and backfilling of subsoil. There will be no excavation or excavation storage in the area, all of it will be used for backfilling for leveling.

Access to neighboring lands outside the drilling location will be prevented, thus preventing the neighboring parcels from being affected.

All staff will be trained on these measures.

5.7 Impacts on Soil Pollution

Impact Definition and Causes:

Soil contamination is defined as the presence of toxic chemicals (wastes or pollutants) in soil in concentrations high enough to pose a risk to human health and/or the ecosystem. Soil contamination occurs when levels of naturally occurring contaminants in soil exceed levels that should naturally occur.

Factors that cause pollution:

- Wastes from activity areas, exhaust gases, industrial wastes are the most important factors causing soil pollution.
- Soil pollution occurs in areas where garbage from activity areas is dumped haphazardly and in areas where sewage is discharged directly into the soil without treatment.
- Some of the exhaust gases are emitted into the air and some are taken up by living things. The rest fall to the ground with rainfall and cause soil pollution.
- Wastes generated by activities and discharged untreated into the air, water and soil pollute the environment.
- In cases such as accidental leakage, spillage and spillage, soil pollution may occur.

Impact Mitigation Methods

All chemicals used in drilling operations will be stored in their packaging.

Chemicals will be stored on sealed concrete floor. Safety Data Sheets (SDS) is available for each chemical substance. There may be some special storage conditions for chemicals. These conditions are written on the SDS. For this reason, the SDS of the material should be read first. Then the materials should be stored. If there are special conditions for storage, these should also be applied. Chemical materials shall be stored and handled under the conditions given in Section 5.3.

Personnel will be assigned for spill response, these personnel will be trained and they will be ready for immediate response in case of a spill. In order to ensure timely and adequate intervention, leakage and spill response equipment will be made available and it will be ensured that this equipment is available for immediate intervention in the working area with all kinds of chemicals.

Waste oil storage tanks shall be stored on a sealed floor under the conditions given in Section 5.2.3.

If needed, materials or pads that absorb shock will be applied to storage floors. When needed, absorbent pads or materials will be easily accessible for on-site use as well as in chemical and waste storage facilities.

For the determination of the current situation in drilling locations, the Regulation on Soil Pollution Control and Point Source Contaminated Sites Annex-2: List of Pollution Indicator Parameters, Potential Soil Polluting Activities and Activity Specific Pollution Indicator Parameters Table 1. Soil analysis will be performed for TOX, TPH, Ag, As, B, Cd, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn, Co, pH, Oil and Grease parameters given in the Pollution Indicator Parameters List and evaluated in relation to drilling activity. Analyses will be carried out with the approval of the RSM Unit prior to the commencement of field works. The analysis to be performed after these analyses will only be performed in case of any leakage or spillage and will not be performed periodically.

Against accidental leakage, spillage and spillage;

Appropriate PPE (Personal Protective Equipment) including emergency apron, splash goggles and appropriate chemically resistant gloves will be available for spill response and cleanup.

Necessary absorbent materials will be available to limit spills.

5.8 Impacts on Biodiversity

Definition and Cause of Impact:

In a location where activities are carried out, the presence of significant species in the region, coupled with the absence of precautions, can lead to the extinction of species and even result in critical situations if not addressed.

Field and literature studies in the form of rapid field assessment were carried out in the locations where the drilling will be carried out within the scope of this project. As a result of these studies, 65 taxa were identified in and around the project area. It was observed that there are no endemic plant taxa among the plant taxa in the project area. In addition, there are no non-endemic, rare or endangered plant taxa in the area. Accordingly, there are no plant taxa that require monitoring among the plant taxa identified in the Project area and its immediate vicinity. On the other hand, in the literature studies, it has been observed that there is no species recommended to be monitored among the fauna species identified in the Project area and its immediate vicinity.

In accordance with the current stage of the conducted studies, it is not expected that the activities to be undertaken will adversely affect biodiversity. Nevertheless, the precautionary measures presented below will be implemented.

Measures to be taken:

Protection Measures to be taken on Wild Animals and Fauna Species

The following measures will be taken to protect the fauna structure in the Project area and impact area.

During the field preparation phase, visual controls will be carried out by an expert biologist and nesting areas will be identified.

The nestlings identified in the area will not be intervened with until they voluntarily leave the nest.

In case there are adults that do not move away from the area, upon notification to the RSM Unit and subsequent approval from the RSM Unit, the adults will be taken out of the project area by an expert biologist by using appropriate capture and trapping techniques to ensure their safety.

The personnel involved in the project will be trained on the nature of the species. This training will provide information on actions to be taken/avoided concerning the species, naturally found in the region and as well as nature protection.

Conservation Measures to be taken on Plant Taxa

As a result of field and literature studies, 65 plant taxa were identified in the project area and its immediate vicinity. Among these taxa, there are no endemic, rare or endangered plant taxa, and there are no plant taxa included in the additional lists of the Bern and Cites Convention. Therefore,

there are no critical plant species in the area. Measures outlined below will be implemented to preserve the floristic structure in the project area and its impact zone.

During the land preparation phase, the topsoil in the area to be worked will be stripped and stored separately in the topsoil storage area.

Irrigation activities will be carried out in dust-emitting processes.

Personnel involved in the project will be trained on the nature of the species. This training will focus on proper behavior and actions to be taken/avoided concerning the naturally occurring species in the region, as well as information on nature conservation.

If no results are obtained after exploration drilling, bio-restoration studies will be carried out.

5.8.1 Conservation Measures to be taken on Habitats in the Region

The following measures will be taken to protect all habitats that contribute to biodiversity in the Project area and its immediate surroundings;

- The boundaries of the project area will be clearly defined and no work will be carried out outside this area by enclosing it with a caged wire fence.
- The material (topsoil, drilling fluid, etc.) that will be generated during the works within the scope of the Project will not be disposed of in the stream beds. It will also not be poured into other habitats in the region. These materials (topsoil, drilling fluid, etc.) will be stored in the designated stock areas within the boundaries of the project area.
- The areas where the material (topsoil, drilling fluid, etc.) that will be formed during the works within the scope of the Project will be stored will be designed in a way that will not allow for events such as flowing, sliding, etc. and will not be stored in areas with high slopes. For these areas, slope stability, cubage etc. calculations will be made by experts from mining and geology disciplines.
- Minimal space will be used as much as possible within the scope of the project.
- Within the scope of the project, bio-restoration conditions will be created and bio-restoration works will be carried out starting from the land preparation-stripping stage.
- Irrigation works will be carried out within the project area and on the transportation route in order to prevent dust formation during the works. Since the transportation route consists of a stabilized road, the structure of the transportation road will be improved or irrigated with an intermittent irrigation system to keep it constantly moist.
- For the wastes that will be generated during the works within the scope of the Project, a reinforced concrete and covered temporary waste storage area with impermeable floor will be constructed and all wastes will be stored separately from each other as stipulated by the relevant legislation.

- All wastes to be generated within the scope of the Project will be disposed of in accordance with the relevant legislation obligations and will not be dumped indiscriminately.

5.9 Impacts from Well Blowouts and Pipeline Ruptures

Impact Definition and Causes

In geothermal drilling activities, well blowouts and pipeline ruptures, although not very common, can occur. These accidents can lead to the release of fluids and gases containing chemicals and heavy metals (e.g. hydrogen sulfide) into the environment.

Prevention Methods

In geothermal drilling activity, the pressure of the fluid will be measured by continuously controlling and taking measurements with safety valves.

Blowout Preventer (BOP) is a safety device placed at the wellhead to prevent blowout. It is a specialized piece of equipment used to temporarily or permanently seal the well for sudden gas-water-oil developments while the drill string is in the well. It seals the well by creating a seal in the space between the drill string and the annulus. After the pressure in the well is controlled, it can be reopened and drilling can continue. In special cases, if the well cannot be brought under control, if contact with the well needs to be completely cut off, the drill string in the well is cut by using steel cutting material in the BOP and full sealing is performed.

Sudden strikes (kick) from the formation can lead to a potentially catastrophic event known as an explosion. The BOP can be controlled from outside the rig via a hydraulic system and is critical for the safety of rig personnel in emergency situations. Control tests of such equipment are carried out regularly during drilling.

In the event that fluid suddenly comes from the well during drilling, the pressure to the well will be increased, if it is not enough, the wellhead will be closed with the closing unit.

An Emergency Action Plan will be prepared for safety planning in case of an emergency and for taking the explosion under control. All personnel will be trained on the measures and precautions given in the Emergency Action Plan.

5.10 Social Impacts

5.10.1 Landscape and Image Impacts

Activities related to geothermal resource exploration may cause image pollution as they will change the natural environment. However, the image impact of geothermal resource exploration is short-lived.

Measures to be taken:

In case of complaints from the surrounding settlements due to image complaints, measures such as screening etc. will be taken around the drilling location.

At the end of the drilling activity, afforestation / planting work will be carried out with natural plant species to support the existing plant species to restore the environment during the rehabilitation phase.

Disposal of wastes shall be carried out according to the relevant legislation. Image pollution caused by wastes will not be allowed.

5.10.2 Cultural Heritage and its Impact on Archaeology

Cultural heritage is a general name given to artifacts created by previous generations and believed to have universal values. Monuments (architecture, sculpture, caves, etc.), buildings, protected areas are included in this group.

Although there are no cultural heritage or archaeological sites in or near the study area, it is possible that unknown vulnerable areas may be disturbed/destroyed unnoticed (during land clearing, etc.). If measures are not taken in the event of the detection of a previously unknown cultural/archaeological asset, this identified asset faces the danger of extinction.

Measures to be taken

If any historical, cultural or archaeological assets are encountered during the land preparation phase, the work on the site will be stopped and Aksaray Provincial Directorate of Culture and Tourism will be notified immediately.

In case of accidental finds, activities will be stopped to avoid further damage.

The activities will be resumed after the controls are carried out and the written approvals of the competent authorities are obtained. (Aksaray Provincial Directorate of Culture and Tourism informs the Museum Directorate to which it is affiliated (Niğde Museum Directorate).

Implementation of the Random Find Procedure to be prepared will be ensured.

All Project staff, including contractors, will be trained on the implementation of the Incidental Finds Procedure.

5.10.3 Social Impacts (Socio-Economic Development - Employment Opportunities) and Measures to be Taken:

Identification and assessment of potential social impacts on project-affected settlements and project-affected people, definition of management measures to be implemented and assessment of residual impacts can be evaluated under the following headings

1. Impacts on population and demography
2. Impacts on living conditions
3. Impacts on the local economy
4. Impacts on land use
5. Impacts on vulnerable groups

1. Impacts on population and demography

Impact;

The population growth rate in the affected region is below the average of Turkey. Therefore, there is potential for migration. The Project will have no impact on livelihoods.

The Impact Elimination Method;

Maintaining the population structure depends on increasing the job opportunities provided under the project and not affecting livelihoods. For this purpose, it is planned to prioritize local employment and increase the proportion of female employees.

Labor influx

Impact;

The number of employees who will come to the region as project employees is quite low, so an influx of workers is not expected. Interviews with local people to date have not experienced any negativity and the number of employees will be limited, which can be evaluated as a low expectation of possible impact.

The Impact Elimination Methods;

Measures will be taken and implemented to ensure that the Project does not have a negative impact on settlements and does not affect the local social, cultural and economic structure. In this context; all Project staff including contractors is obliged to provide induction training to their employees. Local procurement of goods and services by Project staff can be considered as positive impacts on local people.

To mitigate potential negative impacts, induction training will focus on, but will not be limited to, the following elements

- Construction Site Code of Conduct,
- Health and safety arrangements for construction sites and worker accommodation,
- Social management - community relationship and rules and regulations regarding employee codes of conduct,
- Trainings on the environmental and social policies of the project,
- Use of the Complaint Mechanism for all complaints,
- Cultural vulnerabilities and social norms and practices in all areas,
- Awareness-raising training on their responsibilities to respect human rights.

Training minutes will be documented and reported with participants' signatures and photographs. Employees will sign the minutes stating that they will act in accordance with the project activities and will be added to their personal files during the recruitment process.

2. Impacts on living conditions

Dust, noise and vibration, public health

Impact

Dust emissions from Project activities may have an impact on agricultural activities in the vicinity.

The Impact Elimination Method;

If there is a negative impact on agricultural activities due to dust emission, necessary actions will be taken and the damage caused by the negative impact will be compensated.

Impact

Gas emissions from machinery and equipment to be used during geothermal drilling activities may have a potential impact on people living in the vicinity.

The Impact Elimination Method;

Monitoring and warning systems will be installed for gas emissions from machinery and equipment to be used in the activities. Continuous operation of hydrogen sulphide gas monitoring systems will be ensured to facilitate early detection and warning. The operation of the systems will be continuously checked.

In the event of a negative impact on neighboring areas due to dust, noise and emissions, necessary mitigation actions will be taken and the damage caused by the negative impact will be compensated.

In case of complaints such as odor, etc., they will be recorded using the complaint mechanism and will be closed with the necessary actions.

Impact

Noise generation may disturb the environment.

The Impact Elimination Method;

Noise level will be measured in case of complaints. For noise emissions, noise measurements will be made if complaints are received after the start of the activity and additional measures will be taken. In order to reduce noise emissions, periodic inspections and maintenance repairs of machinery and equipment will be carried out regularly, low speed limits will be observed on transportation roads, use of transportation roads will be avoided during night rest hours, and unnecessary machinery and equipment will not be operated.

Impact

The vicinity of the activity area may pose a risk to public health and safety.

The Impact Elimination Method;

The activity area will be surrounded by a wire fence. Thus, it will be ensured that no one from the public can enter. In addition, animals will also be prevented from entering.

Fencing will be provided around well sites, open ponds and mud pits and access from outside the construction site will be prevented.

Entry to the activity site will not be allowed except for personnel. Entrances and exits to the activity area will be done with security control.

Infrastructure

Roads are the most important infrastructure used for access to social services and livelihood activities. During Project activities, roads may deteriorate, there may be negative changes in the living conditions of local people due to access restrictions, and public health and safety risks may arise. Therefore, the impacts of Project activities on roads should be assessed and measures should be taken to mitigate these impacts.

Impact

One of the common and indirect impacts on the safety of local people is that roads used by the public to access services may overlap with roads used for Project activities. There is a non-cadastral dirt road that crosses the Gaziemir-1 drilling location and this road is occasionally used by local people to access lands north of the drilling location. During the investigation, it was determined that there is a dirt road extending 560 m east of the Gaziemir-1 drill location, parallel to the dirt road passing through the drill location. Like the dirt road passing through Gaziemir-1 drilling location, the dirt road extending parallel to the east is connected to the main road. Therefore, this road to the east has been determined as a suitable alternative to the road passing through the drilling location. In order to enable the use of the dirt road passing through the Gaziemir-1 drilling location by the local community during the Project, the road will be protected and the wire fence that defines the borders of the drilling location will be pulled from the west side of the road to ensure the continued use of the road. Traffic, health and safety issues may arise when the public encounters construction vehicles while accessing health and education services.

Another category of impact is the temporary increase in population during the construction phase, which puts pressure on health services in particular.

The Impact Elimination Method;

Measures to mitigate these impacts include the following:

- In case of damage to roads and other infrastructure facilities during the construction phase, necessary repair activities will be provided quickly and effectively.
- Alternative routes to the roads used by local people to access their lands have been identified. The public will be directed to these roads for transportation.
- The heavy vehicles to be used in the project will be planned to use the roads when the traffic is not very busy.
- The training schedule and times will be taken into account when planning the transportation of materials.
- Heavy vehicles that may be in heavy traffic will be accompanied by special beacons
- In order to reduce the burden of public health services, on-site infirmary services will be provided to direct and contracted employees at construction sites.

- Vehicles will be ensured to travel in accordance with speed limits and will be constantly controlled.

3. Impacts on the local economy

The expected positive impacts on welfare and the local economy are indirect and long-term impacts related to the operational phase:

- The region could be positively impacted commercially
- The view that welfare increases as employment is provided

The development of the project will have positive impacts in terms of trade and labor mobility. This can be expected to have a positive impact on welfare and wages. These are the impacts that the Project aims to realize and are related to the operation phase.

Local employment

The Project will adopt the principle of prioritizing local employment to increase positive impacts. This principle will also be adopted by subcontractors. Local employment of 80% for unskilled jobs, 50% for semi-skilled jobs and 20% for skilled jobs can be implemented. Providing the necessary labor force from the Project affected areas and giving priority to women will have a positive impact in the region.

Local Goods and Services Procurement

The Project will adopt the principle of prioritizing local procurement to increase positive impacts. This principle will also be adopted by subcontractors. Procurement of needed goods and services from local tradesmen has a positive impact on the reputation of the Project. Accordingly

- Local employment and procurement will be implemented by the Project Contractor under the control of the Beneficiary. Goods and services to be procured locally will be determined together with the contractor company/companies.
- Consultations will be held with local businesses to inform them about potential local procurement of goods and services.
- Contractor procurement will be monitored through monthly reports.

4. Impacts on land use

The impacts associated with the use of treasury, pasture and threshing floor (i.e. pasture) lands in the Project can be stated as the shrinkage of their utilized areas. Except for the Gaziemir-5 drilling site within the scope of the RSM, there is no use by local people on any of the parcels. There is an illegal user at the Gaziemir-5 drilling site but he has been contacted and consent has been obtained which is provided in Annex 1.8. The road parcel (0 block 616 parcel) to be used for access to the Gaziemir-5 drilling site is also not in use. Likewise, the connection road to be built to the existing road for access to the Gaziemir-5 drilling site is on a threshing floor (i.e. pasture) parcel and is not currently used for agricultural (cultivation or grazing) or any other purpose.

The assessment of the overlap of roads used by the public with the locations within the scope of the Project due to land use has been evaluated above under the Infrastructure sub-heading under the heading of Impacts on Living Conditions 2.

There is no information about cultivation activities in the last 4-5 years on AG-4'. In the years before that, it was learned that someone whose main occupation was not farming used the land for some years. It is detailed in the relevant sections of the ESMP that there is no current use of the land (See Sections 2.1 and 5.6).

For Gaziemir-5 land it was understood that ----- the owner of the parcel entered and occupied the pasture / threshing ground. He was contacted and the situation was explained. The person stated that he did not have any claim and that this land was not important for his livelihood. The beneficiary also informed the person that the land will not be entered until the crops planted for the summer of 2023 are harvested in the summer and stated that they will help him. The person in question also stated in writing in his own handwriting that he did not have any claim under the witness of the headmen. This text is given in Annex-1.8.

For these reasons, the planned drilling is not expected to have any impact on livelihoods.

5. Impacts on vulnerable groups

The vulnerable group/person categories listed below were included in the study process;

- Disabilities,
- Elderly
- People who are homebound due to illness, old age or disability
- Girls of school age but not attending school
- Those who cannot speak Turkish
- The poor living on aid
- Persons without any social security insurance
- Women, especially female-headed households
- Childless widows
- Migrants/refugees

In line with the information received from the headmen, it was determined that the majority of the village population consists of elderly people.

Impacts

There may be various issues in the project process that older and vulnerable groups may face challenges;

- Difficulty for vulnerable groups to access land acquisition and stakeholder engagement activities throughout the project process,
- Impact on livelihood activities on public land and common property (forest),
- Difficulty accessing infrastructure and social services.

The Impact Elimination Methods;

Vulnerable groups should have easy access to accurate information and cooperation will be established with headmen to provide information to individuals.

The ways of accessing the information and complaint mechanism will be communicated by the Public Relations officers during the Stakeholder Engagement Meetings.

In the future, if the project is observed to impact the livelihoods of any stakeholders, members of the public or vulnerable populations through land use, good practices and World Bank OP 4.12 standards will be applied to mitigate and compensate for impacts.

➤ **Occupational Health and Safety (OHS)**

The Project will comply with the OHS Law No. 6331 and related legislation. In addition, internationally recognized good practices and World Bank Group General and Sector Specific Environmental, Health and Safety Guidelines will be followed.

Responsibilities-Roles-General Provisions on OHS:

People at all levels in the Beneficiary organization are responsible for leading and engaging the workforce in achieving health, safety, technical integrity and environmental goals and objectives.

The beneficiary company will be held accountable for achieving this by demonstrating the right OHS behaviors, clearly defining OHS roles and responsibilities, providing the necessary resources, and measuring, reviewing and continuously improving its OHS performance.

Risk Assessment and Management

Risk management is a continuous process and is the cornerstone of all OHS elements. The Beneficiary shall regularly identify hazards and assess risks associated with its activities. The Beneficiary will take appropriate measures to manage risks and therefore prevent or reduce the impact of potential accidents or incidents.

People, Education and Behavior

People's behavior is critical to the Beneficiary's success; therefore, the Beneficiary's workforce will be carefully selected and trained and their skills and competencies will be regularly assessed. All workers will be trained on the necessity of occupational health and safety and the risks they may face on site, chemicals used, and equipment. All staff will also undergo first aid training and firefighting training.

Working with Contractors and Others

The Beneficiary, or the employer, is in charge of contractors, suppliers, and other parties. These parties are essential to the employer's business operations, and the Beneficiary will evaluate their qualifications to carry out tasks on the company's behalf. The Recipient will collaborate with them as a partner to guarantee that OHS standards are met. The Beneficiary will monitor the performance of Contractors and Partners and ensure that procurement processes include a mechanism to fulfill their expectations.

Operation and maintenance

Facilities will be operated and maintained within the existing design framework to ensure safe, secure, healthy and environmentally sound performance.

Information and Documents

The beneficiary will maintain accurate information about its activities and products. All documents will be kept securely and will be available when needed. Material safety data sheets for chemicals used in the facility will be easily accessible to staff.

Community and Stakeholder Awareness

The beneficiary recognizes the benefit of raising public awareness and will actively communicate with a range of stakeholders to uphold the public's trust in the honesty of its business practices, the quality of its output, and its dedication to OHS performance.

Crisis and Emergency Management

The emergency response plan will be maintained to cover all facilities and locations of the Beneficiary. This plan will identify the equipment, training and personnel necessary to protect the workforce, the public, the environment and the reputation of the Beneficiary in the event of an incident.

Incident Analysis and Prevention

Incidents will be reported, investigated and analyzed to prevent recurrence and improve the Beneficiary's performance. The Beneficiary's investigations will focus on root causes and/or system failures. Corrective actions and preventive measures will be used to reduce future injuries and losses.

The OHS Coordinator reports to the Project Management and is responsible for the following:

- Reporting of project status to Project Management,
- Integrating an OHS team,
- Supervise OHS Teams and their role on site,
- Participate in the approval of design changes after the start of the activity,
- Ensuring that necessary trainings are provided,
- To provide a link between Project and Project Management on OHS,
- Full knowledge of the leadership, objectives and expectations of the project,
- It will "drive" the "Step Change" and behavioral development necessary to achieve "World Class" safety performance.

Employees (Beneficiary Staff and Subcontractor Staff) will be responsible for:

- Attend, understand and comply with training on OHS to learn all OHS procedures, rules and practices that apply to their behavior at all times, whether at or outside the workplace,
- Employees are responsible for their own personal safety and the safety of their colleagues through their acts or omissions,
- To be constantly aware of working situations and to report dangerous situations to their superiors, to stop work and to inform their superiors immediately if there is any possibility of harm,
- Comply with all health and safety requirements, practices and other initiatives at all times,
- Use and maintain the appropriate Personal Protective Equipment provided, report any deficiencies and replace as necessary,
- Reporting substandard procedures or conditions to the immediate supervisor,
- Any employee who endangers his/her own safety and health and/or the safety and health of others will be subject to disciplinary action (including immediate termination of employment),
- Working safely at all times.
- Urgent or emergency work stoppage where they consider the work being carried out to be 'risky' or 'unsafe'.

OHS Objectives

The following OHS Objectives have been set under the Project, which will be communicated to all Beneficiaries' Contractors in due course. The objectives are clearly stated as follows:

- Zero Accidents - Accident performance will be monitored during the relevant phases of the Project,
- OSH Trainings/Orientation - OSH personnel who have not attended the Project OSH Training and Education program will not be allowed to work on any site.
All new field staff will attend training during the first week of assignment and before they are allowed to work on site, to ensure they are aware of the specific hazards in the work area,
- Basic Safety Rules - All staff will attend specific training on the Beneficiary's Basic OHS Rules before mobilization,
- Audits / Inspections / Risk Workshops - will be conducted at regular intervals in accordance with the Audit and Risk Assessment Plans,
- Behavioral Safety - "Safe" and "At Risk" behavioral observations will be measured by the number of observations completed monthly following contract award and program launch.
- Step Change Initiatives - Initiatives will be introduced to the project where all staff can be actively involved in the safety process and ultimately change behaviors and focus on Zero Accidents.

Also;

A complaint mechanism for workers will be established so that workers' concerns and complaints (including any health issues such as COVID-19) can be collected and resolved. It will be developed and updated according to needs. COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO), will be strictly followed in the field.

Workers housed on site should be required to minimize contact with people near the site and, in some cases, should be prohibited from leaving the site for the duration of their contract to avoid contact with local communities.

A site-specific Occupational Health and Safety (OHS) risk assessment and associated OHS Management Plan will be developed on a project-specific basis by the contractor together with the Beneficiary before drilling commences. Both the Beneficiary, i.e. the main employer, and all subcontractors will have separate OHS Management Plans, which will be controlled by the Beneficiary.

There is a risk of fire in the drilling site. A sufficient number of fire extinguishers of the appropriate type and number will be kept against fire hazard. Fire extinguishers will be numbered and indicated on the sketch. The fullness and pressure of the fire extinguishers will be checked weekly. Waste and weeds that may cause fire in the drilling area will be cleaned. Regular checks will be made.

Shelves and cabinets will be fixed against earthquake hazards. Heavy materials will be placed at the bottom and light materials at the top. Emergency drills will be held at certain periods.

Entry of unauthorized third parties into the drilling area will increase the risk of work accidents and death. In order to prevent this, the entire location will be surrounded by wire fences and will be checked regularly. In case of openings or deterioration in the wires, immediate intervention will be provided. Warning signs will be placed around the entire location to warn against hazards.

Prior to entry, all individuals will get instruction on occupational safety, site information, and a record. There will be an explanation of the surrounding threats as well as information on the operation and OHS protocol. The individuals who will work will receive OHS training, health exams, orientation, and personal protectors, after which they will be forced to labor..

Parachute type seat belts shall be used against the danger of falling in all work to be carried out at height. The safety belt will be fixed to appropriate anchorage points. Employees will be trained to work at height. Hand tools that employees will use while working at height will be fixed on the employee's tool belt. Seat belts will be checked regularly and records will be kept. Employees will be ensured to check their belts before each use.

Vertical stairs will be equipped with handrails and technical inspections will be carried out. There will be a vertical lifeline and rewind vertical arrestor at the exits to the tower balcony and technical inspections will be carried out.

H₂S monitors and associated audible and image alarms and warning system will be used against hydrogen sulphide coming from the well. At least two wind direction indicators shall be mounted so that they are visible from the drilling rig floor, screen and mud tanks. Artificial respirators will be available at all times in case of a possible H₂S situation.

Diesel oil will be supplied for the use of machines and vehicles working at the location. A permission form will be created during diesel fuel replenishment, it will be checked that the necessary precautions are taken by the site supervisor before replenishment (fire extinguisher in

the replenishment area, grounding, static electricity eliminator copper plate, etc.) and replenishment will not be carried out without the approval of the responsible person at the end of these procedures.

In refueling the drilling rig, refueling will not be done without stopping the machine against fire hazard.

Periodic controls of all machines and vehicles at the location will be carried out and recorded in full on time in accordance with the legislation. Machines with nonconformities will not be used until the nonconformity is eliminated.

There is a danger of exposure to chemicals in the area where chemical materials are mixed. It will be ensured and monitored that employees working in the area where chemical mixtures are made use masks and goggles. Chemicals will be used and stored in accordance with Safety Data Sheets (SDS). It will be ensured that Safety Data Sheets are available in areas accessible to employees and SDS forms will be hung in appropriate areas. Eye Shower and Body Shower kits will be available in the area accessible to employees when mixing chemicals.

Chemical substances will be stored separately according to their properties so as not to react. Chemicals will be stored in their original containers under suitable weather conditions. Chemical materials, warehouses (CMC, caustic, thinner, etc.) and silos will be in accordance with the standard, chemicals will be stacked properly and continuous control will be ensured. In case of a possible fire hazard, fire extinguishers must be equipped with positive pressure complete breathing apparatus (SCBA) and full equipment. Protective clothing, helmet, fire helmet, eye protection, gloves and boots must meet generally recognized standards and be suitable for firefighting. (EN 469)

Catworks, drawworks, cathead, transmission, mud pump, power-end lubrication pump and pressure gauges will be active and their controls will be carried out regularly and their controls will be recorded. Transmission, drawworks, catworks, cathead, diesel engines, power-end oil levels are normal, lubrication is good, the general appearance of the oil is good and continuous checks will be carried out.

While adding drill pipe (rod) to the string, it will be ensured that the rotary table and platform are always clean and organized against slipping and falling. Tong wrench, wedges and clamping chain will be regularly checked and recorded against any breakage or cracking.

A ladder or rescue rope will be provided in the geothermal fluid pool, check-shot and celler pool against falls. Celler pool shall be covered with grating and surrounded with railings in accordance with the legislation and control shall be ensured.

The awareness of employees will be increased by making the necessary occupational safety warning signs in the working areas.

To prevent mud hose explosions caused by overstretching or deformation, hoses shall undergo routine inspections and documentation. Manometers will be stored in the circulation and pump lines. The operating pressure as well as the additional safety pressure will be taken into consideration while choosing hoses. There will be checklists made with the hose pressures and usage times.

Noise measurements will be made against occupational accidents that may occur as a result of hearing loss due to noise created by the drilling motor - mud pumps and the team in the well, decrease in the concentration, attention and reaction capacity of the employee, central nervous system disorders, stress and work efficiency decreases. Employees will be ensured to use headphones in necessary areas and controls will be carried out. Health checks of employees should be carried out periodically.

Equipment such as cranes or forklifts will be used to transport heavy materials to prevent various injuries and injuries. Employees will be trained and supervised to comply with the necessary lifting rules for loads that can be carried by hand.

When using construction machinery for load lifting, a working area will be designated with a strip of 25 meters between it and the machines in order to prevent accidents that could happen from the fall of the suspended weight. It will not be permitted for employees to enter this location. By designating a trash area for all site garbage, hazards will be avoided. The wastes will be grouped, and each group will be given the proper disposal techniques.

Working and maneuvering areas will consist of stable floors suitable for cleaning in order to prevent personnel fall and injury accidents that may occur due to slippery as a result of moving-broken, oil-oil contamination. Work shoes of the employees will be selected as slip resistant.

Rods, water head, ropes will be regularly checked and recorded in order to prevent accidents that may occur as a result of standing in front of the drilling machine while the drilling machine is working, as a result of rod dissolutions, breaks, rope breaks, wire-line rope morset or maneuver rope entanglement. The working area will be identified with strips and it will be ensured that employees work at a safe distance.

During drilling, the geothermal fluid pool will be protected with wire to prevent employees from falling into it. It will be supported with necessary warning signs. The pool will be completely closed after drilling.

All electrical equipment to be used at the work site will be regularly checked and recorded. Equipment will have monthly color coded control labels. Tools without appropriate labels will not be used on site. It will be ensured that defective equipment is not used until it is repaired.

➤ **Traffic and Transportation Measures**

Measures that can be taken to ensure road safety and reduce risks are listed below.

Staff will be trained on this issue.

As far as possible, the roads to be used will pass through places where there are no sensitive receptors such as schools and settlements. There are no sensitive receptors on the road. Figure 5.14 shows the closest non-sensitive receptors, which are disused vineyard houses.

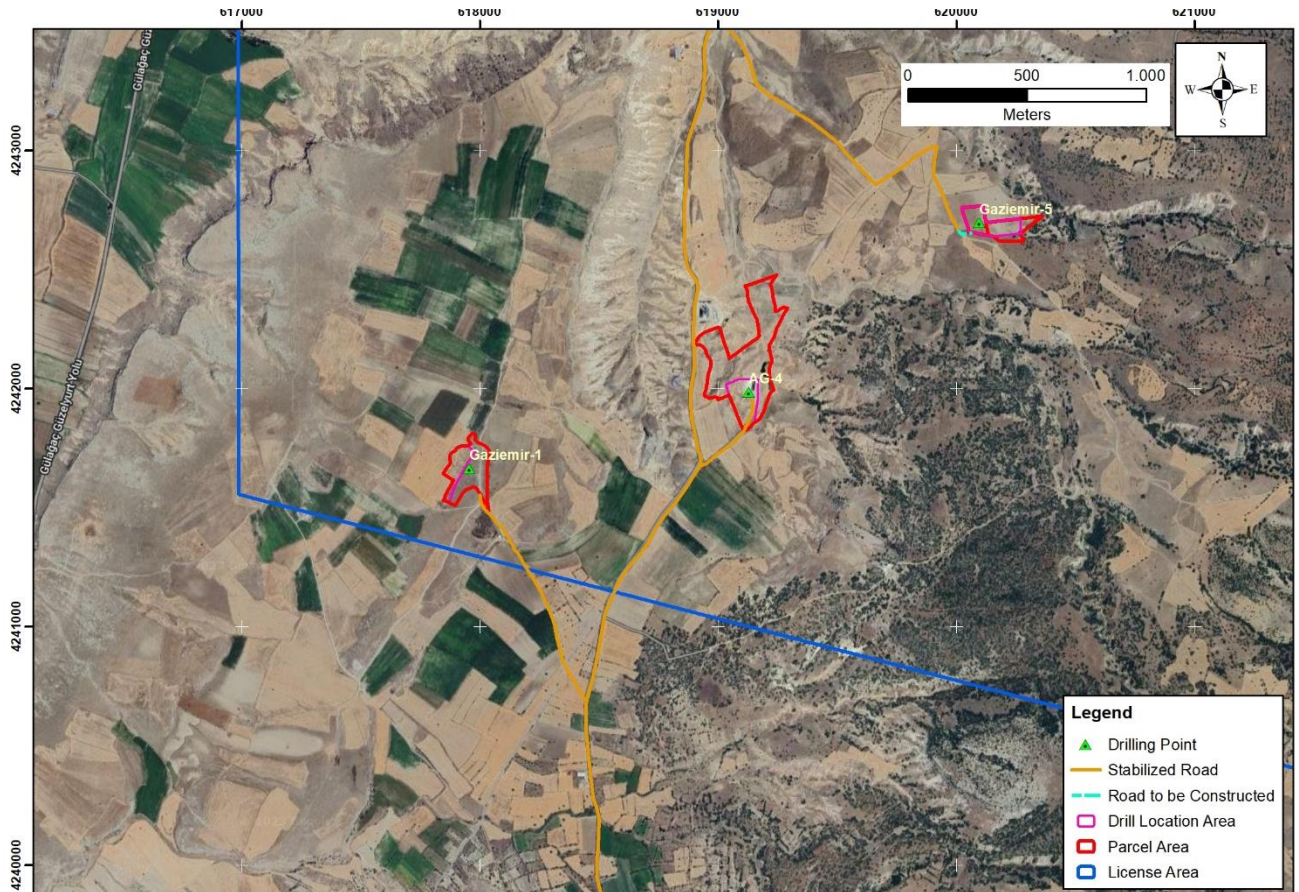


Figure 5.15. Figure showing vulnerable receivers along the access road to the drilling location

Safety and traffic warning signs will be placed at the project site. Compliance with speed limit rules will be ensured.

Vehicle drivers and personnel who will use construction equipment will be trained for safe driving.

Right of road, site speed limits, vehicle inspection requirements, working rules and procedures will be provided to the personnel within the framework of training and compliance will be ensured.

During transportation activities, existing roads will not be damaged; any situation such as smoke, unburned gas, dust that may endanger traffic safety will be prevented, vehicles will not be loaded more than the permitted values, bridges, warning signs, culverts, asphalt and stabilized paved roads will not be damaged. In case of any damage to these structures, the cost of damage will be covered by the contractor.

It will be checked that the vehicle drivers have the necessary documents (such as a driver's license) to drive the vehicle.

The driver and other passengers in the vehicle will be instructed to fasten their seat belts securely and will be ensured to comply with this rule.

It will be ensured that the driver of the vehicle is not fatigued and has not taken drugs, alcohol, etc.

Care will be taken to ensure that the maintenance and repairs of vehicles in traffic are carried out on time Care will be taken to ensure that the vehicles are inspected within that year (trucks, etc. are inspected once a year)

Extra care will be taken not to exceed the transportation limits, and care will be taken not to exceed the limits for the load on the axle weights of the vehicles.

It will be ensured that vehicles are not allowed to be equipped with light and sound equipment that will disturb the environment and distract attention.

All machinery and equipment will be maintained and repaired on time. Vehicles will pay extra attention when passing through densely populated settlements.

➤ **Specific Measures (in relation to the pandemic process)**

A COVID-19 Exposure Prevention, Preparedness and Response Plan will be developed to manage social interactions between the project team and communities around the project site throughout the drilling period.

COVID-19 medical waste will be treated as other infectious/viral medical waste, such as HIV, tuberculosis, measles, etc.

Pursuant to Circular 2020/12 of the Ministry of Environment and Urbanization on COVID-19 Measures in Management, waste of personal hygiene materials/equipment (such as disposable masks, gloves) will be collected, temporarily stored, transported and delivered to waste treatment facilities.

Workers staying on site should be required to minimize contact with people near the site and, in some cases, be prohibited from leaving the site for the duration of their contract to avoid contact with local communities.

Communications should be clear, organized, factual and designed to be easily understood by community members.

Existing means of communication should be used. Use the communication channels that are already available. Face-to-face interactions with members of the community or their representatives won't be feasible in most circumstances. Use of other media, such as radio, text messaging, posters, brochures, and electronic meetings, is advised.

To make sure that communication reaches various groups, the methods employed should consider how diverse community members can access them.

The local community should be made aware of the procedures in place on the ground to address COVID-19 related issues.

This should include all measures implemented to limit or prohibit communication between employees and the community.

The local community should be informed about the procedure for entering/exiting the site, the training provided to workers and the procedure to be followed by the project in case a worker falls ill.

If project representatives, contractors or workers interact with the community, they should practice social distancing and follow other COVID-19 guidelines issued by relevant authorities, both national and international (e.g. WHO).

Ensuring surveillance and active screening and treatment of workers and develop and design an appropriate field-based medical service.

All employees will be provided with pandemic protection trainings and training on corona virus.

Conducting vaccination programs for workers in local communities to improve health and prevent infection.

All employees will be diagnosed with coronavirus will be provided with the necessary medical permission to return to work.

Follow-up and monitoring research will be carried out in accordance with the corona virus control program.

In the event that there are personnel diagnosed with coronavirus among its employees, it will be ensured that coronavirus cases are reported to the relevant health units in the state.

5.11 Potential Impacts

Table 25. Table Showing Potential Impacts

Environmental and Social Impact	Project Phase	Duration of the Impact	Remaining Impact Level after Measures Taken*	Summary Description of Potential Impact
Domestic Solid Waste	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Visual and Environmental Pollution Improper collection and storage negatively affect soil quality. Improper collection and storage negatively impact the quality of groundwater and surface water. Improperly exposed waste can attract wild animals to the construction site. Improperly exposed waste leads to bacterial growth and negatively affecting human health.
Packaging Waste	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Visual and Environmental Pollution Improper collection and storage negatively affect soil quality. Improper collection and storage negatively impact the quality of groundwater and surface water.
Medical Waste	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	If not collected and stored properly, it leads to the deterioration of soil, surface, and groundwater quality. When left exposed, it causes bacterial proliferation in the surrounding environment, resulting in health issues
Hazardous Waste	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	If hazardous waste is not stored properly, it can contaminate soil, surface water and groundwater. In the long term, This situation can lead to adverse effects in the long term, such as poisoning and diseases in humans and animals.. If waste is released uncontrolled into the environment, it can have a negative impact on animals and plants through contact with the waste.
Waste Batteries and Accumulators	Drilling Operation/Well Testing/Rehabilitation	With the start of drilling activity, the impact may continue until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	If waste batteries are not stored and disposed of under appropriate conditions, the substances in the batteries may mix with water and soil. Water and soil quality deteriorates and creates environmental pollution.
End-of-Life Tires	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	In areas where tires are collected uncontrolled, severe fires can occur. There is the possibility of the spread of diseases that are highly threatening to society due to insects that find the opportunity to multiply freely in uncontrolled tire piles.
Other Non-Hazardous Wastes (Scrap Wastes, Glass Shards, Wood Pieces, Excavation and Construction Wastes, etc.)	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Chemical substances in scraps can be dissolved with rainwater etc. and mix with water and soil. Scrap waste, construction waste and excavation that may remain on the land after rehabilitation may corrode and affect soil and groundwater quality.

Environmental and Social Impact	Project Phase	Duration of the Impact	Remaining Impact Level after Measures Taken*	Summary Description of Potential Impact
				Although no excavation waste will be generated, concrete waste may be generated due to installation/construction.
Liquid Waste (Personnel)	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	When stored under inappropriate conditions, it mixes with surface and groundwater and the quality of the water deteriorates. In case of leakage into the soil, soil quality also deteriorates.
Liquid Waste (Process Originated)	Drilling Operation/Well Testing	With the start of drilling activity, the disposal of process-generated liquid wastes may continue until the end of the disposal period.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	When stored under inappropriate conditions, it mixes with surface and groundwater and the quality of the water deteriorates. It is possible for water to leak and affect living things (fish in the water, people watering, etc.) wherever it reaches. If drilling muds mix with surface and groundwater, negative impacts on soil and water quality will occur.
Waste Oils	Drilling Operation/Well Testing	With the start of drilling activity, well testing may continue until the end.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	If waste oils mix with water, water quality deteriorates. Waste oils spilled onto the soil can cause groundwater pollution. Waste oil in the soil destroys plants. Plants cannot grow in soil contaminated with waste oil. When waste oils are burned in inappropriate ways, heavy metals are released into the air, causing air pollution and disrupting the balance of oxygen.
Air Quality (Dust Emissions-Gas Emissions-Exhaust Emissions)	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Air quality is adversely affected due to dust emissions. Dust emission can accumulate in the organs of plant species such as stems, leaf bases, etc. and prevent both respiration and photosynthesis. In addition, dust emission can also accumulate in the vegetative organs of the plant, such as flowers of trees, and prevent the plant from reproducing and multiplying. Gases from geothermal activities are malodorous and toxic gases that create health and safety problems. Exhaust emissions have a negative impact on air quality and the living environment.
Noise Emission	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Noise is defined as "unwanted sound". Therefore, the sound level above the limit values has an impact on the health of the community living in the environment and the personnel working for the Project. It also affects the social lives of people living in and around the Project site.
Impacts on Soil and Land Use (Vegetation Loss and Soil Pollution Land Loss/Acquisition)	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	If land clearing is not carried out with a good management plan, soil erosion can occur. Reduction in soil quality occurs.

Environmental and Social Impact	Project Phase	Duration of the Impact	Remaining Impact Level after Measures Taken*	Summary Description of Potential Impact
				Uncontrolled land clearing activities can affect water resources in the long term. If there are people living in the immediate neighborhood, they may be negatively affected socially. If there is any leakage or spillage (such as chemical leakage directly into the soil, oil leakage, oil spillage) and no measures are taken, soil quality may be affected. Unauthorized and inappropriate discharge of geothermal fluid or drilling mud may affect soil quality. If the affected parcels and nearby parcels are used as agricultural land, there may be impacts on agricultural activities and livelihoods.
Effects on Soil Pollution	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	Any leakage, spillage (such as chemical leakage directly into the soil, oil leakage, oil spillage), unauthorized discharge causes soil pollution.
Biodiversity (Flora-Fauna)	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment./rehabilitation process.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	There are no critical habitats in the site and there will be no impact on critical habitats. Unless mitigation measures are taken in terms of emissions etc., negative impacts on the surrounding ecosystem may occur.
Potential Impacts from Hazardous and Chemical Substances	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	With the start of drilling activity, well testing may continue until the end	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	When exposure to these substances is not prevented or controlled by appropriate means, serious occupational accidents and diseases, even permanent damage and death, can occur. Hazardous and chemical substances are harmful to human health.
Potential Impacts on Surface Water and Groundwater	Site Preparation/Drilling Operation/Well Testing	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	In geothermal drilling, if the application is not properly conducted, there is a possibility of aquifer contamination. It causes a decrease in well productivity. With the extraction of geothermal fluid to the surface, underground aquifers may be depleted. Water quality may deteriorate if waste seeps into the soil or is released directly into the water.
Impacts from Well Blowouts and Pipeline Ruptures	Drilling Activity	Effective during the drilling activity.	If mitigation measures are taken, the level of impact will be "Lowly significant".	These accidents can lead to the release of liquids and gases containing chemicals and heavy metals (e.g. hydrogen sulfide) into the environment Pipeline punctures can also cause precipitation of minerals (silica and calcium carbonate) and release of geothermal fluid and steam containing heavy metals, acids and other contaminants into the surface environment.
Landscape and Image Impacts	Site Preparation/Drilling Operation/Well Testing	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Less Significant".	Activities related to geothermal drilling may cause visual pollution as they alter the natural environment.
Traffic and Transportation	Site Preparation/Drilling Operation/Well Testing	Impact may persist from the initiation of mobilization until site abandonment.	If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Increased traffic load has both environmental and social impacts (safety, etc.).

Environmental and Social Impact	Project Phase	Duration of the Impact	Remaining Impact Level after Measures Taken*	Summary Description of Potential Impact
Cultural Heritage and Archaeology	Land Preparation	There is no cultural heritage or archaeological sites in or near the study area. Therefore, there will be no impact in this regard.	In the event that any historical, cultural or archaeological assets are encountered during excavation works, the work on the Site will be stopped and the relevant Museum Directorates will be notified immediately. If Mitigation Measures are taken in accordance with National and International Legislation, the Impact Level will be "Insignificant".	Although there are no cultural heritage or archaeological sites within or near the study area, there may be unintentional disturbance/destruction of unknown vulnerable areas (e.g. during land clearing).
Community (Local People) Health and Safety	Site Preparation/Drilling Operation/Well Testing	Impact may persist from the initiation of mobilization until site abandonment.	Measures should be taken according to national and international regulations. The level of impact is "Highly Significant" in the case of a public health situation. The level of impact will be of "Low significance" if mitigation measures are taken.	Wastes generated by the Project activities and possible accidents during the Project activities adversely affect the safety and health of the people living there, if necessary precautions are not taken and proper disposal is not carried out.
Occupational Health and Safety	Land Preparation/Drilling Operation/Well Testing/Rehabilitation	Impact may persist from the initiation of mobilization until site abandonment.	Measures should be taken according to national and international regulations. When there is an incident in the field of Occupational Health and Safety, the level of impact is highly significant. If mitigation measures are taken, the level of impact will be of "low significance".	Wastes generated by the Project activities and possible accidents during the Project activities adversely affect the safety and health of the working personnel if necessary precautions are not taken and proper disposal is not carried out.
Sourcing Opportunities - Socio-Economic Benefit (Social Impact)	Site Preparation/Drilling Operation/Well Testing	It will start to provide benefits with the start of mobilization. It will be continuous after the operations are completed, in case of transition to operation.	The start of the project will have positive impacts for the people of the region.	Attention will be given to sourcing materials for the project and, if possible, obtaining services needed in the project from the local community. For example, in the case of outsourcing catering services, priority will be given to local companies.. Furthermore, local employment opportunities will be provided during the project duration.
Employment Opportunities - Socio-Economic Development (Social Impact)	Site Preparation/Drilling Operation/Well Testing	It will start to provide benefits with the start of mobilization. It will be continuous after the operations are completed, in case of transition to operation.	The start of the project will have positive impacts for the people of the region.	In the project, it is considered to employ local people during the geothermal resource exploration activity. It is feasible to provide 80% local employment for unskilled jobs, 50% for semi-skilled jobs and 20% for skilled jobs. It will have a positive impact on the Project. Local employment and procurement will be implemented by the Project Contractor under the control of the Beneficiary. Attention will be given to sourcing materials for the project and, if possible, obtaining services needed in the project from the local community. For example, in the case of outsourcing catering services, priority will be given to local companies.

*: Impact Level Importance Levels

Table 26. Table showing Impact Level Significance Levels

Highly Significant	Impacts are considered to be very significant and are likely to weigh heavily in resolution-making and will be directly related to sites or features of international, national or regional significance and, if the site or feature will be subject to major change, to those of local significance. It is a must that mitigation measures are taken to reduce significance to lower levels before proceeding with the project.
Moderately Significant	Impacts are probably not key factors in resolution-making. If the cumulative effects of such factors lead to an increase in their overall adverse impact on a particular source/recipient, it may influence resolution-making. If possible, the significance of the impact should be reduced to lower levels through mitigation measures; otherwise acceptance of the combined risks will be necessary for the Project to proceed.
Low degree of Significance	Impacts can be put forward as local factors, unlikely to be critical in the resolution-making process, but important in the development of the subsequent design of the Project. Ensuring compliance with standards and safety criteria is sufficient to move forward.
Can be ignored (Insignificant)	There is no impact or impacts are below the perception level and therefore acceptable through normal operational processes.

6.0 Impact Mitigation Plan

Table 27. Impact Mitigation Plan

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases						
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost	
PA1	E&S documentation	Unforeseen E&S impacts due to lack of documentation	The subject will be updated according to ESMP, SEP and RSM Unit and World Bank views and will be finalized and approved.	Beneficiary	From the project budget	
	Organizational structure	E&S management issues and associated impacts arising organizational structure inadequacies	A full time competent environmental and social expert and a competent occupational safety expert will be assigned by the Beneficiary to be present on site, ensuring implementation and monitoring environmental, social and OHS requirements. These experts will monitor contractor and subcontractor practices throughout the Project, supporting implementation of mitigation measures.	Beneficiary		
	Permits	Administrative penalties and E&S impacts resulting of incomplete permits	During the Project, E&S monitoring will be supported by inspections, controls and related corrective/preventive actions and will be tracked with a non-conformity tracking sheet.	Beneficiary		
	Trainings		E&S impacts due to insufficient information dissemination	The E&S specialist and the OHS specialist will check and approve the required E&S documentation (legal OHS documents, staff SSI records, staff OHS files, etc.) of both the Beneficiary and the contractors & subcontractors.		Beneficiary
				The Beneficiary shall submit both its own E&S documentation as well as that of contractors and subcontractors to the RSM Unit for approval. The Beneficiary is obliged to obtain approval from the RSM Unit before entering the site. With each contractor or subcontractor agreement, the required E&S documentation shall be submitted to the RSM Unit for approval before the contractor/subcontractor enters the site. Regardless of the beneficiary, contractor, subcontractor, for each new recruitment, the OHS file, employment documents, SSI records, OHS file and training records of the personnel will be submitted in the monthly E&S monitoring report.		Beneficiary
				In case groundwater wells need to be drilled for utilization (with the approval of RSM Unit), groundwater utilization permit will be obtained from DSI as appropriate for the intended use.		Beneficiary
				The RSM unit will be continuously informed about land acquisition, purchase, leasing and permitting processes and will be provided with relevant documentation. In case of land acquisition, livelihoods for the land owner or user will be assessed through the revision of this ESMP and the revised ESMP will be submitted to the RSM unit for approval. No work or processes will commence without obtaining approval..		Beneficiary
				The E&S expert and H&S expert of the Beneficiary will provide training on OHS and E&S issues of the project for each new hired personnel (regardless of being a beneficiary, contractor, subcontractor) on the first day of recruitment. In addition, contractor/subcontractors will provide OHS and E&S trainings to their own staff and keep records. The Beneficiary will ensure that the contractor/subcontractors provide trainings and keep records.		Beneficiary
Visitors entering the site will be provided with visitor training by the Beneficiary's E&S specialist and OHS specialist and their records will be kept.	Beneficiary					

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
PA2	Awareness of the Contractor on the Environmental and Social Management Required under the Project	The Contractor's lack of competence in environmental and social issues	<p>These ESMPs, SEPs and sub-management plans are included in the contractor's contract documents and the relevant responsibilities and commitment to comply with the E&S documents will be included in their contracts.</p> <p>The sub-management plans listed below will be prepared prior to mobilization. These plans are subject to the approval of the RSM Unit prior to the Beneficiary enters the site. All of these plans will be prepared in line with the ESMP and will include the working principles, procedures, management and monitoring activities, roles and responsibilities of the contractors on environmental and social issues.</p> <ul style="list-style-type: none"> - OHS Management Plan including Emergency Action Plan - Traffic Management Plan - Community Health and Safety Management Plan - Waste Management Plan - Fluid Management Plan - Hazardous Material Management Plan - Incidental Find Procedure <p>In the event that the Contractor's activities do not comply with the ESMP, this ESMP shall be updated and submitted to the RSM Unit for approval.</p>	Beneficiary	No Cost Within Project Cost
PA3	Proactive and effective ESMP and OHS management	Failure to manage E&S issues	Appoint a competent ESMP Officer and an OHS Officer/Team to fulfill the requirements of this ESMP and OHS standards.	Beneficiary and Contractor	Within the project cost
PA4	Proactive and effective ESMP and OHS management	Failure to manage E&S issues	Appoint a full-time, on-site, competent ESMP Officer and an OHS Officer/Team to closely monitor the implementation of this ESMP by project contractors	Beneficiary	Within the project cost
PA5	Permission	Legal non-compliance	Obtaining all legal permits / approvals / certifications required for land use before the project (Land Preparation Activities) commences	Beneficiary	Within Project Cost
PA6 LP1 DA1 WT1 R1	Impact on land acquisition and livelihoods	Involuntary land acquisition and involuntary impact on livelihoods	Throughout the Project, in the event of any unforeseen harm or damage to any parcel/building/crop adjacent to the drilling site or access roads to the drilling site, it will be compensated in accordance with World Bank operational policies and the requirements given in the Beneficiary Handbook.	Beneficiary	Within the project cost
LP2	Topsoil	Failure in crop soil management	<ul style="list-style-type: none"> ▪ Before the start of the work, the topsoil from the drilling locations Gaziemir-1, AG-4 and Gaziemir-5, to a depth of 10-15 cm, will be removed and stockpiled in the designated area for later rehabilitation works. In the AG-4 drilling area, the topsoil is currently stripped in an area of 5000 m², with an additional 1000 m² to be stripped. Although the total amount of stripped soil in the treated area is 290 m³, 95 m³ of it was left at the AG-4 location and the remaining 195 m³ is stored in the area rented by Güzelyurt Geothermal. The quantity is relatively low due to uneven stripping, ranging from 5 cm to 7 cm in some places. When the process is over and the lands need to be restored to their original state, the non-native structures/fields/materials in the location will be removed, and topsoil will be laid on top of 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>the subsoil.</p> <ul style="list-style-type: none"> ▪ Topsoil on the 65 m long connection road route planned for access to Gaziemir-5 drilling site will be stripped and stored along the roadside. ▪ Topsoil will be stored at a maximum height of 2 m and the slope will not be exceed 30 degrees. The storage area will be lightly compacted with a backhoe. The storage area will not have more than 5% slope. ▪ A 10 cm wide and deep earthen channel will be dug around the topsoil storage area to collect rainwater during rainfall and retain it when runoff occurs from the slope. ▪ Measures will be taken to prevent the mixing of subsoil and waste material with the topsoil. 		
LP3	Management of non-hazardous waste - Excavated material	Inadequate management/disposal of excavated material	<ul style="list-style-type: none"> ▪ All of the material excavated from the ponds and the stripped topsoil will be used for site leveling and rehabilitation activities. The aforementioned soil material was used in the leveled area of the completed AG-4 drilling site. ▪ The part of the soil taken for the construction of the geothermal fluid pool, which cannot be used for site leveling, will be piled, forming a barrier around the pool perimeter in a way that it will not cause a collapse. This portion of soil will later be reused in the pool closure process. This practice has been implemented at the drilling location AG-4. ▪ Excavation material will not be mixed with topsoil. 	Beneficiary and Contractor	Within Project Cost
LP4	Road reinforcement	Road construction	<ul style="list-style-type: none"> ▪ In the three drilling locations to be constructed within the scope of RSM, existing roads will be used for AG-4 and Gaziemir-1 drilling and only a 65 m long connection road will be constructed for access to Gaziemir-5 drilling site. If stabilized roads are used, they will be reinforced. ▪ No damage will be inflicted on adjacent parcels during reinforcement and road construction activities. ▪ Consultations will be held with neighboring parcel owners. ▪ In case of harm, this will be recorded through the complaint mechanism and the harm will be compensated in line with the World Bank operational policies and the requirements given in the Beneficiary Handbook. Compensation will be recorded through the complaint mechanism processes. 	Beneficiary and Contractor	Within Project Cost
LP5	Erosion	Surface runoff	<ul style="list-style-type: none"> ▪ Care will be taken to avoid steep sections that may cause erosion and fall. If necessary, a terraced system will be implemented to control sliding. ▪ A diversion/drainage system will be installed to ensure soil stability and prevent surface runoff. Currently, an area of 5,000 m² has been arranged in the AG-4 drilling area and another 1,000 m² will be arranged. Additional work will be carried out concerning surface runoff after this process. ▪ The design of slopes and retaining structures will done to minimize risk and provide appropriate drainage, soil stability and vegetation cover. 	Beneficiary and Contractor	Within Project Cost
LP6 DA2 WT2 R2	Reporting	Inability to monitor and report on E&S and OHS issues	<ul style="list-style-type: none"> ▪ Monthly monitoring reports on E&S and OHS issues will be prepared in the required format and submitted to the RSM Unit on time. 	Beneficiary	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
LP7 DA3 WT3 R3	Reporting for urgent information	Inability to monitor and report urgent issues	<ul style="list-style-type: none"> ▪ Any significant environmental, social, health and safety incident (e.g. fatalities, lost time incidents, environmental spills, etc.) will be reported to the RSM Unit within 1 working day. The Beneficiary shall provide the RSM Unit an Accident/Incident Investigation Report within 15 working days, including a root cause analysis, identified preventive and corrective measures, their deadlines and status at the time of submission of the report. ▪ The RSM Unit will immediately forward the accident/incident notification to the World Bank, review and evaluate the Accident/Incident Investigation Report to be submitted by the Beneficiary within 15 working days, including the root cause analysis, identified corrective/preventive measures and their realization status, make update/revision requests if necessary, and forward it to the World Bank within 30 working days, as specified in the Beneficiary Handbook. 	Beneficiary and Contractor RSM Unit	Within Project Cost
LP8 DA4 WT4 R4	Purchasing, procurement and contractor selection	Local procurement Impacts due to performances inconsistent with project requirements	<ul style="list-style-type: none"> ▪ Contributing to the local economy by using local materials. ▪ Emphasis on sourcing various goods and services locally. ▪ Assessment of environmental and OHS performance in the selection of contractors and suppliers (documents provided as evidence that the environmental and OHS competencies of contractors and economic and efficiency considerations were taken into account during the selection of contractors will be kept in accordance with Article 11 and Annex 5 of the Contract). ▪ Monitoring the environmental and OHS performance of contractors and suppliers, replacing low performers with better performers 	Beneficiary and Contractor	Within Project Cost
LP9 DA5 WT5 R5	Human resources and workforce management	Inadequate human resources and labor management	<ul style="list-style-type: none"> ▪ Prioritizing local employment. ▪ Contracts containing employment terms and rights according to national regulations made with personnel at the time of hiring. ▪ Maintaining personnel data files including contracts, training records, signed codes of conduct, next of kin information and medical reports. ▪ Maintaining database records for employees, workers and subcontractors such as contracts, ID numbers, SSI numbers, age, gender, medical reports. ▪ Prompt and complete payment of wages based on contract. 	Beneficiary and Contractor	Within Project Cost
LP10 DA6 WT6 R6	OHS management and emergencies	Non-compliances with OHS and accidents/incidents Emergencies Inadequately Managed Resulting in Events and Hazards	<ul style="list-style-type: none"> ▪ All activities will be carried out in compliance with the OHS Law, related legislation, World Bank policies and the World Bank Group's EHS Guidelines. ▪ The Beneficiary and the drilling contractor will each appoint a competent, certified, and experienced full-time occupational safety specialist. ▪ Emergency teams will be appointed separately by the Beneficiary and the drilling contractor, trained, and team lists will be posted on information boards.. ▪ OHS Plan prepared according to national legislation and WB standards will be implemented. ▪ Within the scope of Occupational Health and Safety Management, employees will be provided with all trainings required by the relevant legal legislation, ▪ The Beneficiary will provide orientation training on OHS and E&S to all project staff on the day of their appointment. The contractor will also provide and record OHS and E&S trainings to its own staff. The Beneficiary will ensure that the contractor provides OHS and E&S trainings and records are kept. 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ OHS trainings (legal trainings, job-specific trainings, tool box, pre-job trainings, employee representative trainings, risk assessment team trainings, emergency response team trainings, etc.) will be carried out and recorded with a project tracking chart. ▪ Recruitment and SSI records, OHS training documents, legal plans, assignment letters, assigned personnel trainings, worker representative election records, worker representative training records, OHS committee meeting minutes, controls, inspections, observations, occupational safety specialist contract, workplace physician contract, their work schedules, determination-suggestion book, recruitment inspection records, drill reports, periodic control records for vehicles and all other OHS records will be kept on site. ▪ All accidents/incidents/near misses will be recorded in the project tracking sheets with the associated corrective/preventive action, deadlines and responsible person. ▪ An investigation report will be prepared for all accidents/incidents, including root cause analysis and identified corrective and preventive actions. ▪ Appropriate emergency response equipment (fire extinguishers, etc.) will be available at the drilling location and on all vehicles. These will be periodically checked. ▪ Each staff member will be trained in the use of emergency response equipment. ▪ A complaint mechanism will be established for staff to express their opinions, suggestions and complaints. ▪ First aid kits, spill response equipment, fire response equipment will be available at multiple points on the project site. These will be checked periodically. ▪ Appropriate signage, labeling and warning signs will be placed on site. ▪ Periodic and continuous internal audits will be carried out in the field and these will be recorded with checklists and audit forms. ▪ Identified nonconformities and issues open for improvement will be recorded in the Nonconformity Tracking Record List, including corrective and preventive actions. ▪ Compliance with applicable national OHS legislation will be ensured through regularly completed checklists, audit forms and follow-up records. ▪ Emergency Preparedness and Response Plan will be prepared and implemented to cover (well blowouts, H₂ S related measures and community health and safety measures). ▪ An emergency response team will be established. ▪ Training will be provided to the emergency response team. ▪ Regular drills will be conducted. ▪ Each employee will be provided with an Emergency Information Form containing the contact numbers of the contact person to be contacted in case of an emergency, ambulance number. ▪ Emergency Information Sheets will be placed in a location visible to everyone at the drilling location. ▪ An emergency assembly point will be designated at the drilling location. 		
LP11 DA7 WT7	OHS specific topics	OHS non-compliances and accidents/incidents	<ul style="list-style-type: none"> ▪ Surrounding the drilling location with wire fencing and placing warning signs ▪ Installation of safety fences/barriers around the pools at the location ▪ Placing warning lighting around the drilling location as a preventive measure 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
R7			<ul style="list-style-type: none"> ▪ Conducting occupational safety meetings with workers at regular intervals ▪ Providing at least one set of fire extinguishing equipment in each working area ▪ Provide training workers on fire-fighting measures ▪ Establishment of a fire-fighting team consisting of workers for each work zone ▪ Legal periodic inspection of work equipment on site by a competent expert ▪ Daily checks of work equipment by its operators ▪ Maintain first aid boxes for each work team for first aid intervention ▪ Providing certified first aid training to workers ▪ Establishment of a first aid team consisting of workers for each work zone ▪ Providing workers with Personal Protective Equipment (PPE) specific to their tasks ▪ Preparation and implementation of COVID-19 prevention plans/procedures including the following measures in work areas such as accommodation areas, food areas, construction areas, office areas, etc. <ul style="list-style-type: none"> • A pandemic protocol will be developed and implemented throughout the project lifecycle. • All staff and workers will be provided with disposable masks and gloves. • Workers and visitors will be ensured to wear masks and gloves. • Social distance between people will be maintained wherever possible. • Regular pandemic-related trainings will be provided to employees. • Banners and posters related to the pandemic will be hung at critical points within the facility. • If a person develops a fever, cough or other COVID-19 symptom, that person will immediately stop work, stay at home (except to seek medical care or testing if recommended) and withdraw from others. ▪ Shelves and cabinets will be secured against earthquake hazards. Heavy materials will be placed at the bottom and light materials at the top. Emergency drills will be held at certain periods ▪ Providing initial occupational safety training and information about the site to everyone entering the site. The dangers around will be explained and information about the operation and OHS procedure will be given. OHS training, health examinations, orientation and personal protectors will be delivered and embedded to the people who will work and then work will be started. ▪ Parachute type seat belts shall be used against the danger of falling during all work at height. The safety belt will be fixed to appropriate anchorage points. Employees will be trained to work at height. Hand tools that employees will use while working at height will be fixed on the employee's tool belt. Seat belts will be checked regularly and records will be kept. Employees will be ensured to check their belts before each use. ▪ Vertical stairs will be equipped with handrails and technical inspections will be carried out. There will be a vertical lifeline and rewound vertical arrestor at the exits to the tower balcony and technical inspections will be carried out. 		

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ H₂S monitors and associated audible and image alarms and warning system will be used against hydrogen sulphide coming from the well. At least two wind direction indicators will be mounted so that they are visible from the drilling rig floor, screen and mud tanks. Artificial respirators will be available at all times in case of a possible H₂ S situation. ▪ Refueling of the drilling machine against the risk of fire will not be carried out without stopping the machine. 		
LP12 DA8 WT8 R8	Work and working conditions	Inadequate working and accommodation conditions, unhappy workers and insufficient feedback from workers	<ul style="list-style-type: none"> ▪ Compliance with the fundamental principles and standards detailed in national labor, social security and occupational health and safety laws and ILO Conventions 29 and 105 (forced labor), 87 (freedom of association), 98 (right to collective bargaining), 100 (collective bargaining), and 111 (discrimination), 138 (minimum age), 182 (worst forms of child labor) is mandatory. ▪ The following conditions will be maintained during the project works <ul style="list-style-type: none"> • Ensure fair treatment, non-discrimination and equal opportunities for workers; • Promote a good labor-management relationship; • Prevent child and forced labor. ▪ Implementation of the Complaint Mechanism Procedure for workers ▪ Keeping a record of all verbal and written complaints ▪ Responding to complaints in a timely manner and implementing corrective actions where necessary ▪ Providing project orientation training on the complaint mechanism to workers upon recruitment and before starting work ▪ Announcement of the Complaint Mechanism for workers ▪ Providing clear and detailed information about the termination process and the rights of employees in accordance with labor law after construction, site preparation, drilling, and testing activities and rehabilitation stage. ▪ All workers, subcontractors and employees of subcontractors will start work with a signed contract containing a mutually agreed code of conduct. A code of conduct will be prepared and signed by all employees. ▪ Fair treatment, non-discrimination and equal opportunities for workers will be promoted. ▪ Workers will be provided with rest periods and paid overtime. ▪ Contractors and workers will be paid on time. ▪ Workers will be informed of the terms and conditions of employment before the contract is signed. ▪ Design of accommodation at the drilling location in accordance with the "IFC/EBRD Guidance Note on Employee Accommodation Processes and Standards" ▪ Compliance with the guidance note, including but not limited to <ul style="list-style-type: none"> • Accommodation facilities will be provided with adequate heating, cooling and ventilation systems; • The premises will be provided with both natural and artificial lighting (e.g. window surfaces of 5-10% of the floor surface) 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> Workers will be guaranteed access to sufficient quantities of free drinking water for drinking and personal hygiene use. Drinking water will meet national drinking water standards and its quality will be regularly monitored. Rooms/ dormitories are kept in good condition and cleaned regularly. Adequate floor space with a minimum ceiling height of 2.1 m will be provided to ensure the comfort of workers in the rooms. Each employee is provided with a comfortable mattress, pillow, blanket and clean bedding, which is washed frequently. Sanitary and toilet facilities shall be constructed of easily cleaned and frequently cleaned materials and kept in working order. Kitchens will be designed, constructed and equipped to ensure adequate personal hygiene and allow food hygiene practices, including protection against contamination. Food products will be hygienically dated and stored according to refrigeration and dry cellar needs. The safety of workers and their property (personal belongings) on site will be guaranteed. 		
LP13 DA9 WT9 R9	Contractors and subcontractors	Failed contractor and subcontractor ESMP and OHS performance	<ul style="list-style-type: none"> Preparation of the list of contractors and subcontractors, if any, by the beneficiary Ensuring that contractors and subcontractors work in accordance with the requirements of this ESMP, OHS Plan and legislation and implementing the Workers' Complaint Mechanism Continuous control, supervision, informing and, if necessary, warning of contractors and subcontractors 	Beneficiary	Within the project cost
LP14 DA10 WT10 R10	Material procurement	Inadequate management of material procurement	<ul style="list-style-type: none"> Procurement of materials from suppliers located as close as possible Procurement of materials from authorized/licensed/approved suppliers in accordance with national regulations Prefer green and low-carbon certified materials as much as possible 	Beneficiary and Contractor	Within the project cost
LP15 DA11 WT11 R11	Resource utilization	Inefficient use of resources (energy, water, etc.) in activities to be carried out during land preparation, drilling and testing phase and rehabilitation phase	<ul style="list-style-type: none"> Carrying out periodic inspection of work equipment Avoid unnecessary idling of work equipment Keeping lighting at an optimum level and avoiding unnecessary lighting Recording the use of natural resources (energy, water, fuel, etc.) during the project and targeting a reduction in the amount of use each month in accordance with resource use efficiency targets Keeping a Resource Utilization Tracking Schedule 	Beneficiary and Contractor	Within the project cost
LP16 DA12 WT12 R12	Water use for human consumption	Resource consumption	<ul style="list-style-type: none"> Water will be supplied by tankers to the domestic water tank to be placed at the location and will be put into use. In accordance with the Regulation on Water Intended for Human Consumption, water for domestic use will be analyzed. Ensure that bottled and authorized drinking water is used by staff. Resource Utilization Tracking Schedule will be kept. 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
LP17 DA13 WT13 R13	Use of water for water spraying against dust	Resource consumption	<ul style="list-style-type: none"> ▪ There will be the use of an intermediary against dusting. ▪ Resource Utilization Tracking Schedule will be kept. 	Beneficiary and Contractor	Within the project cost
LP18 DA14 WT14 R14	Air pollution	Environmental and health impacts due to air emissions (dust - exhaust - gas emissions)	<ul style="list-style-type: none"> ▪ Preventing scattering of materials by being careful during loading and unloading on trucks ▪ Continuous covering of loaded trailers with tarpaulin etc. ▪ Implementation of speed limits for construction equipment and vehicles ▪ Providing a tracking system on the vehicles used, monitoring of the vehicles by the relevant contractors, warning the drivers in case of exceeding the speed limit, providing training to the vehicle drivers before the start of the activities ▪ Cleaning of truck/vehicle tires on site to prevent mud on roads ▪ Systematic water spraying on stabilized roads used for transportation ▪ Controlled execution of all works during land preparation and rehabilitation ▪ Water spraying with a water truck during land preparation, rehabilitation, and road construction to prevent dust emissions ▪ Avoid overloading vehicles ▪ Careful handling of displaced topsoil during various activities to avoid scattering ▪ For drilling locations, the closest receiver to the location (see Table 4. Table 4) background air quality measurement will be carried out with the approval of the RSM Unit prior to the start of field works. ▪ 24-hour PM10 measurements at complaint points in case of dust-related complaints, with reassessment of dust emission measures based on measurement results. ▪ Evaluating the received complaint in accordance with the Complaint Mechanism; ensuring that the complaint is recorded, evaluated and responded to in a timely and appropriate manner ▪ Carrying out periodic inspection of exhaust emissions of work equipment, ensuring that their records are kept on site ▪ Complete maintenance and repair of work machines and vehicles, ▪ Using vehicles with exhaust emission measurements and emission stamps ▪ Avoiding unnecessary idling of work equipment, preventing unnecessary use ▪ Providing training to the workforce on air quality impacts and related measures ▪ Installation of pressure sensors to prevent sudden fluid and gas release. ▪ The system will be equipped with pressure sensors to prevent sudden fluid and gas output. A fixed H₂ S detector with 5 sensors that can work independently of each other and can alarm when 5 ppm H₂ S is measured at the drilling site, and a double alarm level fixed H S detector that can alarm separately at 10-50 ppm will be ready in working condition and continuous monitoring will be carried out during the drilling and testing phase. Also <ul style="list-style-type: none"> • An audible and illuminated alarm device connected to this detector, • At least one hand-held electronic H₂ S detector, • At least as many 200 bar mini-tube escape masks and 300 bar tube working masks, at 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>least one artificial respiration device,</p> <ul style="list-style-type: none"> • There will be one spare full fresh air cylinder for escape masks and two for work masks. <ul style="list-style-type: none"> ▪ The system and detectors will be maintained and calibrated periodically. The system will be kept under the continuous monitoring and supervision of an occupational safety expert and a competent engineer. ▪ Workers will be trained on potential gas emissions, monitoring systems and emergency procedures related to gas emissions. ▪ The Emergency Action Plan will include mitigation measures and emergency actions related to uncontrolled gas emissions. 		
DA15 WT15	Odor	H ₂ S Odor impact from emissions	<ul style="list-style-type: none"> ▪ A fixed H₂ S detector with 5 sensors that can work independently of each other, which can alarm when 5 ppm H₂ S is measured at the drilling site, and a double alarm level fixed H₂ S detector that can alarm separately at 10-50 ppm will be ready in working condition and continuous monitoring will be carried out during the drilling and testing phase. ▪ The system and detectors will be maintained and calibrated periodically. The system will be kept under the continuous monitoring and supervision of an occupational safety expert and a competent engineer. ▪ In case of a complaint, H₂ S emissions will be measured. RSM unit will be informed about the complaint and the parameters and monitoring points to be measured for monitoring before the measurement work will be presented to the RSM unit and the approval of the RSM unit will be obtained. 	Beneficiary and Contractor	Within the project cost
LP19 DA16 WT16 R15	Domestic waste water	Contamination due to domestic wastewater discharge	<ul style="list-style-type: none"> ▪ Establishment of temporary isolated sealed septic pits at the drilling location and transfer of the collected wastewater to the wastewater discharge point of the Municipality with licensed vacuum trucks ▪ Written approval from the Municipality for the use of municipality-owned vacuum trucks to transfer collected wastewater. ▪ Throughout the project phases, records of the withdrawal of domestic wastewater by vacuum trucks are recorded with the Waste Tracking Schedule ▪ Invoices/receipts for each transportation/disposal will be collected and archived. 	Beneficiary and Contractor	Within the project cost
DA17 WT17	Drilling mud	Impacts of drilling mud on soil, water, natural habitat, community and human health	<ul style="list-style-type: none"> ▪ Preparation of impermeable mud circulation tanks for drilling mud. ▪ Due to both drilling costs and environmental problems, it was aimed to treat drilling mud wastes and interruptions in-situ and to create the least amount of waste and minimum water use. For this purpose, dewatered and stabilized drilling solid wastes accumulated in half-moon tanks without the use of mud-pit (drilling mud waste pool) and after determining the hazardousness, they will be removed from the location in accordance with the WFM and sent to disposal. ▪ Transfer of dewatered and stabilized drilling solids to licensed waste transport trucks for disposal as often as necessary without causing overflow and will be sent to disposal immediately. ▪ Drilling mud will not be discharged to the receiving environment under any circumstances. ▪ Dewatered and stabilized drilling solid wastes will be analyzed to determine whether they are 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>hazardous wastes. The RSM unit will be informed about the analysis plans before the analysis is performed and the approval of the RSM unit will be obtained.</p> <ul style="list-style-type: none"> ▪ Mud analysis will be carried out by accredited laboratories authorized by the Ministry of Environment, Urbanization and Climate Change. ▪ After the mud analyses, the Beneficiary will conduct research on potential disposal methods and submit to the RSM Unit, including the disposal methods, their compliance with the legislation and project requirements, and 5 bidding documents received for disposal (including use as alternative feedstock in compliance with the Communiqué on Refuse Derived Fuel, Additional Fuel and Alternative Feedstock). The RSM Unit and the Beneficiary will decide together on the method of disposal. The aim is to implement the most economical and effective disposal method in line with the Beneficiary Agreement. ▪ As a result of the analysis, drilling mud will be sent to disposal/regular storage facilities holding a Temporary Activity Certificate or Environmental License in accordance with its hazardous nature. Priority will be given to the use of mud as an alternative raw material in accordance with the Communiqué on Waste Derived Fuel, Additional Fuel and Alternative Raw Materials. Disposal records will be recorded with the Waste Tracking Schedule. Invoices/receipts for each transportation/disposal will be collected and archived. ▪ After the closed protection pipes are lowered to the determined depth, the back of the pipe will be cemented from the depth where the pipe is lowered to the surface. Thus, the well will be isolated from the hydrogeological environment. ▪ The shallow groundwater zone of the drilling will be closed against groundwater pollution, and if groundwater is encountered in the drilling process, the groundwater intrusion zone will be closed and the deterioration of groundwater quality with geothermal fluid will be prevented. ▪ Protection pipes (casing) and cementing will be carried out by selecting the best practices. ▪ Protection pipes shall be impermeable. ▪ Appropriate well piping will be realized and protection pipes will be selected in accordance with the groundwater aquifer sections. ▪ The groundwater aquifer will be monitored throughout drilling and logged when reached. All work along the groundwater aquifer will be carried out with the utmost care. The bottom of the groundwater aquifer will also be logged as appropriate. The RSM unit will be continuously informed throughout the GW aquifer as soon as the GW aquifer is reached. ▪ In case of leakage into any formation, the RSM unit will be immediately informed and impact assessment studies will be carried out as appropriate. 		
WT18	Test waters and geothermal fluid	Impacts of test water and geothermal fluid on soil, water, natural habitat, community and human health	<ul style="list-style-type: none"> ▪ Impermeable geothermal fluid pools will be constructed and the test water and fluid during testing will be collected in this pool. The existing fluid pool at AG-4 location will be supplemented with impermeable storage tanks in the field to address any volume deficiencies during testing, ensuring fluid preservation. ▪ A diversion channel will be constructed around the pool to prevent surface water from entering the pool. The aforementioned structure is available at the AG-4 drilling location and will be expanded if deemed necessary. ▪ The top of the pool will be open to allow evaporation. 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ If the pool fills up during the test, the flow will be stopped by means of wellhead valves. Liquid discharge will not be permitted. ▪ Test water and geothermal fluid will not be discharged to the receiving environment under any circumstances. ▪ During the test operations, the test services contractor will be provided with the depth information of the groundwater aquifer and will be required to work with utmost care along the aquifer. After the closed protection pipes are lowered to the determined depth, the back of the pipe will be cemented from the depth where the pipe is lowered to the surface. Thus, the well will be isolated from the hydrogeological environment. ▪ If the geothermal source is reached, the wellhead will be kept under control with a valve until the necessary permits and approvals are obtained for the operation phase. In order to ensure safety, the well will be surrounded with suitable building material, pressure will be measured daily from the manometer and the pressure will be kept at a safe level. ▪ In case the well data yield negative results, the well head will be plugged and up to the reservoir, the well bottom will be cemented with chemical/sulfate-resistant cement to eliminate the possibility of leakage. 		
LP20 DA18 WT19 R16	Management of non-hazardous waste - household and recyclable waste (including packaging waste - alkaline batteries - end-of-life tires - scrap waste)	Improper management/disposal of waste (non-hazardous waste) and environmental pollution	<ul style="list-style-type: none"> ▪ Before the start of the activity, the relevant correspondence between the Beneficiary and the relevant municipality for the collection of domestic solid wastes (recyclable packaging wastes separately) by the Municipality for a fee, which will be generated during the project activities ▪ Disposal of household waste through the municipal household waste collection system ▪ Disposal of recyclable waste through the municipal recyclable waste collection system ▪ Separate waste containers will be provided for household and recyclable wastes, each clearly labeled for the type of waste they contain ▪ Personnel will be trained on the prohibition of dumping household solid wastes generated during the activity into groundwater, surface waters, lakes, rivers, streets, roads, open areas, etc. ▪ Training workers on the management of non-hazardous waste and the use of separate waste containers ▪ Collecting the packaging wastes separately according to their types in larger containers to be placed in the temporary waste storage area in case the containers are full, and ensuring that these recyclable wastes are disposed of by giving them to companies that have obtained environmental licenses or to the packaging waste collection system of the municipality ▪ The accumulation of non-personnel-induced and large-volume packages (which cannot fit in waste containers) in a container in a reserved area in the temporary waste storage area to be created ▪ Keeping the delivery record of household waste and recyclable waste with the Waste Tracking Schedule and receiving delivery receipts for recyclable materials from the municipality's recyclable waste collection truck ▪ Priority should be given to "waste prevention" and "reuse" in the activity, the use of rechargeable batteries should be prioritized in the use of machines such as mobile radios, flashlights, portable radios, etc., the use of rechargeable batteries 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ Within the scope of the activity in question, if waste batteries are generated, they should be collected separately from other wastes in the waste battery collection box in the administrative offices in the project area, delivered to the collection points to be established by the enterprises that distribute and sell battery products or by the municipalities, and the disposal of these batteries to the soil and sea should be strictly prevented. ▪ Vehicle maintenance and tire changes will be carried out by relevant services. However, if, despite this, tires reaching the end of their life are generated within the activity area, they will initially be stored temporarily in the temporary waste storage area and later delivered to licensed companies.. ▪ Providing temporary storage of scrap wastes (scrap metals, broken glass, pieces of wood, etc.) covered on a solid, impermeable, secure ground and ensuring their disposal by giving them to companies that have obtained environmental licenses ▪ Recording all wastes with a waste registration chart ▪ Collecting and archiving invoices/receipts for each transportation/disposal 		
LP21 DA19 WT20 R17	Management of hazardous waste, medical waste and waste oil (according to Waste Management Regulation)	Inappropriate/inadequate management/disposal of waste (hazardous waste) and environmental pollution	<ul style="list-style-type: none"> ▪ Establishment of a temporary hazardous waste temporary storage area with adequate ventilation, safe from human access, closed, sealed, surrounded by a channel for leakage and where the channel ends with a blind leakage collection pool ▪ Keeping spill kits ready in the hazardous waste temporary storage area, intervening in case of leakage ▪ Compulsory Financial Liability Insurance for Hazardous Waste / Hazardous Substances ▪ Ensuring that hazardous wastes are disposed of by licensed carriers and licensed companies according to their types and that disposal operations are carried out through MOTAT, all waste records are recorded in the waste tracking chart and followed up ▪ Collecting and archiving invoices/receipts for each transportation/disposal ▪ Collecting hazardous wastes that are likely to cause leakage (contaminated packaging, covers, cleaning cloths, absorbent pads, etc.) in sealed storage containers and keeping such wastes in a secondary container to prevent leakage from spreading ▪ Providing a separate, leak-proof container for each type of hazardous waste (barrel for waste oils) and labeling it in accordance with the Waste Management Regulation ▪ Keeping hazardous wastes out of the hazardous waste temporary storage area for a maximum of 180 days ▪ Collecting Waste Oils separately at the source, in barrels labeled "waste oil" and on sealed ground (hazardous waste storage area). (As given in the PTD, waste oils in the activity area will be stored in sealed containers (ground sealed, coated with epoxy paint, geo membrane, etc. to ensure impermeability against spills. (Tanks/containers coated with epoxy paint, geo-membrane, etc. to ensure impermeability against spills, on a reinforced concrete floor with a thickness of at least 25 cm, red in color and with the phrase waste oil on it, with the necessary device for cleaning solid or mud-like sediments that may be collected at the bottom). Waste storage area will be designed accordingly). Disposal of waste oil in licensed recycling facilities in accordance with the classification and MOTAT registration 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ Collection of medical waste in red bags and red containers labeled as medical waste ▪ Collection of sharps in sharps medical waste bins ▪ Ensuring the disposal of medical waste in accordance with the legislation and keeping records ▪ Training workers on hazardous waste management and the use of separate waste containers ▪ Locking the storage areas, appointing a competent worker specially trained in hazardous wastes as the area responsible, not allowing entry and exit to the area except for personnel ▪ Prevention of mixing hazardous wastes ▪ Prevention of mixing hazardous wastes with non-hazardous wastes ▪ Treating contaminated non-hazardous waste as hazardous waste and disposing of it appropriately ▪ Collection of all hazardous waste from work areas at the end of the working day and transportation to hazardous waste storage areas ▪ Recording all hazardous wastes received in the hazardous waste collection area in the hazardous waste record book ▪ Placement of warning signs, labeling, fire extinguishers of appropriate size and type ▪ In the event that vegetable waste oil is generated within the scope of the Project, vegetable waste oil will be temporarily stored in drums / barrels / tanks with the phrase "vegetable waste oil" on it in an area with a 25 cm thick impermeable reinforced concrete floor. Leakage pans will be placed under the drums. It will not be mixed with foreign substances. An annual contract will be made with environmentally licensed recovery facilities or vegetable waste oil interim storage facilities for the collection of such oils, the waste declaration form will be filled in, approved, printed out, a copy will be kept for five years and submitted to the authorities when necessary. The waste will be sent to the facilities by licensed vehicles. ▪ In case a cafeteria is established within the project scope, before connecting the cafeteria washing wastewater outlet to the channel, an oil-water separator and sent as vegetable waste oil in accordance with the legislation. 		
LP22 DA20 WT21	Chemical and hazardous substance management	Inadequate management of hazardous materials, OHS incidents and environmental pollution	<ul style="list-style-type: none"> ▪ Establishment of a safe, closed, sealed chemical and hazardous substance storage area with adequate ventilation, surrounded by a channel against leaks and ending with a blind well at the end of the channel ▪ Keeping spill kits ready in the chemical and hazardous substance storage area, intervening in case of spill ▪ Storage of chemical substances on sealed concrete floor (Safety Data Sheets (SDS) are available for each chemical substance. There may be some special storage conditions for chemicals. These conditions are written in the SDS. For this reason, the SDS of the material will be read first. Then the materials will be stored. If there are special conditions for storage, these will also be applied). ▪ Labeling for each type of hazardous substance ▪ Providing safety data sheets for each type of hazardous substance and placing them in the areas where the materials are located 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ Locking of storage areas, appointment of a competent worker specially trained in hazardous materials as area responsible, hazardous material responsible and leakage response responsible ▪ Not mixing hazardous substances with each other ▪ Treating materials contaminated with hazardous substances as hazardous waste and disposing of these wastes appropriately ▪ Collection of all hazardous materials from work areas at the end of the working day and transportation to the hazardous material storage area ▪ Keeping the hazardous materials that must be present in the work area with a secondary container underneath ▪ Providing training to workers on hazardous substance management ▪ Recording all hazardous substances received in the hazardous substance collection area in the hazardous substance tracking chart ▪ Disposal of hazardous material packaging through the national waste system using licensed facilities according to their type ▪ Placing warning signs, labeling, fire extinguishers of appropriate size and type in the dangerous goods storage area ▪ For operations such as refueling or oil changes, leak-proof floors and drip pans should be available and used during operations ▪ Keeping spill response equipment ready in these areas ▪ Preferring the use of biodegradable chemicals 		
DA20 WT22	Maintenance and repair	Equipment underperformance, OHS incidents and environmental pollution	<ul style="list-style-type: none"> ▪ Keeping a list of work equipment and tools used ▪ Keeping maintenance and repair records of every equipment and vehicle used ▪ Maintenance and repair in the services in order to be practical, safe and to prevent environmental pollution in the location ▪ In case maintenance and repairs are carried out on location; <ul style="list-style-type: none"> • Provision of a machine oil drum and adequately sized secondary containers for waste oil to prevent any leakage, • Keeping leakage response equipment ready in these areas ▪ Ensuring that maintenance and repair is carried out only by competent repairers/services ▪ Providing a list of authorized repairers/services 	Beneficiary and Contractor	Within Project Cost
LP23 DA21 WT23 R18	Protection of soil, surface water, groundwater	Environmental pollution	<ul style="list-style-type: none"> ▪ For the determination of the current situation in drilling locations, the Regulation on Soil Pollution Control and Point Source Contaminated Sites Annex-2: List of Pollution Indicator Parameters, Potential Soil Pollutant Activities and Activity Specific Pollution Indicator Parameters Table 1. Soil analysis will be performed for TOX, TPH, Ag, As, B, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn, Co, pH, Oil and Grease parameters given in the Pollution Indicator Parameters List and evaluated in relation to drilling activity. Analyses will be carried out with the approval of the RSM Unit prior to the start of field works. ▪ During geothermal drilling, in order to determine the impact on groundwater, samples will be taken from the underground (GWS) water source (see Figure 4.3) closest to the drilling 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>locations with the risk of contamination and determined in Section 4.1 and analyzed according to the parameters given in Annex 3 Article 7 and Annex 5 Article 2 of the Regulation on the Protection of Groundwater against Pollution and Degradation. Approval of the RSM Unit will be obtained prior to sampling. Throughout the drilling operation, with the approval of the RSM Unit and RSM Consultant, monthly groundwater sampling will be carried out from the same GWS sample point for the same parameters. Approval of the RSM Unit will be obtained before each sampling. The results of the sampling will be compared with the results of the baseline assessment and will be interpreted and reported in the monthly monitoring reports.</p> <ul style="list-style-type: none"> ▪ During geothermal drilling, in order to determine the impact on groundwater, it is planned to take samples from the surface water (GWS) source (see Figure 4.3), which is closest to the drilling locations with risk of contamination and determined in Section 4.1, and analyze according to the parameters given in Table 2 of Annex-5 of the Surface Water Quality Regulation. Since the subject GWS source is a seasonal flowing stream, this will be evaluated separately during the study period. Approval of the RSM Unit will be obtained prior to sampling. Throughout the drilling operation, with the approval of the RSM Unit and the RSM Consultant, monthly surface water sampling will be carried out for the same parameters from the same GWS sample point as long as there is water flow. Approval of the RSM Unit will be obtained before each sampling. The results of the sampling will be compared with the results of the baseline assessment and will be interpreted and reported in the monthly monitoring reports. ▪ Ensure that topsoil (topsoil layer) is stripped and protected during land preparation ▪ Designate a specified area for stripped topsoil ▪ Ensure not to mix topsoil and subsoil ▪ Laying topsoil on top of subsoil for reinstatement and landscaping ▪ Storage of all chemicals used in drilling operations in their packaging ▪ Ensuring image and technical control of construction machinery, vehicles and equipment on a regular basis, ▪ Maintenance and repair in case of leakage ▪ Implementation of adequate spill response in the event of a leakage/spillage incident ▪ Ensuring that spill kits (absorbent pads or materials) are available in work areas for spill response and that leakage is prevented from reaching the ground ▪ Ensuring that each work team has trained spill response personnel ▪ Training workers on the use of spill kits and emergency response in case of spillage ▪ Preparation of accident/incident investigation reports on spill incidents ▪ Recording spillage incidents in the Accident/Incident Record Book ▪ Ensuring that geothermal drilling activities are carried out in accordance with best practices regarding drilling fluids and well casing ▪ Construct water diversion channels on the surface of the drill site for the regulation and removal of surface water ▪ Regular inspection of these channels for blockages ▪ If there is any leakage in the drilling area and there is a problem in the intervention of this 		

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>leakage, image inspection of the leachate pool, in case of a visible leakage, sending the liquid for analysis, ensuring its disposal according to the analysis result</p> <ul style="list-style-type: none"> ▪ Installing diversion channels (collection channel) around the geothermal fluid pool in order to prevent mixing surface water and geothermal fluid ▪ Regular control of diversion channels against blockage ▪ In order to prevent surface water from entering the drilling location, rainwater collection channels will be constructed around the drilling location and the surface flow will be directed out of the location. At the AG-4 drilling location, there is already a geothermal fluid pool with drilling concrete, and after the other structures (the remaining 1000 m² area arrangement) are completed, the containment channel and other operations will be carried out. ▪ Regular control of collection channels against clogging 		
WT24 R19	Landscape, land use and soil	It will be caused by activities; -Loss of land and vegetation -Changes in land quality -Land degradation	<ul style="list-style-type: none"> ▪ The geothermal fluid to be stored in the pools will not be discharged to the receiving environment in any way. In order to prevent the fluid from mixing with soil and water, full sealing will be ensured in the pools and the possibility of leakage will be eliminated. ▪ After the completion of the drilling works, all structures except the drilling wellhead will be removed from the site. ▪ If the geothermal resource is reached, the well head will be kept under control with a valve until the necessary permits and approvals are obtained for the operation phase. In order to ensure well safety, the wellhead and its surroundings will be surrounded with appropriate building material (sheet metal, wire cage, concrete wall, etc.) to prevent uncontrolled interventions. ▪ In case of negative results of the well data, the well heads will be blinded and abandoned and the possibility of leakage will be eliminated by cementing with chemical/sulfate resistant cement to the bottom of the well (reservoir). ▪ At the end of the activity, no waste or wastewater will be left on site. ▪ The drilling location will be completely cleaned after the completion of drilling and the geomembrane in the fluid pool will be disposed of in accordance with the WFM, the pool will be filled and closed, and wastes will be disposed of in accordance with the legislation. ▪ The excavated soil will be used for filling and landscaping of the site after cleaning and disposal of the units at the drilling location. Topsoil will be laid on the landscaped areas to ensure bio-restoration and soil with high organic content will be returned to the site. The drilling location will be rehabilitated as close as possible to its natural and pre-project condition. ▪ The soil that was stripped during the preparation of the connection road planned for Gaziemir-5 and deposited on the roadside along the road will be re-surfaced on the road route within the scope of restoration works. 	Beneficiary and Contractor	Within the project budget
LP24 DA22 WT25 R20	Noise	Environmental impacts and health effects due to noise generation	<ul style="list-style-type: none"> ▪ Selection of quality and technological equipment operating at low noise level ▪ Ensuring the use of noise-reducing silencers ▪ Further measures will be taken in the event of complaints and in case of complaints, if noise measurements and noise limit values are exceeded. These can be listed as sound barriers, noise shields and/or acoustic walls. In case of such a need, the approval of the RSM Unit will 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>be obtained.</p> <ul style="list-style-type: none"> ▪ Ensuring compliance with speed limits ▪ Ensuring that truck drivers are first and foremost educated, warned and made aware in order to prevent the use of horns unless it is mandatory for safety reasons ▪ Ensuring that the vehicles have been inspected regularly ▪ Periodic control of all construction machinery and equipment used within the scope of the project, keeping periodic control records ready on site, ▪ Routine control and timely maintenance and repair of all construction machinery, equipment and vehicles ▪ Informing local people about noise sources and durations ▪ Carrying out works during daylight hours, especially during land preparation and rehabilitation phases ▪ Restricting traffic in residential areas during night hours ▪ Traffic flow only through designated routes ▪ In case of night work, obtaining the necessary permits ▪ Active use of engine covers ▪ Not allowing vehicles to be equipped with light and sound equipment that will disturb the environment and distract attention ▪ Preventing unnecessary use of machinery-equipment that causes noise, stopping the operation of the vehicle that is not currently in use in the field or the vehicle that is on standby ▪ For drilling locations, the closest receiver to the location (see Table 4. Table 4) background noise level measurement will be carried out with the approval of the RSM Unit prior to the start of field works. ▪ In case of any complaint due to project activities, this will be done by taking 24-hour noise measurements at the point where the complaint is received (RSM unit will be informed about the complaint and the parameters and measurement points to be measured before the measurement work will be presented to the RSM unit and the approval of the RSM unit will be obtained), in case the measurement results exceed the project requirements, examining the drilling activity, taking necessary actions to reduce the noise source. ▪ Evaluating the received complaint in accordance with the Complaint Mechanism; ensuring that the complaint is recorded, evaluated and responded to in a timely and appropriate manner 		
DA23 WT26	Well blowouts and pipeline punctures	Health impacts and environmental impacts due to well blowout or pipeline rupture	<ul style="list-style-type: none"> ▪ Blow-out preventer will be used throughout the drilling activity. Sudden strikes (kick) from the formation can lead to a potentially catastrophic event known as a blowout. The BOP is a safety device placed at the wellhead to prevent blow-out. It is a specialized piece of equipment used to temporarily or permanently seal the well in case of sudden gas-water-oil incursions while the drill string is in the well. ▪ Continuous control with safety valves in geothermal drilling activity, taking measurements and measuring the pressure of the fluid ▪ Increasing the pressure to the well in case of sudden fluid coming from the well during drilling, closing the wellhead with a closing unit in case it is not enough 	Beneficiary and Contractor	Within Project Cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ Preparation of safety planning in case of emergency and Emergency Action Plan to control the explosion ▪ Training all personnel on the measures and precautions given in the Emergency Action Plan 		
LP25 DA24 WT27 R21	Public health and safety related to project activities	Potential adverse impacts on public health and safety resulting from project works	<ul style="list-style-type: none"> ▪ Ensuring that measures related to air, odor and noise emissions are in place as defined in this ESMP ▪ Conducting emergency drills with the participation of the community as required by the legislation and the Emergency and Response Plan ▪ Providing training to the workforce on the importance of community health and safety measures ▪ Informing the community in the area where the drilling location is located by placing information signs 5 days before the start of activities ▪ Carrying out transportation works in areas with heavy traffic during off-peak hours ▪ Placement of signs and lighting at the entrance of the location showing safety warnings ▪ Providing training (such as safe driving trainings) to personnel on traffic management and measures/rules (such as right of way, site speed limits, vehicle inspection requirements, work rules and procedures) ▪ During transportation activities, not to damage existing roads; to prevent any situation such as smoke, unburned gas, dust that may endanger traffic safety, not to load vehicles more than the permitted values, not to damage bridges, warning signs, culverts, asphalt and stabilized paved roads, in case of any damage to these structures, the cost of the damage shall be covered by the contractor ▪ Checking that vehicle drivers have the necessary documents (such as driver's license) to drive the vehicle ▪ Explaining and ensuring that the driver and other passengers in the vehicle fasten their seat belts safely and comply with this rule ▪ Ensuring that the driver of the vehicle is not fatigued, has not taken drugs, alcohol, etc. ▪ Making sure that the maintenance and repairs of vehicles in traffic are done on time, making sure that the vehicles (trucks, etc.) are inspected within that year (trucks, etc. are inspected once a year) ▪ Paying extra attention not to exceed the transportation limits, as well as paying attention not to exceed the limits in the load on the axle weights of the vehicles ▪ Ensuring that vehicles are not allowed to be equipped with light and sound equipment that will disturb the environment and distract attention ▪ Ensuring that the maintenance and repairs of all machinery and equipment to be used are carried out on time, ▪ Ensuring that vehicles pay extra attention when passing through densely populated settlements and comply with speed limit and tonnage rules ▪ Having flagmen on roads cutting through settlements ▪ Use of preventive equipment and BOP valves, H₂ S detector system to prevent drilling gas 	Beneficiary and Contractor	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<p>escape</p> <ul style="list-style-type: none"> Announcing the complaint mechanism to stakeholders and ensuring that they communicate their suggestions, opinions and complaints through this mechanism Providing visitor training to each visitor 		
LP26 DA25 WT28 R22	Public health and safety regarding workers' behavior	Potential adverse impacts on public health and safety resulting from project works	<ul style="list-style-type: none"> Training workers on appropriate communication and social aspects of the project to ensure respectful behavior towards local communities and to avoid cultural problems and community discomfort Undertaking with signature that employees will apply the rules of behavior in accordance with the project rules 	Beneficiary and Contractor	Within the project cost
LP27 DA26 WT29 R23	Security	Unsafe conditions during project work	<ul style="list-style-type: none"> Ensuring a sufficient number of competent security personnel with no record of misconduct Ensuring that any use of force is avoided Training of security personnel on project conditions and avoiding the use of force 	Beneficiary and Contractor	Within the project cost
LP28 DA27 WT30 R24	Restrictions on land use	Negative impacts on communities' use of land	<ul style="list-style-type: none"> Ensuring that project activities do not restrict / hinder the social and economic life of people in the region Monitoring related complaints/requests and taking necessary measures/measures, making improvements 	Beneficiary Contractor	Construction cost includes
LP29 DA28 WT31 R25	Biodiversity	Negative impacts of project activities on flora and fauna species	<ul style="list-style-type: none"> Not using any area other than the drilling location and the area where the road will be built, even temporarily Wire fencing of the drilling location Determining and recording the number of trees in the drilling locations before the study Preservation of vegetation as much as possible Stripping the topsoil and storing it in the designated area Not mixing topsoil and subsoil with each other Ensure that equipment and vehicles do not disturb existing habitat Ensuring that workers do not throw waste on the ground. Prior to land preparation, provide specialized training to key personnel who will manage activities within the scope of land preparation, explaining the impacts of these activities on flora, fauna and habitat and mitigation measures Training all staff on the impacts of activities on flora, fauna and habitat and mitigation measures If no results are obtained during exploration drilling, ensuring that reinstatement and landscaping works are carried out appropriately No intervention should be made until the young individuals detected in the area leave the nest In case there are adult individuals that do not move away from the area, following the notification of the RSM Unit and the approval of the RSM Unit, the adult individuals are taken out of the project area by an expert biologist using appropriate capture and trapping techniques in a way that they will not be harmed. 	Contractor Beneficiary	Within the project cost

Pre-Activity (PA) Phase - Land Preparation (LP) - Drilling Activity (DA) Phase - Well Testing (WT) and Rehabilitation (R) Phases					
No	Subject	Definition of Potential Impact	Mitigation Measures	Responsible Party	Cost
			<ul style="list-style-type: none"> ▪ Realization of irrigation works in dust emitting processes ▪ Hunting and gathering of animals is not allowed ▪ Observing speed limits on roads ▪ Turning off unnecessary lighting ▪ Training of the team on spill response, ▪ Keeping spill response equipment ready ▪ Immediate intervention in case of spill 		
LP30 DA29 WT32 R26	Cultural heritage	Damage to cultural heritage in cases of potential incidental finds	<ul style="list-style-type: none"> ▪ Implementation of the Archaeological Incidental Finds Procedure detailed below: <ul style="list-style-type: none"> • Training workers on precautions regarding archaeological finds • In case of accidental finds, stop work immediately and fence off the area until an official notification is received • Informing the RSM Unit immediately and in detail • Contacting the Provincial Museum Directorate, informing about the incidental find • The Museum Directorate assesses the findings and determines the significance of the finding and informs about the scope of the outcome of the examination • Informing the RSM Unit about the potential delay in line with the information received from the representatives of the Museum Directorate • Acting according to the decision of the representatives of the Museum Directorate and not starting the works without written approval from the Museum Directorate • Reporting the incidental find event and process 	Contractor Beneficiary	Within the project cost
PA7 LP31 DA30 WT33 R27	Stakeholder Engagement, Disclosure of Information and Stakeholder Complaint Mechanism	Inadequate information provided to stakeholders on project actions, complaint mechanism not functioning	<ul style="list-style-type: none"> ▪ Implementation of the Stakeholder Engagement Plan ▪ Providing stakeholders with the necessary information about the project ▪ Conducting consultations with stakeholders ▪ Disclosure of the stakeholder complaint mechanism to the public, including details on how to contact the staff responsible for handling complaints ▪ Distribution of project brochures to stakeholders ▪ Keeping records of all stakeholder complaints and explanations in the complaint register ▪ Designing a complaint mechanism that allows for anonymous complaints of gender-based violence, sexual exploitation and abuse/sexual harassment ▪ Ensuring that complaints are responded to in a timely manner and corrective actions are implemented when necessary ▪ Keeping records of stakeholder consultation meetings and information sharing in the stakeholder participation logbook ▪ Stakeholder Engagement Plan (SEP) and ESMP are disclosed to the public and remain publicly accessible throughout the Project cycle ▪ Notification of the community in the area of the drilling location 5 days before the start of works 	Beneficiary	Within Project Cost

7.0 Monitoring Plan

Table 28. Monitoring Plan

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
1	Pre-construct ion	Preparation for project activities (E&S Documentation, Permits, Organizational Structure, Trainings)	<ul style="list-style-type: none"> - Office - Drilling Locations 	<ul style="list-style-type: none"> - Control of documents, records and tracking charts - Regular inspections 	Daily	<ul style="list-style-type: none"> - To avoid inadequate environmental and social organization and management failure - To ensure that there are no deficiencies in documentation, training and permission processes 	<ul style="list-style-type: none"> - Employment of E&S Specialist and OHS Specialist and timely establishment of E&S organization - Timely preparation of environmental and social documentation - Completion of permits - Trainings provided to each employee 	Zero Non-Compliance	Project Budget	Beneficiary Contractor
2	Pre-construct ion	<p>Basic environmental measurements and analysis;</p> <p>Noise (24 hours a day),</p> <p>PM10 (24 hours),</p> <p>For groundwater quality, the parameters given in Annex 3 Article 7 and Annex 5 Article 2 of the Regulation on the Protection of Groundwater against Pollution and Degradation</p>	<ul style="list-style-type: none"> - At the nearest sensitive receptors for noise and PM10 (given in Figure 2.10, Figure 2.11 and Figure 2.12) - Groundwater at GWS 01 point given in Table 7 - Surface water at SWS 01 point given in Table 7 - A point within the drilling location for soil quality where no unit will be placed within the scope of the Project 	Measurements and analyzes to be performed by accredited laboratories	<ul style="list-style-type: none"> - Before starting land preparation for the drilling site (one-off) - With the approval of the RSM Unit before work starts at each location - The measurement-analysis program, including measurement and analysis sampling points on the map, duration of measurements, parameters to be analyzed, references to parameters (regulations, best practices, etc.) will be reported to the RSM Unit in advance. Once the RSM Unit approves the program, bids will be received and submitted to the RSM Unit for approval. After approval, the program can 	To determine the environmental baseline before the start of field work	<ul style="list-style-type: none"> - Completion of measurement and analysis studies on time 	Determinatio n of the current environmental situation	In Project Budget	Beneficiary

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
		Parameters given in Annex-5 Table 2 of the Surface Water Quality Regulation for surface water quality Soil quality (TOX, TPH, Ag, As, B, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn, Co, pH, Oil and Grease)			start. The results will be submitted as an annex in the form of a short report including results reports.					
3	Land preparation Drilling and testing operations Rehabilitation	Domestic wastewater	- Drilling locations and septic tanks	- On-site inspections - Waste records, tracking sheets, invoices and receipts - Wastewater analysis to be performed in accredited laboratories - Soil / groundwater / surface water analyzes to be performed in accredited laboratories	- Daily - Daily - Subject to the approval of the RSM Unit in case of any contamination. - Any spillage and contamination is subject to the approval of the RSM Unit.	Potential impact on soil, surface water and groundwater due to effluent	- Waste water volume - Number of incidents	- Decrease in production quantity - Zero event	In Project Budget	Beneficiary Contractor
4	Drilling and testing operations	Test water and geothermal fluid	- Drilling locations	- On-site inspections - Soil/groundwater/surface water analysis	- Daily - Any leakage and contamination of the reservoir is subject to the approval of the RSM unit.	Potential impact on soil, groundwater and surface water due to test water and geothermal fluid	- Test water and geothermal fluid volume - Number of incidents	-No leakage from wells to reservoirs - No overflow of test water and geothermal fluids from any of the	In Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
								pools, tanks and pits		
5	Drilling and testing operations	Drilling mud and rock fragments	- Drilling locations	<ul style="list-style-type: none"> - On-site inspections - Rock crumb and mud analysis by an accredited laboratory - Waste records, invoices, receipts - Soil / groundwater / surface water analysis to be performed in accredited laboratories 	<ul style="list-style-type: none"> - Daily - With RSM Unit approval after drilling is completed - Daily - Subject to the approval of the RSM Unit in case of any contamination. 	Potential impact on soil, groundwater and surface water due to drilling mud and rock fragments	<ul style="list-style-type: none"> - - Mud volume - Rock cuttings volume - Number of incidents 	<ul style="list-style-type: none"> -No overflow from tanks - No overflow from the rock cuttings collection area - Zero event 	In Project Budget	Beneficiary Contractors
6	Drilling and testing operations	For groundwater quality Parameters given in Annex 3 Article 7 and Annex 5 Article 2 of the Regulation on the Protection of Groundwater against Pollution and Degradation	Groundwater according to the location at YAS 01 point given in Table 7	<ul style="list-style-type: none"> - On-site inspections - Drilling logs for groundwater reservoir controls - Drilling logs - Groundwater analysis by an accredited laboratory 	<ul style="list-style-type: none"> - Daily - Daily - Daily - Subject to the approval of the RSM Unit, monthly groundwater analysis downstream of groundwater flow to identify any seepage into the reservoir formation and surface or subsurface contamination 	Potential impact on groundwater during drilling and testing operations	<ul style="list-style-type: none"> - Number of incidents 	-Zero event	In Project Budget	Beneficiary Contractors
7	Land preparation Drilling and testing operations	Wastes	- Drilling locations and temporary waste storage areas	<ul style="list-style-type: none"> -In-field inspections - Waste records, tracking sheets, invoices and receipts 	<ul style="list-style-type: none"> - Daily - Daily -Subject to the approval of the RSM Unit in case of any contamination. 	Potential impact on soil, groundwater and surface water due to wastes	<ul style="list-style-type: none"> - Volume/quantity of waste - Number of incidents 	<ul style="list-style-type: none"> -Decrease in production quantity -Zero event 	Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
	Rehabilitation			<ul style="list-style-type: none"> - Waste analyzes to be performed in accredited laboratories - Soil / groundwater / surface water analysis to be performed in accredited laboratories 	<ul style="list-style-type: none"> - Subject to the approval of the RSM Unit in case of any contamination. 					
8	Land preparation Rehabilitation	Excavated soil and vegetable soil	<ul style="list-style-type: none"> - Drilling locations - Along the connection road for Gazimir-5 	<ul style="list-style-type: none"> - On-site inspections - Records of topsoil and excavation processing and storage - Drainage and surface stabilization design documents 	<ul style="list-style-type: none"> - Daily - Daily - Before the studies are carried out and weekly 	Potential impact on soil due to land preparation and rehabilitation works	<ul style="list-style-type: none"> - Number of incidents 	-Zero event	Project Budget	Beneficiary Contractors
9	Land preparation Drilling and testing operations Rehabilitation	Air/dust and gas emissions	<ul style="list-style-type: none"> - Drilling location and nearby vulnerable areas 	<ul style="list-style-type: none"> On-site and off-site inspections - Environmental air quality measurements to be made in accredited laboratories (PM10, H₂ S) - Vehicle exhaust emission measurements - External complaint records - Training and exercise records -H₂ S and CO₂ emission 	<ul style="list-style-type: none"> - Daily - In case of any complaint, with the approval of the RSM unit - Passenger cars - once every 2 years, other vehicles - once a year - Weekly - Weekly - Daily - Weekly 	Potential impact on local air quality, health of living organisms and nearby agricultural land	<ul style="list-style-type: none"> - Number of non-conformities - Number of complaints - Legal limits 	<ul style="list-style-type: none"> - Zero non-compliance - Resolving all complaints within the stipulated timeframe - Compliance with limits 	Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
				<ul style="list-style-type: none"> monitoring and warning system records -H2S and CO2 emission monitoring and warning system maintenance records 						
10	<ul style="list-style-type: none"> Land preparation Drilling and testing operations Rehabilitation 	Noise	<ul style="list-style-type: none"> - Drilling location and nearby vulnerable areas 	<ul style="list-style-type: none"> - On-site and off-site inspections - Environmental noise measurements to be made in an accredited laboratory - Maintenance records of machinery and vehicles - External complaint records 	<ul style="list-style-type: none"> - Daily - In case of any complaint, with the approval of the RSM unit - Regularly (according to what is recommended by the services) - Weekly 	<ul style="list-style-type: none"> Potential impact on the health of living organisms and disturbance to nearby residents 	<ul style="list-style-type: none"> - Number of non-conformities - Number of complaints - Legal limits 	<ul style="list-style-type: none"> - Zero non-compliance - Resolving all complaints within the stipulated timeframe - Compliance with limits 	Project Budget	<ul style="list-style-type: none"> Beneficiary Contractors
11	<ul style="list-style-type: none"> Drilling and testing operations 	Odor	<ul style="list-style-type: none"> - Drilling location and nearby vulnerable areas 	<ul style="list-style-type: none"> - On-site and off-site inspections - Environmental odor measurements to be made in an accredited laboratory - H₂S measurements - External complaint records - H₂ S emission monitoring and warning system records 	<ul style="list-style-type: none"> - Daily - In case of any complaint, with the approval of the RSM unit - In case of any complaint, with the approval of the RSM unit - Weekly - Daily - Weekly 	<ul style="list-style-type: none"> Discomfort of those living nearby 	<ul style="list-style-type: none"> - Number of non-conformities - Number of complaints - Legal limits 	<ul style="list-style-type: none"> - Zero non-compliance - Resolving all complaints within the stipulated timeframe - Compliance with limits 	Project Budget	<ul style="list-style-type: none"> Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
				- H ₂ S emission monitoring and warning system maintenance records						
12	Drilling and testing operations	Well explosion	- Drilling location and nearby vulnerable areas	- On-site and off-site inspections - Inspection of explosion prevention equipment and system - H ₂ S measurements - Soil / surface water / groundwater analyzes to be performed in accredited laboratories - External complaint records	- Daily - Daily - In case of any explosion, with the approval of the RSM unit - In case of any complaint, with the approval of the RSM unit - Weekly	Potential impact on the health of living organisms and on soil, surface water and groundwater quality	-Number of non-compliances - Number of complaints -Legal limits	- Zero non-compliance - Resolving all complaints within the stipulated timeframe - Compliance with limits	In Project Budget	Beneficiary Contractors
13	Land preparation Drilling and testing operations Rehabilitation	Hazardous/Chemical material	- Drilling locations - Chemical storage area	-In-field inspections Accident/incident/trauma follow-up chart and investigation reports - Assignment records - Spill kit checklists - Training registrations - Geothermal fluid collection basin control records	- Daily - Weekly - Monthly - Weekly - Monthly - Daily - Subject to the approval of the RSM Unit in case of any contamination. - Daily - Any spillage and contamination is subject	Potential impact on soil, groundwater and surface water due to hazardous substances	-Number of incidents	-Zero event	Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
				<ul style="list-style-type: none"> - Contamination analysis for the seepage collection pit - Vehicle and equipment inspection records - Soil / groundwater / surface water analysis to be performed in accredited laboratories 	to the approval of the RSM unit.					
14	Land preparation Drilling and testing operations Rehabilitation	Biodiversity	-Drilling Locations	<ul style="list-style-type: none"> -In-field inspections -Training records 	<ul style="list-style-type: none"> - Daily - Monthly 	Potential impact on flora, fauna and habitats due to project activities	<ul style="list-style-type: none"> - Number of incidents - Number of trained personnel 	<ul style="list-style-type: none"> - Zero event - Training of all staff 	In Project Budget	Beneficiary Contractors
15	Land preparation Drilling and testing operations Rehabilitation	Soil quality and land rehabilitation	-Drilling Locations	<ul style="list-style-type: none"> -In-field inspections -External complaint records 	<ul style="list-style-type: none"> - Daily - Weekly 	Negative impact on the soil and landscape of the site	<ul style="list-style-type: none"> - Number of non-conformities - Number of complaints 	<ul style="list-style-type: none"> - Zero non-compliance - Resolving all complaints within the stipulated timeframe 	Project Budget	Beneficiary Contractors
16	Land preparation	Resource Efficiency 1. Water 2. Fuels	<ul style="list-style-type: none"> - Office - Drilling locations 	-Document and resource utilization tracking chart control	<ul style="list-style-type: none"> - Monthly - Daily 	Inappropriate use of resources (energy, water, etc.)	<ul style="list-style-type: none"> -Quantities consumed 1.[m³] 2.[L] 3.[kWh] 	<ul style="list-style-type: none"> - Reduced use of raw materials 	In Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
	Drilling and testing operations Rehabilitation	3. Electricity 4. Raw materials (non-hazardous)		On-site inspections			4.			
17	Land preparation Drilling and testing operations Rehabilitation	Occupational health and safety	- Drilling locations	- On-site inspections - OHS related follow-up schedules and records - Training records - Internal complaint records	- Daily - Daily - Weekly - Weekly	Negative impact on the health and safety of employees	- Number of incidents - Number of non-conformities - Number of trained personnel - Number of complaints from workers	- Zero event - Zero major non-compliance - Remediation of minor nonconformities within the deadline - Training of all staff - Zero complaints	In Project Budget	Beneficiary Contractors
18	Land preparation Drilling and testing operations Rehabilitation	Community health and safety	- Drilling locations - Communities nearby	- In-field inspections - Training records - External complaint records	- Daily - Monthly - Weekly	Negative impact on public health and safety	- Number of incidents - Number of trained personnel - Number of complaints received from the community	- Zero event - Training of all staff - Resolving all complaints within the stipulated timeframe	In Project Budget	Beneficiary Contractors
19	Land preparation Drilling and testing operations	Work and working conditions	- Drilling locations	- In-field inspections - Shelter inspection - Internal complaint records	- Daily - Weekly - Weekly	Negative impacts associated with the management of workers' fundamental principles and rights	- Number of non-conformities - Number of complaints from workers	- Zero non-compliance - Resolving all complaints within the stipulated timeframe	In Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
	Rehabilitation									
20	Pre-construction Land preparation Drilling and testing operations Rehabilitation	Supply chain and Contractor management	- Drilling locations	- Records of pre-assessment of contractors' E&S and OHS competence and evidence that they have been selected taking into account the economic and practical considerations of Article 11 and Annex 5 of the Beneficiary Agreement. -Employment records by gender and locality / procurement records by locality Non-compliance tracking charts	- Before contractor selection - Monthly - Weekly	Non-compliance with project standards	- Pre-evaluation records -Number of non-compliances - Number and percentage of contracted local businesses - Number and percentage of local labor force	- Selection of the most economical and feasible option - Correction of non-conformities within the specified timeframe - Absence of E&S incident - Increase in local businesses and employment	In Project Budget	Beneficiary Contractors
21	Land preparation Drilling and testing operations Rehabilitation	Stakeholder Engagement and Complaint Mechanism	- Communities nearby - Drilling locations	- Stakeholder engagement activities and records - Complaint mechanism training records - Internal complaint records - External complaint records	- Continuous - Monthly - Weekly - Weekly	Not informing stakeholders and not voicing the complaints/requests of Project stakeholders/employees	- Number of stakeholder engagement activities - Number of trained personnel - Number of complaints	- Adequate stakeholder engagement activities according to SEP - Training of all staff - Resolving all complaints within the stipulated timeframe	In Project Budget	Beneficiary Contractors
22	Pre-construction	Land acquisition and livelihoods	- Drilling locations	-In-field inspections	- Daily - Weekly	Failed land acquisition implementation and non-compliance with legislation and OP 4.12	- Land acquisition records/agreements	- Successful land acquisition process	Project Budget	Beneficiary Contractors

No	Phase	Parameter to Monitor	Where is it?	How/ Monitoring Method	Monitoring / Reporting Duration / Frequency	Why?	Success Indicators	Target	Cost	Responsible party
	Land preparation Drilling and testing operations Rehabilitation			-Internal off-site inspections -External complaint records		and negative impact on livelihoods	- Records of damage to neighboring land - Number of complaints	- Successful compensation - Zero damage to neighboring lands - Resolving all complaints within the stipulated timeframe		
23	Land preparation	Cultural heritage	- Drilling locations - Along the connection road to be built for transportation to Gaziemir-5	- On-site inspections - Training registrations	- Daily - Monthly	Potential impact on cultural heritage	- Number of non-conformities - Number of trained personnel	- Zero non-compliance - All staff trained	In Project Budget	Beneficiary Contractors

8.0 Institutional Arrangements

In order to mitigate and prevent potential negative environmental and social impacts expected to be experienced in an activity, there are regulations that need to be made in order to implement the measures given in the management plans.

These arrangements are necessary for the successful implementation of the Environmental and Social Management Plan. The roles and responsibilities of the institutions, organizations and individuals who will be involved in the implementation - monitoring - review process of the Environmental and Social Management Plan are given below. In addition organization chart of the Beneficiary company is given in Figure 8.1.

Beneficiary Company is responsible for

- Management, implementation, monitoring and compliance with EIA (Environmental Impact Assessment) obligations in national legislation
- Implementation of the content and requirements of the Environmental and Social Management Plan and, if applicable, ensuring its implementation by contractors and subcontractors
- Monitoring of the Environmental and Social Management Plan and sub-management plans
- Ensuring compliance with all commitments of the Environmental and Social Management Plan and sub-management plans
- Entering the ESMP and PKP and the sub-management plans to be prepared into the contractor contract and undertaking that the works will be carried out in accordance with these plans
- Following the approval of the ESMP, after the contract is signed, preparing sub-management plans in line with the approved ESMP and submitting them to the RSM Unit for approval
- Monitoring the performance of ESMP, PKP and sub-management plans and taking corrective actions if necessary
- Implementation of the Complaint Mechanism established to receive the opinions and complaints of the local people in the vicinity during the operation
- Continuous and regular monitoring of the Complaint Mechanism, ensuring necessary communication to address public concerns
- Fulfillment of public commitments, if any
- Preparation and distribution of necessary documents to inform the public
- Communicating with relevant institutions and organizations for the implementation of the Environmental and Social Management Plan

- Assign a full-time competent environmental and social expert (environmental engineer, etc.) on site for environmental and social management and monitoring
- Appointment of occupational safety specialist and workplace physician in accordance with the legal legislation for the execution of work and procedures related to occupational health and safety
- Appointment of a full-time competent occupational safety expert on site
- In case of non-compliance with the Environmental and Social Management Plan, ensure that the cause of the non-compliance is remediated (if there is a contractor and the contractor caused the non-compliance, ensure that the contractor remediates the non-compliance)
- Informing the RSM Unit and RSM Consultant in case of non-compliance with/ deviation from the Environmental and Social Management Plan
- Informing the RSM Unit and RSM Consultant with Technical (Drilling) Progress reports
- Implementation of laws and regulations required by the World Bank through the RSM Unit
- Transmitting environmental and social monitoring reports to the RSM Unit and the RSM consultant as provided in the Beneficiary Agreement
- Allocating the necessary resources for environmental, social and occupational health and safety issues and presenting them to the project
- Ensuring that corrective/preventive actions recommended by the RSM Unit or RSM Consultant are realized on time and reported appropriately

The Environment and Social Expert is responsible for, but not limited to, the following.

- To ensure that the ESMP is up to date, approved by the RSM Unit and appropriate to the nature and scale of the Project,
- To ensure that the contractor and relevant subcontractors prepare, review and approve their own management plans and sub-procedures,
- Make the ESMP available to contractors and subcontractors,
- To ensure that the ESMP is effectively implemented by contractors and subcontractors,
- To ensure that the ESMP meets the requirements of applicable legal requirements, commitments and standards,

- To check the effectiveness of the ESMP and the performance of the contractor and subcontractors through periodic inspections, monitoring activities and external audits at the construction site,
- To collect, organize and review monitoring data and performance monitoring reports provided by the contractor and subcontractors,
- To monitor field activities (during site preparation, drilling, well testing and rehabilitation phases) and notify the Contractor and subcontractors of all ESMP related hazards, nonconformities and incidents and approved corrective or remedial actions,
- To coordinate internal/external complaint mechanism and employee issues, keep all records, follow up and close complaints,
- To provide ESMP trainings to contractors and subcontractors, collect and review training records provided by contractors and subcontractors.

The beneficiary's occupational safety expert is responsible for, but not limited to, the following.

- Implementation of the requirements of the ESMP together with the environmental and social expert,
- Carrying out works in accordance with local OHS legislation and World Bank requirements,
- Preparation of relevant OHS documents (risk assessment, emergency action plan, health and safety plan, etc.),
- Providing legal OHS trainings,
- Providing orientation training to contractor and subcontractor personnel,
- Assigning support staff, worker representative, emergency response personnel, etc. and providing related trainings,
- Periodic field inspections and controls,
- Maintaining accident/incident/ near miss records, preparing incident investigation reports including root cause analysis and reporting all these regularly and appropriately,
- Checking that contractors act in compliance with legal regulations on occupational health and safety and providing remedial guidance to contractors.

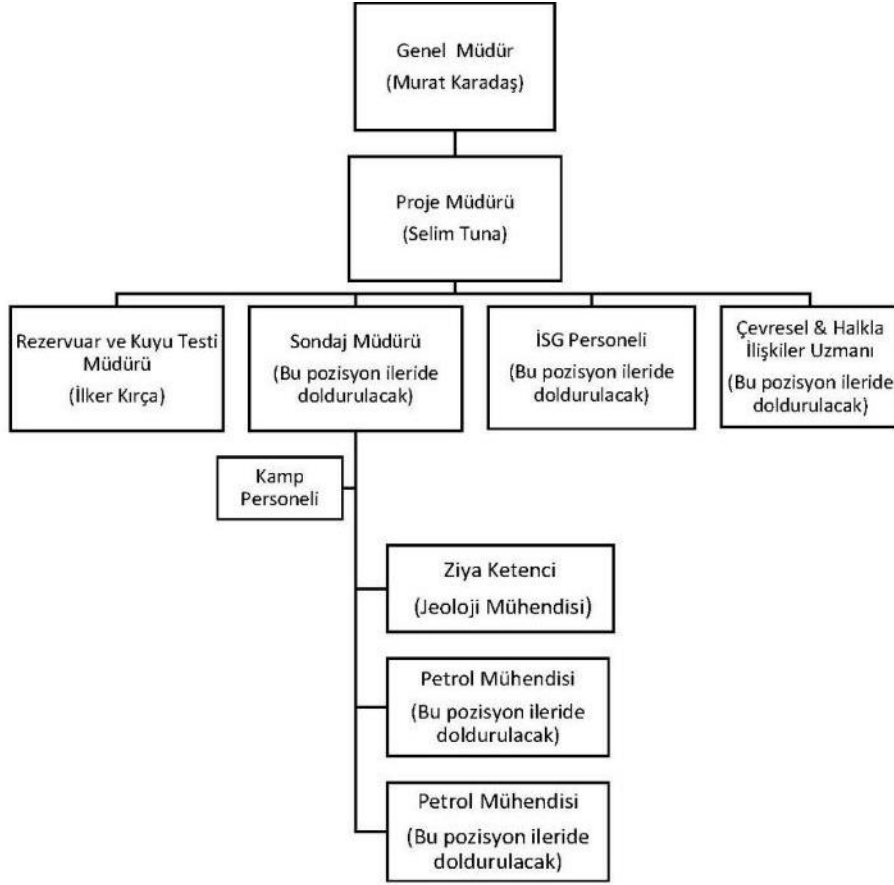


Figure 8.1. Beneficiary Company Organization Chart

RSM Unit and RSM Advisor

- Leads the selected sponsor to ensure that all relevant standards and regulations are adhered to throughout the project.
- Oversees and monitors the appropriate implementation of the World Bank's environmental and social safeguard policies.
- If necessary, informs the beneficiary about the action plan and informs the beneficiary about the correction of the identified non-compliances/non-compliances within the specified periods.

World Bank

- It is the main source of financing.
- Approves the final project selection.
- Assist the RSM Unit in the development of the Performance and Monitoring Database System during the preparatory phase.
- Provides technical guidance for the RSM Unit.
- Examines the stages of project development in general.
- Reviews incoming reports to determine whether the Bank's standards have been complied with.

Contractors and Subcontractors

- The Contractor shall fulfill the responsibilities specified in this ESMP.
- The Contractor shall prepare its own sub-management plans, such as the OHS Plan, and submit them to the Beneficiary prior to field activities.
- The Contractor shall be aware of its duties and responsibilities under this ESMP to comply with national regulations and WB environmental and social safeguard policies and relevant EHS guidelines. Ensuring that this ESMP and other E&S documents and sub-management plan will be an integral part of the Contractor's contract. The contract text will commit the Contractor to full compliance with these documents and WB environmental and social safeguards policies and relevant EHS guidelines.
- The Contractor shall provide training to workers on environmental and social issues (including OHS) in accordance with the World Bank's environmental and social safeguard policies and relevant EHS guidelines and national regulations within the scope of project activities to raise environmental and social awareness.

- The Contractor shall implement the measures specified in the Environmental and Social Management Plan for the project within the scope of the period of responsibility.
- It will be ensured that the ESMP and sub-management plans are entered into the contractor contract and that the works are carried out in accordance with these plans and that the works are carried out in accordance with the ESMP, sub-management plans and local legislation requirements.
- It will be ensured that the sub-management plans to be prepared by the Beneficiary are reviewed and revised under the control of the Contractor by providing additions related to environmental and social practices, procedures and regulations related to its own business and activities.
- It will be ensured that the records specified in the Environmental and Social Management Plan and sub-management plans are kept, monitoring is carried out and internal reporting is prepared.
- Subcontractors and project staff will be informed about the ESMP and sub-management plans, implementation principles and administrative aspects, and will be ensured to work in compliance with the ESMP within the scope of the project.
- All trainings within the scope of ESMP and legal legislation will be provided to employees.
- The Contractor's occupational safety specialist is responsible for ensuring that the requirements specified in the legal legislation and the OHS regulations given in the ESMP are met for the Contractor, depending on the subcontracting contract. The Beneficiary will work with the occupational safety specialist to ensure the OHS arrangements specified in the ESMP.
- Implement the instructions given by the beneficiary's occupational safety expert, carry out corrective/preventive actions and provide remedial guidance.

9.0 Audit and Reporting

The correct implementation of this ESMP will be verified through continuous internal inspections and E&S (including OHS) audits. Internal audit of the ESMP will be performed on a daily basis by the Beneficiary's E&S expert, the Beneficiary's occupational safety expert, contractors and subcontractors. In addition, weekly environmental and social (including OHS) audits will be conducted by the Project Manager to monitor the implementation performance of the ESMP. Monthly E&S monitoring reports will be prepared by the Beneficiary with the support of Contractors and subcontractor data and submitted to the RSM Unit. The format of the E&S Monitoring reports will be provided to the Beneficiary by the RSM Unit under the RSM Program, in the contract annex, to ensure that the Beneficiary adequately covers E&S issues and provides a statistical data.

The results of inspections and audits and progress in preventive/corrective actions will be reported and further appropriate measures will be taken if necessary.

All records related to the implementation of the ESMP will be kept by the Beneficiary, contractors and subcontractors.

The Beneficiary shall report any significant environmental, social, health and safety incidents (e.g. fatalities, lost time incidents, environmental spills, etc.) to the RSM Unit within 1 working day. The Beneficiary shall provide to the RSM Unit within 15 working days an Accident/Incident Investigation/Investigation Report including a root cause analysis, identified preventive and corrective measures, their deadlines and status at the time of submission of the report. The RSM Unit will review and evaluate the Accident/Incident Investigation Report to be submitted by the Beneficiary within 15 working days, including the root cause analysis, identified corrective/preventive measures, and their status at the time of submission, make update/revision requests if necessary, and forward it to the World Bank within 30 working days, as specified in the Beneficiary Handbook.

10.0 Training

All relevant employees of the Beneficiary, contractors and subcontractors will receive specific site induction training by the Beneficiary's environmental and social expert and occupational safety expert to cover environmental, social and OHS issues and will receive regular environmental, social and OHS training during the land preparation, drilling, testing and rehabilitation phases.

Training on this ESMP will be provided to contractors and subcontractors at the beginning of each phase by the beneficiary's environmental and social expert and occupational safety expert.

Training topics include at least the following:

- ESMP requirements;
- Legal obligations;
- ESMP and control requirements and how to implement them on site;
- Procedures to be followed and mitigation measures to be implemented;
- The roles that employees play in ESMP.

11.0 Consultations with Affected Groups and Civil Society Groups

➤ Dates and location of meetings;

In the current situation, there have been continuous public consultations for two years, since the license came into force (2019). The dates of some recent interviews are 07.11.2020-20.12.2020-11.04.2021- 06.06.2021- 19.07.2021. Women were generally interviewed in the fields and men were generally interviewed in village coffee houses.

Both headmen and local people are supportive of exploration drilling to find the potential. During the geological and geophysical studies in the sites, the local community has been supportive of the Beneficiary and there has been no negative reaction.

On 29 September 2021, the first Stakeholder Engagement Meeting was held in Güzelyurt Municipality Wedding Hall in Güzelyurt District. Announcements for the Stakeholder Management Meeting were published in national and local newspapers at least 15 days in advance (**Annex 2: Annex 5 of the SEP**), indicating the topic, date, place and time of the meeting. Stakeholders were also invited for consultations a few days before the meeting through official letters sent to nearby administrative districts and announcements and notifications made locally. In addition, announcements about the meeting were made in villages. On the day of the meeting, 6 shuttle buses were provided for the public to come to the meeting place from each village from the settlements closest to the project areas and from points where people can easily access the meeting place. The villages in question are as follows: Akyamaç, Gaziemir, Alanyurt, Bozcayurt, Sivrihisar, Ilısu, Yuva, Elmacık, Koçpınar, Karkın, Helvadere/Aydınlar, Helvadere/Cumhuriyet, Helvadere/Kirazlı, Helvadere/Zafer. Village headmen were informed in advance that a shuttle bus would be provided. Village headmen and the Beneficiary owner have also been in contact via social media (groups have been established on chat platforms).

On 29.11.2023, a second Stakeholder Engagement Meeting was held at the Municipal Wedding Hall in Güzelyurt District of Aksaray Province. The approved ESMP and its annexes, posters and brochures prepared for the meeting were published on www.guzelyurtjeotermal.com on 16.11.2023. In order to announce the meeting, posters and brochures prepared with the approval of RSM experts were printed on 18.11.2023. 15 posters and 250 brochures were printed. An agreement was made with an agency to advertise in Haber68 newspaper, which has a high circulation in Aksaray. The advertisement text was published in the newspaper dated 20.11.2023. Güzelyurt Municipality was contacted to announce the meeting from the municipal sound system and the municipality stated that it could announce the meeting free of charge. Accordingly, within the scope of the "Güzelyurt Geothermal Exploration Drilling Project" planned by "GÜZELYURT JEOTERMAL ENERJİ A.Ş.", a "Stakeholder Participation Meeting" will be held on November 29, 2023 at 14:00 at Güzelyurt Municipality Wedding Hall in order to inform the Project stakeholders and to receive their opinions and suggestions. All our people are invited. " from 20.11.2023 until 28.11.2023, including weekdays and Saturdays, a total of 8 times every day at 14:00.

The meeting started on November 29, 2023 at 14:18 and ended at 15:12.

➤ **Details about the participants**

○ **First Stakeholder Engagement Meeting**

More than one hundred participants from Helvadere, Güzelyurt Yeni Mahallesi, Güzelyurt Yukarı Mahallesi, Güzelyurt District, Elmacık Village, Yuva Village, Ihlara Town, Koçpınar Village, Iısu Village and some institutions participated in the meeting, and the written signatures of approximately 75 people could be obtained.

Around 18 of the participants were women. Future efforts will be made to involve more local women. For more women to participate, future meetings will be held in different settings, such as at home, if possible.

○ **Second Stakeholder Engagement Meeting**

In order to increase participation in the meeting, a shuttle service was organized from Akyamaç-Bozcayurt and Gaziemir villages. The departure times of the shuttles were written on the brochure and posters before the meeting. There was no major disruption in the shuttle organization. Shuttles departed from Bozcayurt and Gaziemir villages at 13:30. From Akyamaç village, the shuttle departed at 13:40. The shuttles departed from the common points of the village from the points where public transportation was most comfortable.

The meeting was attended by approximately 80 people from the local administrations and residents of Güzelyurt District, Gaziemir, Bozcayurt and Akyamaç villages and public institutions and organizations involved in local administration.

➤ **Meeting Program/Schedule: What was presented by whom;**

○ **First Stakeholder Engagement Meeting**

A presentation was made by the environmental consultancy firm and the purpose of the meeting, information about the project, its location, impacts, and benefits and how stakeholder engagement will be ensured were explained to the participants.

The opinions and suggestions of the public were listened to, recorded and questions from the participants were answered by the Beneficiary. In addition, detailed information about the project and the opportunities to be provided were explained in detail by the project owner company.

○ **Second Stakeholder Engagement Meeting**

A presentation was made by the environmental consultancy firm and the purpose of the meeting, information about the project, its location, impacts, benefits and how to ensure stakeholder engagement was explained to the participants.

The views and suggestions of the public were listened to and recorded and questions from the participants were answered by the Beneficiary. In addition, detailed information about the project and the opportunities to be provided were explained in detail by the project owner company.

➤ **Comments, Questions and Presenters' Answers**

○ **First Stakeholder Engagement Meeting**

On September 29, 2021, during the stakeholder engagement meeting, some of the questions from the participants and the answers from the sponsor were as follows

It was asked whether the vapor from the chimneys would cause climate change

It is stated that the facilities to be established will operate as a closed cycle system and will have steam output. It is stated that there will be no hot or cold discharge to the receiving environment.

It was asked whether the geothermal waters could be used for irrigation purposes after the heat is removed.

It is stated that geothermal waters cannot be used for irrigation purposes due to their chemical structure. It is also added that discharge will not be allowed.

From the long-term plans of the beneficiary, it was asked who will produce the fruits and vegetables and whether the products of individual people who set up greenhouses will be purchased.

It was stated that depending on the capacity of the facility, the products produced by the people of the region will also be dried. It was stated that the main purpose of the establishment of the facility is to ensure that the fruits and vegetables grown in the region are dried in the facility and to develop trade in the region.

It was asked whether facilities will also be built in Ilisu Town.

It was stated that they also have licenses in the vicinity of Ilisu, but since this area is within the Special Environmental Protection Zone, a separate EIA application will be made. It was added that the springs in this area are deeper than 3500 meters and that a special study would be conducted. It was stated that it would be very costly to transport water from Ilisu to Güzelyurt and therefore a separate project would be developed for Ilisu.

It was asked whether the resource would be used for heating residential areas.

It was stated that geothermal heating may be economical for areas with mass housing, but the resource extracted in this project will be used primarily for electricity generation and in the long term for the establishment of modern greenhouses and fruit and vegetable drying facilities.

It was asked whether private entrepreneurs who want to do greenhouse farming can benefit from the resource.

The current focus is on finding the geothermal resource and, depending on the strength of the resource, using it for electricity generation and, in the long term, for the establishment of greenhouses and fruit and vegetable drying facilities. It is stated that the tomatoes to be produced in the greenhouse will be exported, but the fruits and vegetables to be used in the drying facility can be supplied from the people of the region. It was also added that local people would be employed. On the other hand, it has been stated that investments in Specialized Organized Greenhouse Zones based on Agriculture under the leadership of the Governorship and the Ministry of Agriculture can also be supported as a company and private enterprise investors can take place as investors in these organized greenhouse zones. It was stated that the Governorship and the Provincial Directorate of Agriculture can make the necessary announcements if the work on this issue progresses.

It was asked whether ground surveys had been carried out and how long the projects would take.

It is stated that geological, geochemical and geophysical studies are carried out during the search for the resource. As a result of these studies, geothermal drilling points were determined. The project is expected to be completed in 24 months. Prof. Dr. Hasan Sözbilir, Director of Dokuz Eylül University Earthquake Research Center, and Cemil Adıgüzel, retired from MTA, were said to be working on the project. It was stated that exploration and development studies will continue at every stage of the project. With the completion of the official processes, it is stated that drilling will begin in early 2022.

It was stated by the citizens that there were reactions against geothermal in the media and that geothermal activities were said to damage cultivated lands. It was asked what measures will be taken against cultivated lands.

It is stated that the project will be managed with the requirements of the World Bank and the Risk Sharing Mechanism. It has been added that the works will be carried out under completely environmentally friendly conditions, respecting people, animals and nature. It is stated that the process will be carried out in a transparent manner by involving stakeholders. It was stated that monitoring of endemic species was started at the very beginning of the project. It was stated that they will protect agricultural lands and cultivated areas at every stage of the project and necessary measures will be taken.

It was asked whether the reserves of underground geothermal fluids were calculated. It was asked how many millions of years these fluids were formed.

It is stated that the underground fluid will be detected by drilling and that it is necessary to drill and test multiple wells for reserve calculation. It was stated that the fluid continues to percolate underground in drops over time, the presence of the rock that will form the reservoir and the heating system should heat the fluid and it should not be able to reach the surface with the cover rocks. It was added that this process is a process of thousands of years. It was said that the heating system is Hasan Mountain itself. It is stated that it is still hot. It was specified that after the heat of the fluid to be produced by drilling is taken, it will be pumped back to the same reservoir and it will be heated again.

In general, public reactions are positive and supportive of the project. Local people want the project to start as soon as possible. The feedback from the public is positive. In the time period after the meeting, headmen called the company owner and asked when the activities would start. Local people show supportive behavior towards investment in the region.

- **Second Stakeholder Engagement Meeting**

Question 1: According to the information you provided about the implementation of the project, what is the current stage of the project?

Our company has been operating in the field for 4 years. During this time, geological and geophysical studies were carried out in the field. As a result of these studies, possible well locations were determined and necessary permits were obtained. In order to turn our exploration area into an operation area, 2 wells were drilled in the field. Due to the geothermal fluid obtained from the wells, the fields were converted into operating fields, then the well locations were revised in the light of the data obtained and the necessary permits for these fields were obtained. In the coming months, it is planned to drill a deeper well than the wells in the field within the scope of the risk

sharing mechanism by obtaining the final approval of the World Bank and to obtain a suitable Geothermal fluid in terms of its quality.

Question 2: Will the people be able to use the geothermal fluid to heat greenhouses individually?

The primary objective of the project is the establishment of a geothermal power plant. Our secondary objective is the establishment of Geothermal heated greenhouses, which is a project that supports women's labor force and employment when considered socially. The allocation of the geothermal fluid to be extracted within the scope of the project to be used in individual greenhouses to be established by individuals on their own lands is not possible in terms of both the efficiency and sustainability of production and the legal regulations regarding the zoning status of the lands. Although we have future plans for greenhouse activities in Güzelyurt region, we can say that our priority is the geothermal power plant and the geothermal fluid to be extracted is primarily intended to be used in the power plant.

Question 3: Will there be any losses in the geothermal fluid to be produced under the project? How much of it will be recycled?

Considering that the geothermal resource under the ground is limited, it is not possible to release the geothermal fluid to the environment, both technically in terms of the sustainability of the project, in terms of the risks that the geothermal fluid may pose to the environment, and due to environmental legal regulations. In order for the project to be sustainable, production processes must be carried out with a closed cycle system. In this way, it is aimed to minimize geothermal fluid losses.

Question 4: Will any arrangements be made in terms of ownership of citizens' lands in the area where the facility will be built? Is there any expropriation of the parcels in the area where the geothermal plant will be built? How is a Geothermal Power Plant (GPP) different from a Solar Power Plant (SPP)?

The well points that we have drilled within the scope of the project and for which the necessary permits have been obtained (EIA, etc.) and which are planned to be drilled in the future are located on public lands that are not suitable for agriculture. It is aimed that the agricultural activities of the people of the region will not be affected by the works to be carried out unless it is necessary. Although we have the right of expropriation provided to the company by the geothermal law, our company has not used this right until today and has not wanted to use it. As a company, our priority has always been to reach an agreement with the citizens. There is no areal zoning work in the installation of geothermal power plants. Only the area where the power plant will be installed is zoned and the nature of the surrounding lands does not change. The fact that GEPPs can be produced depending on the season and in a certain part of the day, and if we compare the GEPP and GEPP plants with the same capacity in terms of the area where they will be installed, we can see that GEPPs produce more efficiently and are more advantageous.

Question 5: Do you have a plan or study on geothermal residential heating within the scope of the project?

We have already stated that the purpose and priority of our project is electricity generation. However, considering the amount and quality of geothermal fluid to be obtained in future studies, we will be open to new projects and future offers if we have enough resources.

Question 6: Do geothermal power plants threaten the health of the people living in the region? Will the power plant harm the right to health?

Although we do not have sufficient scientific data on this issue, we can say that there are no scientific studies that we can make a definite judgment on the subject, especially in regions where GEPPs are dense (Aegean Region, Aydın, etc.).

➤ **Agreed steps**

○ **First Stakeholder Engagement Meeting**

Unemployment is one of the biggest problems in the region. The surrounding agricultural lands are not productive agricultural lands. Wheat is generally cultivated in agricultural lands. New investments are needed in the region.

After the Project starts, meetings will be held with local people and headmen in the method and frequency given in the PKP. In these meetings, information about the Project will be provided and the opinions of the participants and the people they represent will be taken.

Contact numbers for the Beneficiary's Community Relations Officers have now been left in all local headmen' offices and municipalities in the project area, and leaflets distributed to the public provide possible avenues for complaints (**Annex 2: provided in Annex 3 of the SEP**). Complaint boxes will also be placed in village centers in the near future. The suggestion/complaint form given in **Annex 1 of the SEP will be** available next to the complaint boxes.

It is planned to establish communication through women representatives from within the village to enable women to voice their possible wishes and complaints. It is aimed to be able to listen to all women living in the region by communicating more frequently with representatives with strong communication skills from within the village.

○ **Second Stakeholder Engagement Meeting**

In the second stakeholder engagement meeting, thei received have largely focused on the public's access to benefits from the geothermal source. It has been emphasized that the geothermal source will primarily be utilized for electricity generation. An explanation has been provided that individual usage is deemed economically unfeasible and, therefore, not permitted. However, if there are plans initiated by public authorities, such as an Agricultural Specialized Organized Greenhouse Industrial Zone or a City District heating system, and if there are sufficient resources, the company may consider these plans.

During and after the presentation, company officials have assured that they can always be reached through the contact numbers provided on brochures and posters.

It was conveyed that requests and complaints can be left in the complaint boxes to be left in the mukhtars' offices.

Additionally, it has been indicated that details about the project can be obtained from the 'Environmental and Social Management' booklet left in mukhtars' offices.

At the end of the meeting, it was conveyed that depending on the progress of the Project, another stakeholder participation meeting will be organized in the future

The information note of the second Stakeholder Engagement Meeting is given in Annex 2: Annex 4 of SEP.

REFERENCES:

- [1] Culver G., 1991, Drilling and Construction, Chapter 6, Geothermal Direct Use Engineering and Design Guidebook
- [2] Finger J., Blankenship D., 2010, Handbook of Best Practices for Geothermal Drilling, Sandia Report
- [3] Chemwotei S.C., 2011, Geothermal Drilling Fluids, Geothermal Training Program

Annex 1
Official Documents

Annex 1.1

Operation License

Annex 1.2

Gazimir License EIA Not Required Decisions

Annex 1.3

Gaziemir-1 Drilling Location Usage Permits

Annex 1.4

AG-4 Drilling Location Usage Permits

Annex 1.5

Gaziemir-5 Drilling Location Usage Permits

Annex 1.6

Institutional Opinions for the PTD subject to the EIA Not Required Decision for Gaziemir-1 and Gaziemir-5

Annex 1.7

**Institutional Opinions for
the PTD subject to the EIA
Not Required Decision
where AG-4 is evaluated**

Annex 1.8

Gaziemir-5 Illegal User Consent

Annex 2

Stakeholder Engagement Plan

Annex 3

Noise Emission Calculations

T.C.
AKSARAY İL ÖZEL İDARESİ
JEOTERMAL KAYNAK İŞLETME RUHSATI

İli : AKSARAY
İlçesi : GÜZELYURT
Belde : -
Köyü : -
Kaynağın Cinsi : JEOTERMAL KAYNAK
Ruhsat Numarası : 2023/15
Ruhsatın Yürürlüğe Giriş Tarihi : 15/08/2023
Ruhsat Süresi Bitim Tarihi : 15/08/2053
Ruhsat Alanı (hektar) : 4869.77 Hektar
Ruhsat Sahibi : GÜZELYURT JEOTERMAL ENERJİ
A.Ş.
T.C. Kimlik No :
Vergi Daire No : Cumhuriyet V.D. / 453 152 13 58
Ruhsatın Ait Olduğu paftalar : L32b3, L32b4
Erişim No : 3382865

Ruhsat Koordinatları:

Poligon 1	1. Nokta	2. Nokta	3. Nokta	4. Nokta	5. Nokta	6. Nokta	7. Nokta
Sağa (Y)	616988	616974	623000	623000	624600	625000	625000
Yukarı (X)	4241558	4247000	4246999	4245400	4245400	4243420	4242000
	8. Nokta	9. Nokta	10. Nokta				
Sağa (Y)	625464	625691	623000				
Yukarı (X)	4241126	4239999	4239999				

Ruhsat Sahibinin Adresi :

Kazım Özalp Mah. Reşit Galip Cad.No:97 Çankaya / ANKARA

Mehmet Emre CANPOLAT

Vali a.
Vali Yardımcısı
Genel Sekreter v.

Valilik Makamının 15.08.2023 tarih ve 29598 sayılı Oluru ile İşletme Ruhsatına geçişi yapılmıştır.



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-2758429~202262

11.04.2022

Konu : Ek-2 Proje Tanıtım Dosyası

GMK YENİLENEBİLİR ENERJİ MÜH. İMALAT SAN. VE TİC. A.Ş. NE
Adalet Mah. Manas Blv. Folkart Towers A-Kule
47/B Daire:2601 Bayraklı /İZMİR

Aksaray İli, Güzelyurt İlçesi Yeni Mahalle ve Bozcayurt köyünde **Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş.** tarafından yapılması planlanan "**Jeotermal Kaynak Arama Sondajları**" projesine ait Proje Tanıtım Dosyası incelenmiş ve değerlendirilmiştir.

25.11.2014 tarih ve 29186 Sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği'nin 17. Maddesi gereğince, "Jeotermal Kaynak Arama Sondajları" Projesine Valiliğimizce "**Çevresel Etki Değerlendirmesi Gerekli Değildir Kararı**" verilmiştir.

Söz konusu projeye ilişkin Proje Tanıtım Dosyası ve eklerinde belirtilen hususlar ile 5491 Sayılı Çevre Kanununda Değişiklik Yapılmasına Dair Kanunla değişik 2872 Sayılı Çevre Kanunu ve bu Kanuna istinaden yürürlüğe giren ilgili Yönetmeliklere uyulması, mer'i mevzuat uyarınca ilgili kurum/kuruluşlardan gerekli izinlerin alınması ÇED Yönetmeliği'nin 18. Maddesi gereğince projede yapılacak bu Yönetmeliğe tabi değişikliklerin Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) iletilmesi gerekmektedir.

Bilgilerinizi ve gereğini rica ederim.

Hamza AYDOĞDU
Vali

Ek:

- 1 - ÇED Gerekli Değildir Belgesi (2 Sayfa)
- 2 - Seçme-Eleme Kontrol Listesi (3 Sayfa)

Dağıtım:

Gereği:

GMK YENİLENEBİLİR ENERJİ MÜH. İMALAT
SAN. VE TİC. A.Ş. NE
Adalet Mah. Manas Blv. Folkart Towers A-Kule
47/B Daire:2601 Bayraklı /İZMİR

Bilgi:

Enpark Çevre Enerji Maden Mühendislik Danışmanlık
ve Müşavirlik Ltd.Şti.ne
Bozcayurt Köyü Muhtarlığına
Yeni Mahallesi Muhtarlığına

"Belgenin asli
elektronik imzalıdır."
Zülfikar OZDAŞ
YH.K.I.

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 862E5BC4-D004-43DE-80BB-E26CE0A8F5F7

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY
Tel: 0(382) 2175100 Faks: 0(382) 2175105
e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

Bilgi için: Sadık PÖKÖN
Makine Mühendisi





T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
Çevresel Etki Değerlendirmesi, İzin ve Denetim Genel Müdürlüğü



T.C.
AKSARAY VALİLİĞİ
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜ

Karar Tarihi : 13-01-2022
Karar No : 13955465 220-02 E-2022B

ÇEVRESEL ETKİ DEĞERLENDİRME BELGESİ

25.11.2014 tarih ve 29186 sayılı Resmi Gazete’de yayımlanarak yürürlüğe giren Çevresel Etki Değerlendirmesi Yönetmeliği’nin Ek-II listesinde yer alan '**Jeotermal Kaynak Arama Sondajları**' projesi ile ilgili olarak inceleme-değerlendirme yapılmış ve Proje Tanıtım Dosyasında çevresel etkilere karşı alınması öngörülen önlemler yeterli görülmüştür. Ayrıca ÇED Raporu hazırlanmasına gerek bulunmadığı tespit edilmiş olup, söz konusu projeye ÇED Yönetmeliğinin 17.Maddesi gereğince Valiliğimizce "**Çevresel Etki Değerlendirmesi Gerekli Değildir**" karar verilmiştir.



Proje Sahibi : GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş.
Proje Yeri : Aksaray İli, Güzelyurt İlçesi, Yeni Mahalle ve Bozcayurt Köyü
Kapasite : 4 adet Jeotermal Kaynak Arama Sondajı

PROJE KOORDİNATLARI

Koordinat Sırası	Sağa (Y), Yukarı (X)	Koor. Sırası	Enlem. Boylam
Datum	ED-50	Datum	WGS-84
Projeksiyon	UTM	Projeksiyon	COGRAFIK
D.O.M.	33	D.O.M.	--
Zon	36	Zon	--
Ölçek Fak.	6 derecelik	Ölçek Fak.	--
SONDAJ LOKASYONLARI			
AG-1	619067.2381	4240244.0768	38.300747
AG-2	618233.92	4239631.59	38.29533878
AG-3	617403.27	4240266.59	38.30116912
AG-4	619135.05	4241992.89	38.31649450
201968001 RUHSAT POLİGON 1			
1	616988	4241558	38.31285886
2	623000	4239999	38.29800843
3	623000	4237462	38.27515086
4	621090	4237473	38.27550953
5	619726	4237873	38.27929636
6	619647	4239442	38.29344332
7	616994	4239437	38.29374804
201968001 RUHSAT POLİGON 2			
1	617402	4234534	38.24951896
2	618188	4235423	38.25742580
3	621000	4235403	38.25687136
4	621000	4233000	38.23522072
5	620012	4232969	38.23534410
6	619200	4233583	38.24071389
7	617802	4233616	38.24119546
201968002 RUHSAT			
1	616988	4241558	38.31285886
2	616974	4247000	38.36189237
3	623000	4246999	38.36107576
4	623000	4245400	38.34666944
5	624600	4245400	38.34644831
6	625000	4243420	38.32855374
7	625000	4242000	38.31576019
8	625464	4241126	38.30782106
9	625691	4239999	38.24071389
10	623000	4239999	38.24119546
AG-1 SONDAJ ALANI			
1	619074.5575	4240244.2090	38.30074722033185
2	619067.4624	4240237.3281	38.30068616549269
3	619060.7783	4240244.7045	38.30075351287152
4	619067.7221	4240251.7602	38.30081616182393
AG-2 SONDAJ ALANI			
1	618228.9200	4239626.5900	38.29529438
2	618238.9200	4239626.5900	38.29529307
3	618238.9200	4239636.5900	38.29538317
4	618228.9200	4239626.5900	38.29538448

AG-3 SONDAJ ALANI			
1	617398.2700	4240261.5900	38.30112473
2	617408.2700	4240261.5900	38.30112342
3	617408.2700	4240271.5900	38.30121352
4	617398.2700	4240271.5900	38.30121483
AG-4 SONDAJ ALANI			
1	619130.0500	4241987.8900	38.31645011
2	619140.0500	4241987.8900	38.31644878
3	619140.0500	4241997.8900	38.31653888
4	619130.0500	4241997.8900	38.31654021
AG-1 ÇED ALANI			
1	619116.0855	4240235.3492	38.3006618821203
2	619058.3374	4240184.8301	38.30021437792104
3	619018.6148	4240240.8147	38.30072406000595
4	619072.4357	4240286.5563	38.30112904353923
AG-2 ÇED ALANI			
1	618198.9200	4239595.8757	38.29502160
2	618268.9200	4239595.8757	38.29501238
3	618268.9200	4239667.3043	38.29565504
4	618198.9200	4239667.3043	38.29566517
AG-3 ÇED ALANI			
1	617368.2700	4240230.8757	38.30085192
2	617438.2700	4240230.8757	38.30084276
3	617438.2700	4240302.3043	38.30148632
4	617368.2700	4240302.3043	38.30149548
AG-4 ÇED ALANI			
1	619100.0500	4241957.1757	38.31617737
2	619170.0500	4241957.1757	38.31616807
3	619170.0500	4242028.6043	38.31681162
4	619100.0500	4242028.6043	38.31682092



T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
Çevresel Etki Değerlendirmesi, İzin ve Denetim Genel Müdürlüğü



T.C.
AKSARAY VALİLİĞİ
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜ

Karar Tarihi : 29-11-2022
Karar No : 13955465 220-02 E-2022283

ÇEVRESEL ETKİ DEĞERLENDİRME BELGESİ

25.11.2014 tarih ve 29186 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren Çevresel Etki Değerlendirmesi Yönetmeliği'nin Ek-II listesinde yer alan '**Jeotermal Kaynak Arama Sondajları**' projesi ile ilgili olarak inceleme-değerlendirme yapılmış ve Proje Tanıtım Dosyasında çevresel etkilere karşı alınması öngörülen önlemler yeterli görülmüştür. Ayrıca ÇED Raporu hazırlanmasına gerek bulunmadığı tespit edilmiş olup, söz konusu projeye ÇED Yönetmeliğinin 17. Maddesi gereğince Valiliğimizce "**Çevresel Etki Değerlendirmesi Gerekli Değildir**" kararı verilmiştir.

Ali OZCAN
Vali a.
Çevre, Şehircilik ve İklim Değişikliği İl Müdürü



Proje Sahibi : GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET A.Ş.
Proje Yeri : Aksaray İli, Güzelyurt İlçesi, Güzelyurt İlçesi, Akyamaç Mahallesi, Bozcayurt Köyü
Kapasite : 7 Adet Jeotermal Kaynak Arama Sondajı

KOORDİNATLAR

Ruhsat Koordinatları

2019680002 Nolu (Erişim no: 3382865) Ruhsat Sahası Koordinatları

NO	X	Y	ENLEM	BOYLAM
1	616988	4241558	38.312859	34.337820
2	616974	4247000	38.361892	34.338562
3	623000	4246999	38.361076	34.407517
4	623000	4245400	38.346669	34.407238
5	624600	4245400	38.346448	34.425543
6	625000	4243420	38.328554	34.429768
7	625000	4242000	38.315760	34.429517
8	625464	4241126	38.307821	34.434668
9	625691	4239999	38.240714	34.361773
10	623000	4239999	38.241195	34.345807
ALANI	4869.77 Hektar			

SONDAJ KOORDİNATLARI (Sondağın delineceği noktalar)

SONDAJ ADI	X	Y	ENLEM	BOYLAM
Gaziemir-1	617986.56	4241661.10	38.313658	34.349261
Gaziemir-2	618937.57	4242360.11	38.319830	34.360254
Gaziemir-3	618962.57	4242200.11	38.318385	34.360512
Gaziemir-4	619445.57	4243107.11	38.326493	34.366190
Gaziemir-5	620150.57	4242618.95	38.322000	34.374170
Gaziemir-6	617221.56	4241734.10	38.314416	34.340525
Gaziemir-7	617306.56	4242372.11	38.320153	34.341602



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-5159791 -2022285

02.12.2022

Konu : ÇED Ek-2 Proje Tanıtım Dosyası

GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET ANONİM
ŞİRKETİNE

Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

İlimiz Güzelyurt ilçesi Akyamaç Mahallesi ve Bozcayurt Köyü adreslerinde Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Kaynak Arama Sondajları" projesine ait Proje Tanıtım Dosyası, Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği'nin 15. maddesinin birinci fıkrasının (a) bendi uyarınca incelenmiş ve değerlendirilmiştir.

29.07.2022 tarihli ve 31907 Sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği'nin 17. maddesi gereğince, söz konusu projeye Valiliğimizce "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilmiştir.

Bu kapsamda "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilen projeye ilişkin Proje Tanıtım Dosyası ve eklerinde belirtilen hususlar ile 2872 sayılı Çevre Kanunu ve bu Kanuna istinaden yürürlüğe giren mer'i mevzuata uygun faaliyet gösterilmesi, ilgili kurum/kuruluşlardan gerekli izinlerin alınması, ÇED Yönetmeliği'nin 18. maddesinin üçüncü fıkrası gereğince projede yapılacak mezkûr yönetmeliğe tabi değişikliklerin Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) iletilmesi hususunda;

Bilgilerini ve gereğini arz ve rica ederim.

Bülent MERT

Vali a.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü V.

Ek: Çevresel Etki Değerlendirme Belgesi (2 Sayfa)

Dağıtım:

Gereği:

GMK YENİLENEBİLİR ENERJİ
MÜHENDİSLİK İMALAT SANAYİ VE

Bilgi:

Tarım Ve Orman Bakanlığı 8. Bölge
Müdürlüğüne(Ek konulmadı)
DSİ 4. Bölge Müdürlüğüne(Ek konulmadı)
Su Yönetimi Genel Müdürlüğüne(Ek konulmadı)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevresehicilik@hsbt.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



TİCARİET ANONİM ŞİRKETİNE
Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

Aksaray İl Özel İdaresine(Ek konulmadı)
Aksaray İl Tarım Ve Orman Müdürlüğüne(Ek
konulmadı)
Aksaray İl Kültür Ve Turizm Müdürlüğüne(Ek
konulmadı)
Konya Orman Bölge Müdürlüğüne(Ek
konulmadı)
Güzelyurt Kaymakamlığına(Ek konulmadı)
Bozcayurt Köyü Muhtarlığına(Ek konulmadı)
Akyamaç Mahallesi Muhtarlığına(Ek konulmadı)
Enpark Çevre Enerji Maden Müh. Dan. ve Müş.
Ltd. Şti.ne
Çayyolu Mah. Irmakent Sitesi 2681. Sok. No:12
Çankaya ANKARA

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevrevesehirlik@bssd1.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



ÇED DEVRİ İLE İLGİLİ YAZILAR



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-5824983

24.02.2023

Konu : ÇED Gerekli Değildir Kararı Belgesi

GÜZELYURT JEOTERMAL ENERJİ A.Ş. YE
Kazım Özalp Mahallesi Reşit Galip Caddesi No:97 Çankaya/ANKARA

İlgi : 16.02.2023 tarihli yazınız.

İlimiz Güzelyurt ilçesi Akyamaç Mahallesi Bozcayurt köyü mevkiinde GMK Yenilenebilir Enerji Müh. İmalat San. ve Tic. A.Ş. uhdesinde bulunan 2019680002 Ruhsat Numaralı Jeotermal Kaynak arama projesi faaliyetinin Güzelyurt Jeotermal Enerji A.Ş. 'ye devredildiği bildirilmiş olup İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesinin yeni unvan adına düzenlenmesi İlgi (b)'de kayıtlı yazı ile talep edilmiştir.

Bilindiği üzere 29 Temmuz 2022 tarihli ve 31907 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği'nin, Proje Sahibinin Değişmesi ve Projenin Devri başlıklı 21 inci maddesinin 1 inci fıkrasında;

"Proje sahibinin herhangi bir nedenle değişmesi durumunda; projenin yeni sahibi, projenin devrine konu bilgi ve belgeleri (noter onaylı devir sözleşmesi, tapu senedi, ilgili idaresince onaylı icra/ihale sonuç belgeleri ve benzeri), nihai ÇED raporu/proje tanıtım dosyası ve eklerinin proje sahibinin taahhüdü altında olduğunu belirten taahhütnamesini ve taahhüdü imzalayan yetkilinin noter onaylı imza sirküleri ile ticari sicil gazetesini 6 ay içerisinde ilgili il müdürlüğüne sunmakla yükümlüdür(...)" hükmü bulunmaktadır.

İl Müdürlüğümüzce İlgi (b) dilekçe ve eklerinde yapılan inceleme ile maliallinde yapılan değerlendirme sonucunda İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesine esas koordinatlarda faaliyetin başlamış olduğu, mezkûr Yönetmelik gereği hazırlanması gereken bilgi ve belgelerin eksiksiz olarak sunulduğu tespit edilmiştir.

Bu kapsamda İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesi mer'i mevzuata uyulması kaydıyla Güzelyurt Jeotermal Enerji A.Ş. adına geçerlidir.

Ancak faaliyette kapasite artışı, yer değişikliği, proses değişikliği vb. herhangi bir değişiklik olması durumunda ÇED Yönetmeliği başta olmak üzere Çevre Mevzuatı konusunda değerlendirme yapılabilmesi için Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) tekrar müracaat edilmesi ve 2872 sayılı Çevre Kanunu başta olmak üzere Çevre Mevzuatına uyulması hususunda;

Bilgilerini ve gereğini rica ederim.

" Belgenin aslı
elektronik imzalıdır."

Ali ÖZCAN

Vali a.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü

24-02-2023

Evrak Görevlisi
Neslihan Tokyan

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 1B27AA86-263E-4DD4-BFEF-4180CF1BAE2D

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

Bilgi için: Çiğdem YILDIRIM

Mühendis





T.C.

ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI

Çevresel Etki Değerlendirmesi, İzin ve Denetim Genel Müdürlüğü



T.C.

AKSARAY VALİLİĞİ

ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜ

Karar Tarihi : 29-11-2022

Karar No : 13955465 220-02 E-2022283

ÇEVRESEL ETKİ DEĞERLENDİRME BELGESİ

25.11.2014 tarih ve 29186 sayılı Resmî Gazete'de yayımlanarak yürürlüğe giren Çevresel Etki Değerlendirmesi Yönetmeliği'nin Ek-II listesinde yer alan 'Jeotermal Kaynak Arama Sondajları' projesi ile ilgili olarak inceleme-değerlendirme yapılmış ve Proje Tanıtım Dosyasında çevresel etkilere karşı alınması öngörülen önlemler yeterli görülmüştür. Ayrıca ÇED Raporu hazırlanmasına gerek bulunmadığı tespit edilmiş olup, söz konusu projeye ÇED Yönetmeliğinin 17. Maddesi gereğince Valiliğimizce "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilmiştir.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü

Ali ÖZCAN
Vali a.

Proje Sahibi : GMM YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET A.Ş.

Proje Yeri : Aksaray İli, Güzelyurt İlçesi, Güzelyurt İlçesi, Akyamaç Mahallesi, Bozcayurt Köyü

Kapasite : 7 Adet Jeotermal Kaynak Arama Sondajı

KOORDİNATLAR

Ruhsat Koordinatları

2019680002 Nolu (Erişim no: 3382865) Ruhsat Sahası Koordinatları

NO	X	Y	ENLEM	BOYLAM
1	616988	4241558	38.312859	34.337820
2	616974	4247000	38.361892	34.338562
3	623000	4246999	38.361076	34.407517
4	623000	4245400	38.346669	34.407238
5	624600	4245400	38.346448	34.425543
6	625000	4243420	38.328554	34.429768
7	625000	4242000	38.315760	34.429517
8	625464	4241126	38.307821	34.434668
9	625691	4239999	38.240714	34.361773
10	623000	4239999	38.241195	34.345807
ALANI		4869.77 Hektar		

SONDAJ KOORDİNATLARI (Sondajın delineceği noktaları)

SONDAJ ADI	X	Y	ENLEM	BOYLAM
Gazlemir-1	617986.56	4241661.10	38.313658	34.349261
Gazlemir-2	618937.57	4242360.11	38.319830	34.360254
Gazlemir-3	618962.57	4242200.11	38.318385	34.360512
Gazlemir-4	619445.57	4243107.11	38.326493	34.366190
Gazlemir-5	620150.57	4242618.95	38.322000	34.374170
Gazlemir-6	617221.56	4241734.10	38.314416	34.340525
Gazlemir-7	617306.56	4242372.11	38.320153	34.341602



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-5159791 -2022285

02.12.2022

Konu : ÇED Ek-2 Proje Tanıtım Dosyası

GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET ANONİM
ŞİRKETİNE

Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

İlimiz Güzelyurt ilçesi Akyamaç Mahallesi ve Bozcayurt Köyü adreslerinde Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Kaynak Arama Sondajları" projesine ait Proje Tanıtım Dosyası, Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği'nin 15. maddesinin birinci fıkrasının (a) bendi uyarınca incelenmiş ve değerlendirilmiştir.

29.07.2022 tarihli ve 31907 Sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği'nin 17. maddesi gereğince, söz konusu projeye Valiliğimizce "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilmiştir.

Bu kapsamda "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilen projeye ilişkin Proje Tanıtım Dosyası ve eklerinde belirtilen hususlar ile 2872 sayılı Çevre Kanunu ve bu Kanuna istinaden yürürlüğe giren mer'i mevzuata uygun faaliyet gösterilmesi, ilgili kurum/kuruluşlardan gerekli izinlerin alınması, ÇED Yönetmeliği'nin 18. maddesinin üçüncü fıkrası gereğince projede yapılacak mezkûr yönetmeliğe tabi değişikliklerin Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) iletilmesi hususunda;

Bilgilerini ve gereğini arz ve rica ederim.

Bülent MERT

Vali a.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü V.

Ek: Çevresel Etki Değerlendirme Belgesi (2 Sayfa)

Dağıtım:

Gereği:

GMK YENİLENEBİLİR ENERJİ
MÜHENDİSLİK İMALAT SANAYİ VE

Bilgi:

Tarım Ve Orman Bakanlığı 8. Bölge
Müdürlüğüne(Ek konulmadı)
DSİ 4. Bölge Müdürlüğüne(Ek konulmadı)
Su Yönetimi Genel Müdürlüğüne(Ek konulmadı)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevresehircilik@hsbt.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



TİCARİET ANONİM ŞİRKETİNE
Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

Aksaray İl Özel İdaresine(Ek konulmadı)
Aksaray İl Tarım Ve Orman Müdürlüğüne(Ek
konulmadı)
Aksaray İl Kültür Ve Turizm Müdürlüğüne(Ek
konulmadı)
Konya Orman Bölge Müdürlüğüne(Ek
konulmadı)
Güzelyurt Kaymakamlığına(Ek konulmadı)
Bozcayurt Köyü Muhtarlığına(Ek konulmadı)
Akyamaç Mahallesi Muhtarlığına(Ek konulmadı)
Enpark Çevre Enerji Maden Müh. Dan. ve Müş.
Ltd. Şti.ne
Çayyolu Mah. Irmakent Sitesi 2681. Sok. No:12
Çankaya ANKARA

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevresahircilik@bssm.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



ARAZI İZİNİ İLE İLGİLİ YAZILAR

İL ÖZEL İDARESİ RUHSAT VE DENETİM MÜDÜRLÜĞÜ'NE AKSARAY

Konu: 2019680002 Numaralı Jeotermal Kaynak Arama Ruhsatında Hazine Arazileri Sondaj Çalışmaları

Aksaray İli, Güzelyurt İlçesi Gaziemir Köyü mevkiinde bulunan 2009680002 No'lu ruhsatımızın içerisinde kalan aşağıda yazılı parseller üzerinde jeotermal kaynak arama amaçlı sondaj çalışması yapmak istemekteyiz.

Aksaray İli, Güzelyurt İlçesine bağlı 2863 parselin işgal olmayan kısmı
Aksaray İli, Güzelyurt İlçesine bağlı 3821 parselin tamamı
Aksaray İli, Güzelyurt İlçesi Bozcayurt Mevkiine bağlı 731 parselin işgal olmayan kısmı
Aksaray İli, Güzelyurt İlçesi Bozcayurt Mevkiine bağlı 616 parselin işgal olmayan kısmı
Aksaray İli, Güzelyurt İlçesine bağlı 2848 parselin işgal olmayan kısmı
Aksaray İli, Güzelyurt İlçesine bağlı 2833 parselin tamamı

26551 sayılı resmî gazetede yayımlanan 5686 numaraları Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanun'unun 12. Madde 7. Fıkrasına göre *"Hazinenin özel mülkiyetinde veya Devletin hüküm ve tasarrufundaki yerlerde yapılan faaliyetler için bu Kanunun yürürlük tarihinden sonra kira, ecri misil alınmaz"* şeklinde belirtilmektedir.

Konu ile ilgili olarak, Şirketimizce yapılan jeofizik ve jeolojik araştırmalar neticesince "Arama Sondaj Yeri" olarak belirlediğimiz ve tapuda Hazine arazisi olarak gözüken Güzelyurt ilçesi Mevkiindeki 3821 ve 2833 parsellerin tamamı ile 2863 parsel ve 2848 parselin işgal olmayan kısımları, Bozcayurt mevkiinde bulunan 731 parsel ve Akyamaç mevkiinde bulunan 616 parsellerinin işgal edilmemiş kısımları üzerinde, ilgili kanuna dayanan jeotermal kaynak arama ile ilgili dilekçemizin Çevre Şehircilik İl Müdürlüğü'ne, Milli Emlak Müdürlüğü'ne ve ilgili kurumlara yönlendirilmesini ve gerekli izinlerin tarafımıza sağlanmasını talep ederiz.

Gereğini saygılarımızla arz ederiz.

Tarih: 02/06/2022

ADRES: Adalet Mah. Manas Blv. Folkart Towers A kule 47 B Kat:26/2601 Bayraklı/İzmir
Tel: +90 232 532 01 54
Karşiyaka V.D: 396 073 72 89

Ekler:

1. Parsellerin Koordinatları
2. 2863 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü
3. 3821 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü
4. 731 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü
5. 616 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü
6. 2848 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü
7. 2833 Parsel Sondaj Alanı Koordinatları Uydu Görüntüsü

EK-1 Parsellerin Koordinatları**2863 Parsel Koordinatları**

No	Enlem	Boylam	No	Enlem	Boylam	No	Enlem	Boylam
1	38.3137	34.3478	36	38.3127	34.3494	71	38.3148	34.3489
2	38.3135	34.3476	37	38.3126	34.3495	72	38.3147	34.3489
3	38.3135	34.3478	38	38.3125	34.3495	73	38.3147	34.3489
4	38.3134	34.3479	39	38.3124	34.3496	74	38.3147	34.349
5	38.3133	34.3481	40	38.3123	34.3496	75	38.3147	34.349
6	38.3133	34.3481	41	38.3122	34.3495	76	38.3146	34.349
7	38.3132	34.3481	42	38.3122	34.3496	77	38.3146	34.3489
8	38.3131	34.348	43	38.3121	34.3497	78	38.3146	34.3489
9	38.313	34.348	44	38.3121	34.3498	79	38.3146	34.3488
10	38.3129	34.3479	45	38.3123	34.3498	80	38.3146	34.3487
11	38.3128	34.3478	46	38.3125	34.3497	81	38.3146	34.3486
12	38.3127	34.3477	47	38.3127	34.3497	82	38.3145	34.3485
13	38.3126	34.3477	48	38.3131	34.3497	83	38.3145	34.3485
14	38.3126	34.3477	49	38.3134	34.3497	84	38.3145	34.3484
15	38.3125	34.3476	50	38.3136	34.3497	85	38.3145	34.3483
16	38.3125	34.3477	51	38.3138	34.3498	86	38.3144	34.3483
17	38.3125	34.3478	52	38.3141	34.3498	87	38.3144	34.3482
18	38.3124	34.3479	53	38.3142	34.3499	88	38.3143	34.3481
19	38.3124	34.3479	54	38.3143	34.3499	89	38.3143	34.348
20	38.3124	34.348	55	38.3144	34.3499	90	38.3143	34.348
21	38.3123	34.3481	56	38.3145	34.3497	91	38.3142	34.348
22	38.3123	34.3481	57	38.3146	34.3496	92	38.3142	34.348
23	38.3123	34.3482	58	38.3146	34.3496	93	38.3141	34.348
24	38.3123	34.3482	59	38.3147	34.3494	94	38.3141	34.348
25	38.3125	34.3484	60	38.3147	34.3493	95	38.3139	34.348
26	38.3128	34.3485	61	38.3148	34.3492	96	38.3139	34.3479
27	38.3129	34.3486	62	38.3148	34.3492	97	38.3138	34.3478
28	38.3129	34.3487	63	38.3149	34.3492	98	38.3137	34.3478
29	38.3129	34.3488	64	38.315	34.3492			
30	38.313	34.349	65	38.315	34.349			
31	38.313	34.3491	66	38.315	34.349			
32	38.313	34.3491	67	38.315	34.349			
33	38.313	34.3492	68	38.3149	34.3489			
34	38.313	34.3492	69	38.3149	34.3489			
35	38.3128	34.3493	70	38.3148	34.3489			

3821 Parsel Koordinatları

No	Enlem	Boylam	No	Enlem	Boylam
1	38.3199	34.3599	27	38.3214	34.3614
2	38.3197	34.3598	28	38.3213	34.3614
3	38.3196	34.3602	29	38.3212	34.3613
4	38.3194	34.3606	30	38.3211	34.3614
5	38.3192	34.3608	31	38.321	34.3614
6	38.3189	34.3609	32	38.3208	34.3614
7	38.319	34.361	33	38.3207	34.3614
8	38.3193	34.361	34	38.3206	34.3614
9	38.3195	34.3611	35	38.3206	34.3614
10	38.3197	34.3611	36	38.3205	34.3614
11	38.3198	34.3613	37	38.3204	34.3614
12	38.32	34.3614	38	38.3204	34.3614
13	38.3202	34.3617	39	38.3204	34.3614
14	38.3202	34.3619	40	38.3202	34.3611
15	38.3203	34.3621	41	38.3201	34.3609
16	38.3205	34.3623	42	38.32	34.3608
17	38.3206	34.3622	43	38.3201	34.3607
18	38.3208	34.3621	44	38.3203	34.3604
19	38.321	34.3619	45	38.3203	34.3603
20	38.3212	34.3618	46	38.3205	34.3601
21	38.3214	34.3617	47	38.3207	34.36
22	38.3217	34.3615	48	38.3204	34.36
23	38.3218	34.3614	49	38.3203	34.36
24	38.3217	34.3614	50	38.3202	34.36
25	38.3216	34.3613	51	38.32	34.36
26	38.3215	34.3613	52	38.3199	34.3599

731 Parsel Koordinatları

No	Enlem	Boylam	No	Enlem	Boylam
1	38.3269	34.365	41	38.3262	34.3656
2	38.327	34.3649	42	38.3262	34.3655
3	38.3271	34.3647	43	38.3262	34.3651
4	38.3274	34.3642	44	38.3261	34.365
5	38.3275	34.3639	45	38.3261	34.3649
6	38.3277	34.3635	46	38.3261	34.3648
7	38.3278	34.3633	47	38.326	34.3647
8	38.3277	34.3633	48	38.3259	34.3647
9	38.3273	34.3633	49	38.3258	34.3647
10	38.3268	34.3633	50	38.3259	34.3648
11	38.3265	34.3633	51	38.3259	34.3649
12	38.3264	34.3632	52	38.3259	34.3651
13	38.3263	34.3633	53	38.3258	34.3655
14	38.3261	34.3635	54	38.3258	34.3657
15	38.3259	34.3638	55	38.3258	34.366
16	38.3258	34.364	56	38.3258	34.3661
17	38.3256	34.3642	57	38.3257	34.3662
18	38.3256	34.3643	58	38.3258	34.3663
19	38.3258	34.3642	59	38.3259	34.3664
20	38.3259	34.3641	60	38.326	34.3664
21	38.326	34.3641	61	38.326	34.3664
22	38.326	34.3641	62	38.3259	34.3667
23	38.3262	34.3641	63	38.3258	34.3668
24	38.3263	34.3642	64	38.3259	34.3669
25	38.3264	34.3642	65	38.3262	34.3668
26	38.3265	34.3643	66	38.3263	34.3667
27	38.3266	34.3644	67	38.3264	34.3666
28	38.3267	34.3644	68	38.3265	34.3666
29	38.3267	34.3646	69	38.3265	34.3668
30	38.3267	34.3648	70	38.3266	34.3667
31	38.3267	34.3649	71	38.3269	34.3663
32	38.3266	34.365	72	38.327	34.3661
33	38.3266	34.3652	73	38.327	34.366
34	38.3266	34.3654	74	38.327	34.3658
35	38.3266	34.3655	75	38.3269	34.3657
36	38.3265	34.3657	76	38.3269	34.3656
37	38.3264	34.3658	77	38.3269	34.3654
38	38.3263	34.3658	78	38.3269	34.3652
39	38.3263	34.3658	79	38.3269	34.3651
40	38.3262	34.3658	80	38.3269	34.365

616 Parsel Koordinatları

No	Enlem	Boylam	No	Enlem	Boylam
1	38.3222	34.374	31	38.3218	34.3723
2	38.3222	34.3738	32	38.3218	34.3723
3	38.3223	34.3736	33	38.3218	34.3724
4	38.3223	34.3734	34	38.3219	34.3724
5	38.3224	34.3732	35	38.322	34.3724
6	38.3224	34.373	36	38.322	34.3725
7	38.3224	34.3728	37	38.322	34.3725
8	38.3224	34.3727	38	38.322	34.3726
9	38.3225	34.3726	39	38.3221	34.3726
10	38.3224	34.3725	40	38.3222	34.3726
11	38.3224	34.3725	41	38.3221	34.3728
12	38.3223	34.3725	42	38.3221	34.3728
13	38.3222	34.3724	43	38.3221	34.3729
14	38.3222	34.3724	44	38.3221	34.373
15	38.3221	34.3723	45	38.322	34.3731
16	38.3221	34.3722	46	38.322	34.3732
17	38.322	34.3721	47	38.3219	34.3733
18	38.322	34.3721	48	38.3218	34.3735
19	38.3219	34.3721	49	38.3218	34.3736
20	38.3218	34.3721	50	38.3217	34.3737
21	38.3218	34.3719	51	38.3216	34.374
22	38.3218	34.3717	52	38.3216	34.3742
23	38.3218	34.3716	53	38.3215	34.3742
24	38.3218	34.3716	54	38.3215	34.3743
25	38.3218	34.3717	55	38.3216	34.3745
26	38.3218	34.3719	56	38.3217	34.3745
27	38.3218	34.372	57	38.322	34.3745
28	38.3218	34.3721	58	38.3222	34.3742
29	38.3218	34.3722	59	38.3222	34.374
30	38.3219	34.3723			

2848 Parsel Koordinatları

No	Enlem	Boylam	No	Enlem	Boylam
1	38.3136	34.3391	45	38.3144	34.3407
2	38.3136	34.3392	46	38.3144	34.3407
3	38.3134	34.3392	47	38.3145	34.3408
4	38.3134	34.3393	48	38.3145	34.3408
5	38.3133	34.3394	49	38.3144	34.3409
6	38.3132	34.3394	50	38.3144	34.3409
7	38.3132	34.3395	51	38.3144	34.341
8	38.3131	34.3395	52	38.3144	34.3411
9	38.3131	34.3396	53	38.3144	34.3411
10	38.3131	34.3396	54	38.3144	34.3411
11	38.3132	34.3396	55	38.3145	34.3412
12	38.3133	34.3397	56	38.3145	34.3411
13	38.3134	34.3397	57	38.3145	34.3411
14	38.3135	34.3398	58	38.3146	34.3411
15	38.3135	34.3398	59	38.3146	34.3411
16	38.3136	34.3398	60	38.3146	34.3411
17	38.3136	34.3399	61	38.3147	34.341
18	38.3137	34.3399	62	38.3147	34.3409
19	38.3138	34.34	63	38.3147	34.3409
20	38.3139	34.3401	64	38.3148	34.3408
21	38.3139	34.3401	65	38.3148	34.3408
22	38.314	34.3402	66	38.3148	34.3406
23	38.314	34.3402	67	38.3148	34.3406
24	38.314	34.3402	68	38.3148	34.3406
25	38.314	34.3402	69	38.3148	34.3405
26	38.3139	34.3404	70	38.3148	34.3404
27	38.3139	34.3405	71	38.3148	34.3402
28	38.3137	34.3406	72	38.3149	34.3402
29	38.3137	34.3406	73	38.3148	34.3401
30	38.3136	34.3407	74	38.3147	34.3401
31	38.3136	34.3408	75	38.3146	34.3401
32	38.3137	34.3409	76	38.3145	34.34
33	38.3139	34.3408	77	38.3145	34.34
34	38.3139	34.3407	78	38.3144	34.3399
35	38.314	34.3406	79	38.3144	34.3399
36	38.3141	34.3406	80	38.3143	34.3397
37	38.3141	34.3405	81	38.3143	34.3397
38	38.3141	34.3405	82	38.3142	34.3396
39	38.3141	34.3405	83	38.3141	34.3395
40	38.3142	34.3405	84	38.314	34.3393
41	38.3143	34.3406	85	38.3139	34.3392
42	38.3143	34.3406	86	38.3138	34.3391
43	38.3144	34.3407	87	38.3136	34.3391
44	38.3144	34.3407			




2833 Parsel Koordinatları

No	Enlem	Boylam	No	Enlem	Boylam
1	38.3196	34.3406	44	38.32	34.3422
2	38.3196	34.3406	45	38.3201	34.3422
3	38.3195	34.3405	46	38.3201	34.3422
4	38.3195	34.3404	47	38.3202	34.3422
5	38.3195	34.3404	48	38.3203	34.3422
6	38.3195	34.3404	49	38.3203	34.3421
7	38.3194	34.3403	50	38.3204	34.3421
8	38.3193	34.3403	51	38.3205	34.3421
9	38.3192	34.3403	52	38.3206	34.3422
10	38.3192	34.3403	53	38.3206	34.342
11	38.3191	34.3403	54	38.3206	34.3419
12	38.319	34.3403	55	38.3206	34.3417
13	38.319	34.3403	56	38.3206	34.3416
14	38.3189	34.3403	57	38.3206	34.3415
15	38.3189	34.3403	58	38.3206	34.3414
16	38.3189	34.3403	59	38.3206	34.3412
17	38.3188	34.3403	60	38.3206	34.3411
18	38.3188	34.3405	61	38.3206	34.341
19	38.3188	34.3406	62	38.3205	34.3409
20	38.3187	34.3407	63	38.3205	34.3408
21	38.3187	34.3408	64	38.3205	34.3406
22	38.3187	34.3408	65	38.3204	34.3404
23	38.3189	34.3408	66	38.3203	34.3404
24	38.319	34.3409	67	38.3203	34.3404
25	38.3191	34.3409	68	38.3203	34.3404
26	38.3191	34.3409	69	38.3202	34.3404
27	38.3191	34.341	70	38.3202	34.3404
28	38.3191	34.3411	71	38.3201	34.3404
29	38.3192	34.3412	72	38.3201	34.3404
30	38.3192	34.3413	73	38.3199	34.3404
31	38.3193	34.3414	74	38.3199	34.3404
32	38.3194	34.3415	75	38.3199	34.3405
33	38.3195	34.3417	76	38.3199	34.3405
34	38.3196	34.3418	77	38.3198	34.3405
35	38.3196	34.3419	78	38.3198	34.3406
36	38.3197	34.3421	79	38.3198	34.3406
37	38.3197	34.3422	80	38.3198	34.3406
38	38.3197	34.3422	81	38.3197	34.3407
39	38.3198	34.3423	82	38.3197	34.3407
40	38.3198	34.3423	83	38.3197	34.3407
41	38.3198	34.3423	84	38.3196	34.3407
42	38.3198	34.3422	85	38.3196	34.3406
43	38.3199	34.3422	86	38.3196	34.3406

Güzelyurt Mevkii

2863 Parsel

Açıklama

-  2863 Parsel
-  Gaziemir-1
-  Gaziemir-1 Başvuru Alanı

2863

Gaziemir-1

Google Earth

Image © 2022 CNES / Airbus



500 m



Güzelyurt Mevkii

3821 Parsel

Açıklama

-  3821 Parsel
-  Gaziemir-2



Google Earth

Image © 2022 CNES / Airbus




500 m



Güzelyurt Bozcayurt Mevkii

731 Parsel

Açıklama

-  731 Parsel
-  Gaziemir-4
-  Gaziemir-4 Başvuru Alanı

Google Earth

Image © 2022 CNES / Airbus

731

Gaziemir 4




500 m

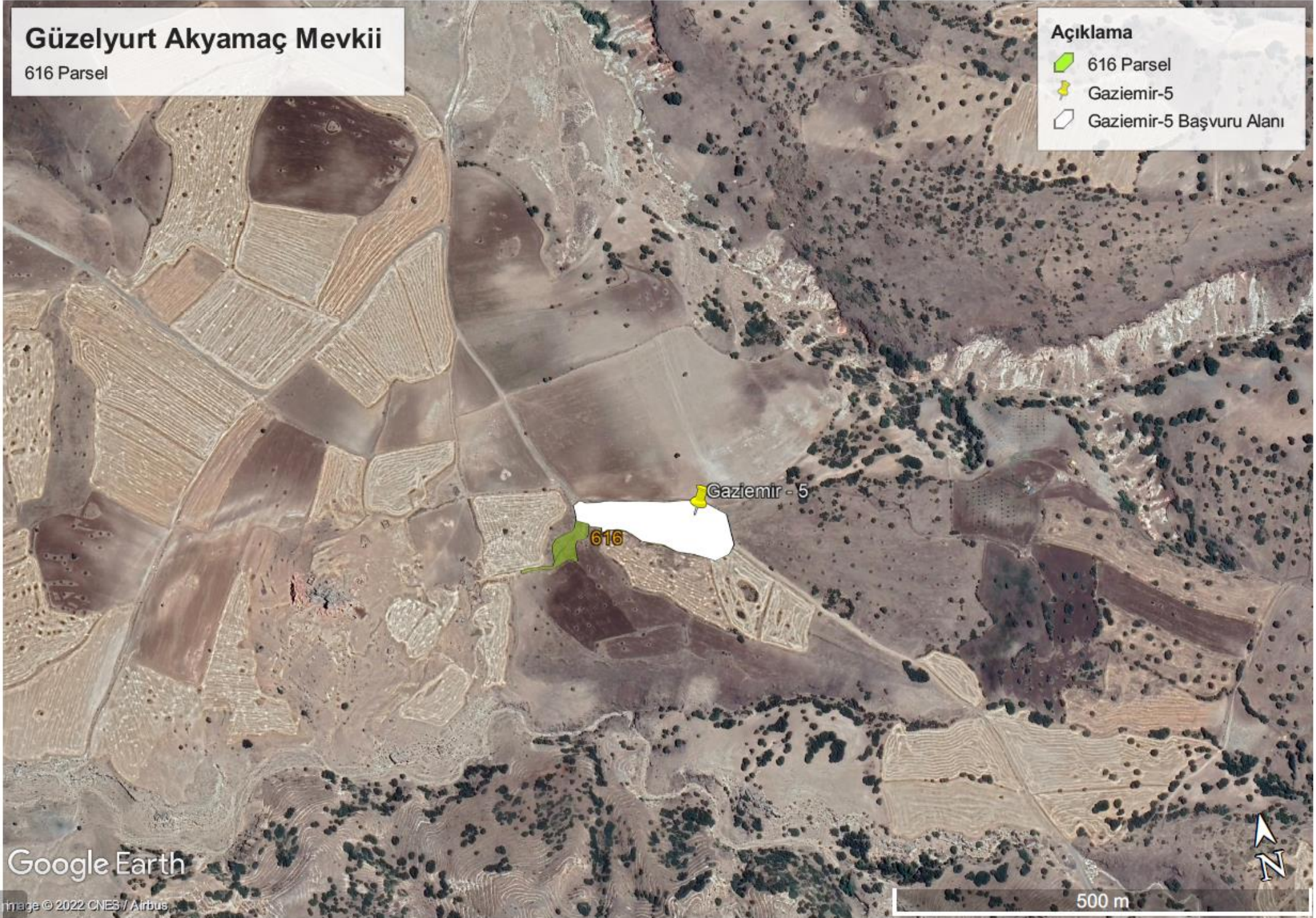


Güzelyurt Akyamaç Mevkii

616 Parsel

Açıklama

-  616 Parsel
-  Gaziemir-5
-  Gaziemir-5 Başvuru Alanı



Google Earth




Image © 2022 CNES / Airbus

500 m

Güzelyurt Mevkii

2848 Parsel

Açıklama

-  2848 Parsel
-  Gaziemir-6
-  Gaziemir-6 Başvuru Alanı



Google Earth

Image © 2022 CNES / Airbus

500 m



Güzelyurt Mevkii

2833 Parsel

Açıklama

-  2833 Parsel
-  Gaziemir-7
-  Gaziemir-7 Başvuru Alanı

Güldag Güzelyurt Yolu

Gaziemir 7

2833

Google Earth

Image © 2022 CNES / Airbus

500 m



T.C.
AKSARAY İL ÖZEL İDARESİ
JEOTERMAL KAYNAK ARAMA RUHSATI

İli : AKSARAY
İlçesi : GÜZELYURT
Belde : -
Köyü : -
Kaynağın Cinsi : JEOTERMAL KAYNAK
Ruhsat Numarası : 2019680002
Ruhsatın Yürürlüğe Giriş Tarihi : 12/03/2019
Ruhsat Süresi Bitim Tarihi : 11/03/2023
Ruhsat Alanı (hektar) : 4869.77 Hektar
Ruhsat Sahibi : GMK YENİLENEBİLİR ENERJİ MÜH.
İMALAT SAN. VE TİC. A.Ş.
T.C. Kimlik No :
Vergi Daire No : Karşiyaka V.D. 396 073 7289
Ruhsatın Ait Olduğu paftalar : L32b3, L32b4
Erişim No : 3382865

Ruhsat Koordinatları:

Polygon 1	1. Nokta	2. Nokta	3. Nokta	4. Nokta	5. Nokta	6. Nokta	7. Nokta
Sağa (Y)	616988	616974	623000	623000	624600	625000	625000
Yukarı (X)	4241558	4247000	4246999	4245400	4245400	4243420	4242000
	8. Nokta	9. Nokta	10. Nokta				
Sağa (Y)	625464	625691	623000				
Yukarı (X)	4241126	4239999	4239999				

Ruhsat Sahibinin Adresi :

Adalet Mah. Manas Blv. Folkart Towers A-Kule 47/B Daire:2601 Bayraklı /ZMİR


Yüksel ÇELİK
Vali a.
Genel Sekreter

Valilik Makamının 25.02.2022 tarih ve 12982 sayılı Oluru ile ruhsat süresi bitim tarihinden itibaren 1 yıl uzatılmıştır.



T.C.
AKSARAY VALİLİĞİ
Çevre, İklim ve İklim Bilişim Müdürlüğü
Milli Emlak Müdürlüğü

Sayı : E-24868629-000-5369981

26.12.2022

Konu : Sondaj Çalışması

DAĞITIM YERLERİNE

- İlgi : a) Aksaray İl Özel İdaresi'nin 10.06.2022 tarihli ve 84035498-755.03.02-15940 sayılı yazısı.
b) 14.06.2022 tarihli ve E-24868629-000-3889644 sayılı yazımız.
c) Güzelyurt Jeotermal Enerji Anonim Şirketi'nin 08.12.2022 tarihli ve BİLA sayılı dilekçesi.

GMK Yenilenebilir Enerji Mühendislik İmalat San Ve Tic. A.Ş. tarafından idarenize verilen İlgi (a) da kayıtlı yazınız ekindeki 02.06.2022 tarihli ve 7209 sayılı dilekçede, Aksaray İli Güzelyurt İlçesinde bulunan Hazineye ait 2863 parsel numaralı taşınmazın işgal olmayan kısımları, 3821 parsel numaralı, Bozcayurt 731 parselin işgal olmayan kısmı, Bozcayurt 616 parselin işgal olmayan kısmı, Güzelyurt 2848 parselin işgal olmayan kısmı, ve 2833 parselin tamamı üzerinde, jeotermal kaynak arama amaçlı sondaj çalışması yapmak istedikleri belirtilerek, izin talep edilmiş olup; İlgi (b) de kayıtlı yazımızla olumlu görüş verilmiştir. İlgi (c) de kayıtlı dilekçe ile GMK Yenilenebilir Enerji Mühendislik İmalat San Ve Tic. A.Ş. ne ait olan, Jeotermal Kaynak Arama Ruhsatının, Güzelyurt Jeotermal Enerji A.Ş. adına devredildiği, yukarıda belirtilen taşınmazlar üzerinde verilen arazi kullanım izinlerinin şirketleri adına devredilmesini, aynı zamanda Güzelyurt ilçesinde bulunan 2844 ve 2842 parsel numaralı taşınmazlar içinde Jeotermal kaynak arama amaçlı arazi kullanım izninin verilmesi talep edilmiştir.

5686 Sayılı Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanununun 12 maddesi (7) bendinde "**Hazinenin özel mülkiyetinde veya Devletin hüküm ve tasarrufundaki yerlerde yapılan faaliyetler için bu Kanunun yürürlük tarihinden sonra kira, ecrimisil alınmaz**" hükmü bulunmaktadır. Bununla birlikte; Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanunu Uygulama Yönetmeliğinin İrtifak ve Kamulaştırma başlıklı 22 maddesi (1) bendinde "**Arama ruhsat sahibi, arama faaliyetlerini, özel mülkiyete konu tarla, bağ, bahçe gibi alanlarda taşınmazın sahibinden izin alınarak sürdürür.**" denilmektedir.

Yukarıdaki mevzuat hükümlerine göre; ruhsat sahası içerisinde kalan Hazinenin özel mülkiyetinde veya Devletin hüküm ve tasarrufundaki taşınmazların, jeotermal amaçlı arama ve işletme faaliyetinden önce Müdürlüğümüzden izin alınması gerekmektedir. Buna göre; geçerli jeotermal kaynak arama ruhsatı bulunması şartıyla, **Aksaray İli Güzelyurt İlçesinde bulunan Hazineye ait 2863 parsel, 3821 parsel, 2848 parsel, 2833 parsel, 2844 parsel, 2842 parsel, Bozcayurt 731 parsel ve Bozcayurt 616 parsel numaralı taşınmazlar** üzerinde, jeotermal kaynak arama amaçlı sondaj çalışması yapılmasında hazine taşınmazları açısından sakınca bulunmamaktadır.

Bilgilerini ve gereğini arz/rica ederim.

Ali ÖZCAN

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: C90ACDE8-9141-4C0D-B3FC-BEE4CB581CCC

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: Stiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KEP Adresi : aksaraycevreseshircilik@hs01.kep.tr

Bilgi için: Alper GEÇGİL
Milli Emlak Müdürü V.



Dağıtım:

Gereği:

Aksaray İl Özel İdaresine
GÜZELYURT JEOTERMAL ENERJİ ANONİM
ŞİRKETİNE
Kazım Özalp mah. Reşit Galip Cad. No: 97
Çankaya ANKARA

Bilgi:

GMK YENİNEBİLİR ENERJİ MÜH.İMALAT
SAN.VE TİC.A.Ş.A
İZMİR

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: C90ACDE8-9141-4C0D-B3FC-BEE4CB581CCC

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: Stiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY
Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KEP Adresi : aksaraycevresehircilik@hs01.kep.tr

Bilgi için: Alper GEÇGİL
Milli Emlak Müdürü V.



ÇED DEVRİ İLE İLGİLİ YAZILAR



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü



Sayı : E-13955465-220.02-7666663

20.10.2023

Konu : Sondaj Noktası İlave Edilmesi

GÜZELYURT JEOTERMAL ENERJİ A.Ş. YE
Manas Bulvarı Folkart Towers A Kule 47/B K:26/2601 Bayraklı/İZMİR

- İlgi : a) Bakanlığımızın (ÇED İzin ve Denetim Genel Müdürlüğü) 27.08.2021 tarihli ve 1618156 sayılı talimatı.
b) 29.11.2022 tarihli ve E.2022283 sayılı ÇED Gerekli Değildir Kararı Belgesi.
c) 21.09.2023 tarihli yazınız.

İlimiz Güzelyurt ilçesi sınırları dahilinde Güzelyurt Jeotermal Enerji A.Ş. uhdesinde İlgi (b) ÇED Gerekli Değildir Kararı Belgesine esas olarak devam etmekte olan Jeotermal Kaynak Arama projesine ilave bir sondaj noktası eklenmesi faaliyetinin Çevresel Etki Değerlendirmesi Yönetmeliği (ÇED) kapsamında değerlendirilmesi İlgi (c) yazıyla talep edilmiştir.

Bilindiği üzere Bakanlığımız ÇED İzin ve Denetim Genel Müdürlüğü'nün İlgi (a)'da kayıtlı *Madencilik Faaliyetlerinin ÇED Sürecinde ve Görüş Taleplerinde Uygulanacak Usul ve Esaslar* konulu talimatının 4 üncü maddesi gereğince; ÇED Yönetmeliği kapsamında değerlendirilen ve ÇED Kararı verilen petrol veya jeotermal kaynak arama projelerinin ÇED Kararına esas Çalışma alanlarında aynı yöntemle ilave kaynak arama çalışması yapılması durumunda; ilave edilmesi planlanan yeni arama noktalarının çevresel etkilerinin, ÇED Kararına konu mevcut arama faaliyetinin çevresel etkilerini de içerecek şekilde kümülatif olarak değerlendirilmesi (kullanılacak kimyasalların özellikleri, yapılacak havuzların boyutları, geçirimsizlik özellikleri, sondaj çamuru kapsamında oluşan su ve atığın bertaraf yöntemleri, petrol ve jeotermalin akışkan özellikleri, test kuyusundan çıkan suların bertarafı, v.b.) gerekmektedir. Bu çerçevede değerlendirme sonucunda mevcut karara esas Proje Tanıtım Dosyasında yer alan taahhütlerin ilave açılacak kuyular için de geçerli olması halinde yeni arama noktaları için ÇED Yönetmeliği hükümlerinin uygulanmasına gerek bulunmamaktadır.

Bu kapsamda faaliyetin çevre üzerindeki muhtemel etkileri ile bu etkilerin önlenmesi veya en aza indirilmesi için alınması gereken tedbirlerin belirlendiği İlgi (b) Karara esas hazırlanan Proje Tanıtım Dosyasında belirlenen taahhütlerin yeni arama noktası için de geçerli olması ve ÇED alanı içerisinde faaliyet gösterilmesi kaydıyla mezkur Talimat gereği Ek'te gönderilen koordinatta yapılacak jeotermal kaynak arama sondajına ÇED Yönetmeliği hükümlerinin uygulanmasına gerek bulunmamaktadır.

Ayrıca 2872 sayılı Çevre Kanunu ve bu Kanuna istinaden yürürlüğe giren mer'î mevzuata uygun faaliyet gösterilmesi, ilgili kurum/kuruluşlardan gerekli izinlerin alınması ve projede yapılacak mezkûr Yönetmeliğe tabi değişikliklerin İl Müdürlüğümüze iletilmesi hususunda;
Gereğini rica ederim.

Ali ÖZCAN
Vali a.
Çevre, Şehircilik ve İklim Değişikliği İl Müdürü

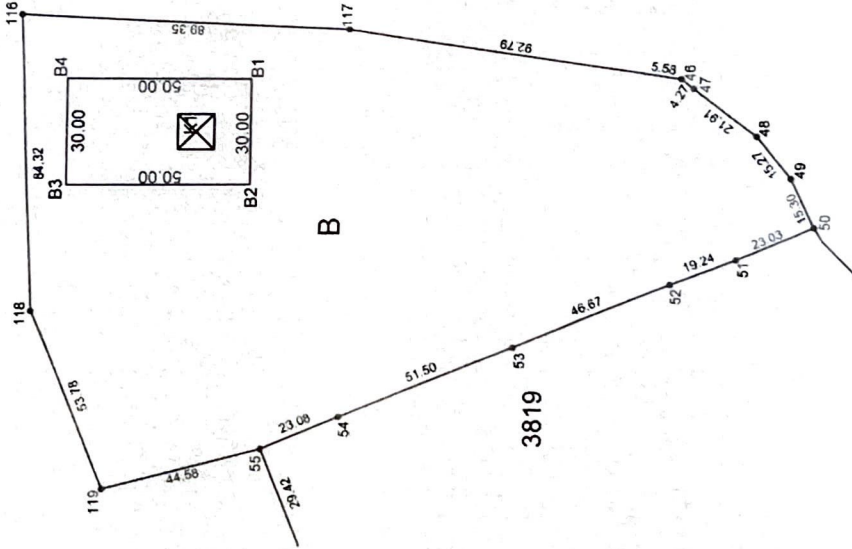
Ek: Sondaj Koordinatları (2 Sayfa)

**BELGENİN ASLI
ELEKTRONİK İMZALIDIR.**

Yusuf ALABOYUN
Evrak Görevlisi



AG-4 ÇED ALANI KROKİSİ



GÜZELYURT JEOTERMAL ENERJİ A.Ş.
 Kazım Özalp Mah. R.Ş.Ç. Cad. No: 97
 Çankaya / ANKARA
 Cumhuriyet / D. No: 4531521359
 Mersis No: 0453152165800001 Tic. Sic. No: 475527

UYGULANILAR BELEDİYE/ÖZEL İDARE	
DUZENLEYEN	ONAYLAYAN
KONTROL EDEN	
ADI SOYADI	
TARİH	
İMZA	

İli	AKSARAY		
İlçesi	GÜZELYURT		
Mahallesi	MERKEZ		
Ada / Parsel	- 00809		
NoktaNo	Y	ITRF	X
46	619168 53	4243374 07	
47	619165 82	4243370 77	
48	619152 27	4243353 55	
49	619140 29	4243344 09	
50	619175 40	4243337 68	
51	619110 26	4243358 79	
52	619110 26	4243376 66	
53	619092 03	4243417 70	
54	619072 68	4243417 70	
55	619063 92	4243488 78	
116	619106 99	4243554 98	
117	619183 02	4243465 73	
118	619102 73	4243551 62	
B1	619052 76	4243531 53	
B2	619136 95	4243492 81	
B3	619136 95	4243492 81	
B4	619106 95	4243542 81	
K1	619153 94	4243507 82	

ED 50 GERECE KOORDİNATLAR			
NoktaNo	Y	X	
46	619149 62	4241659 19	
47	619146 92	4241655 90	
48	619133 36	4241638 68	
49	619107 52	4241629 22	
50	619107 52	4241629 22	
51	619096 31	4241842 91	
52	619091 20	4241891 76	
53	619073 16	4241904 81	
54	619053 82	4241562 51	
55	619045 05	4241673 85	
116	619106 08	4242040 03	
117	619154 11	4241950 81	
118	619083 86	4242036 88	
B1	619033 91	4242016 99	
B2	619120 06	4241977 89	
B3	619120 06	4242027 87	
B4	619150 04	4242027 87	
K1	619135 05	4241962 89	

MERA İZNI İLE İLGİLİ YAZILAR



T.C.
AKSARAY VALİLİĞİ
İl Tarım ve Orman Müdürlüğü



Sayı : E-11254826-115.02-11660977

17.10.2023

Konu : Güzelyurt Jeotermal Enerji A.Ş. Arama
Amaçlı Sondaj Çalışmaları

GÜZELYURT JEOTERMAL ENERJİ ANONİM ŞİRKETİNE
KAZIM ÖZALP MAH. REŞİT GALİP CAD. NO: 97 ÇANKAYA / ANKARA

İlgi : Aksaray İl Özel İdaresinin 06.10.2023 tarihli ve 84035498-000-31363 sayılı yazısı.

İlgi yazı ile talep edilen Güzelyurt Jeotermal Enerji A.Ş. Firmasının uhdesindeki arama ruhsat sahası içerisinde bulunan İlimiz Güzelyurt İlçesi Merkezinde bulunan 3809 numaralı mera vasıflı taşınmazın 19.291,29 m² lik kısmında, Akyamaç Köyünde bulunan 1328 ve 879 numaralı mera vasıflı taşınmazların tamamında ve 616 numaralı mera vasıflı taşınmazın 1.110,52 m² lik kısmı olmak üzere toplamda 44.751,81 m² lik kısmındaki mera vasıflı taşınmazlarda jeotermal kaynak arama amaçlı sondaj çalışması amacıyla, 4342 Sayılı Mera Kanununun 14 üncü maddesinin (a) bendi hükmü gereği arama izni verilmesi talebi 16.10.2023 tarihli ve 11622659 sayılı Valilik Oluru ile uygun görülmüştür.

Şirketinizle geri dönüşüm sözleşmesine esas olacak Mera Yönetmeliğinin 8'inci maddesinin (a) bendi gereği yatırılacak teminat miktarı İl Mera Komisyonunun 12.10.2023 tarihli ve 729 sayılı kararı ile **192.765,41 TL** (Yüz Doksan İki Bin Yedi Yüz Atmış Beş TL Kırk Bir Kr.) olarak belirlenmiştir.

Belirlenen teminatın nakit(Defterdarlığa Ait Muhasebe Müdürlüğü Tahsilat Hesabı) veya teminat mektubu şeklinde 16.10.2023 tarihli Valilik Olurundan itibaren 6 ay içerisinde İl Mera Komisyonuna sunulması, teminat mektubu şeklinde sunulması durumunda ise teminatın aslının İl Mera Komisyonuna ibraz edilmesi gerekmektedir. Belirlenen teminatın yatırılmasından sonra arama ruhsat sahibi ile Geri Dönüşüm Sözleşmesi imzalanacak olup Mera Yönetmeliği'nin 8'inci maddesinin (a) bendinin 1'inci alt bendi "Ruhsat sahibi çalışmalara başlayabilmek için Komisyonca öngörülen teminatı yatırmış ve sözleşmeyi imzalamış olmalıdır." hükmü gereği ruhsat sahibi ile Valilik arasında imzalanan Geri Dönüşüm Sözleşmesinin imzalanmasına müteakip jeotermal kaynak sondaj arama amaçlı çalışmalarına başlanacağı hususunda;

Gereğini rica ederim.

Nejdet DEMİR
İl Müdürü

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: 0BB08101-4726-457F-A098-7A9D9573F593

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray

Tel: (0382) 213 15 85 Faks: (0382) 213 29 07

E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr

KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Erman TELL

Mühendis

Telefon No:(382) 217 22 07



NERA GERİ DÖNÜŐÜM PROJESİ

GÜZELYURT JEOTERMAL ENERJİ A.Ő

JEOTERMAL KAYNAK ARAMA SONDAJLARI

**AKSARAY İLİ, GÜZELYURT İLÇESİ,
AKYAMAÇ KÖYÜ**

HAZIRLAYAN

**EMİN HAŐERE İLAÇLAMA PROJE YAZILIM
DANIŐMANLIK HİZMETLERİ**

ADRES: K. Bölcek Mahallesi 2601 Sokak Özmenler Apartmanı No: 13/D

E-MAIL: eminhasereilaclama@gmail.com

AKSARAY-2023

**PROJENİN ADI VE ADRESİ: JEOTERMAL KAYNAK ARAMA TESİSİ
GERİ DÖNÜŞÜM PROJESİ**

PROJENİN HAZIRLANDIĞI İL VE TARİH: AKSARAY- EKİM- 2023

PROJEYİ YAPTIRAN FİRMA: GÜZELYURT JEOTERMAL ENERJİ A.Ş

PROJEYİ HAZIRLAYAN

Adı Soyadı: MUSTAFA PİŞKİN

Unvanı: ZİRAAT YÜK. MÜH.

Oda Kayıt No: 33162

Tarih: 11.10.2023

İmza:

PROJEYİ İNCELEYENLER

Adı Soyadı:

Erman TELLİ

Ünvanı:

Ziraat Yük. Müh.

Tarih:

12.10.2023

İmza:

O. Atilla DİVANOĞLU

Ziraat Müh.

12.10.2023

PROJEYİ KONTROL EDEN

Adı Soyadı: Akın BOZDEMİR

Unvanı: Şube Müdürü

Tarih: 12.10.2023

İmza:

ONAY

12.10.2023

NEJDET DEMİR

İl Müdürü

İÇİNDEKİLER

1.PROJE ÖZELİKLERİ

1.A.PROJE TANITIMI VE AMACI

2.COĞRAFİ KONUM

2.A. PROJE ALANI, KOORDİNATLARI, PAFTASI

2.A.1.TOPOĞRAFYA

2.A.2.TOPRAK YAPISI

- Arazi sınıfları
- Toplam Arazi Kullanım Durumu
- İşlenen Arazi Kullanım Durumu

2.A.3.İKLİM

2.A.4.BİTKİ ÖRTÜSÜ

2.B.1. METEOROLOJİK BİLGİLER VE VERİLER

2.B.2.FLORA-FAUNA

2.B.3.MEVcut TARIMSAL FAALİYETLER

2.B.4.JEOLOJİK DURUM

2.B.5.BÖLGENİN DEPREM HARİTASI

2.B.6.EROZYON DURUMU

3.PROJE ALANI İÇİN FAALİYET ESNASINDA VE SONRASINDA YAPILACAK İŞLEMLER

3.A.MERA GERİ DÖNÜŞÜMÜ ÖNCESİ YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

3.B. MERA ARAZİ HAZIRLANMASI SONRASI YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

4.MERANIN ESKİ HALİNE GETİRİLMESİ İÇİN YAPILACAK GERİ DÖNÜŞÜM ÇALIŞMALARI

4.A. ÇALIŞMA ALANININ DÜZELTİLMESİ VE BİTKİSEL TOPRAĞIN SERİLMESİ

4.B. TOPRAK VE TOHUM YATAĞININ HAZIRLANMASI

4.C. MERA BİTKİLERİN EKİLMESİ

4.D. GÜBRELEME

5.PROJE MALİYETİ

6.SONUÇ VE ÖNERİLER

1.PROJE ÖZELİKLERİ

1.A.PROJE TANITIMI ve AMACI

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan 9.950,00 m² büyüklüğündeki 1328 parselin tamamı, 14.400,00 m² büyüklüğündeki 879 parselin tamamı, 10.400,00 m² büyüklüğündeki 616 parselin 1.110,52 m²'lik kısmında, 101.600,00 m² büyüklüğündeki 3809 parselin 19.291,29 m² lik kısmında Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi planlanmaktadır.

Güzelyurt Jeotermal Enerji A.Ş tarafından yapılması planlanan Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyünde yapılacak olan jeotermal sondaj faaliyeti sadece arama amaçlı olup üretim yapılmayacaktır. Sondaj faaliyetleri neticesinde; jeotermal kaynak rezerv miktarı, kalite, uygunluk gibi değerlendirmeler yapılacaktır. İleriki yıllarda değerlendirme sonuçlarına göre gerekiyorsa yeni sondaj lokasyonları belirlenecek, kaynakların uygun olması durumunda da üretim aşamasına geçilecektir.

Sondaj alanının tamamı mera vasıflı (1328, 879, 616, 3809 nolu parseller) taşınmaz parsellerin içerisinde kalmaktadır. Sondaj sahalarına ilişkin arama izni alınması (26727 sayılı Resmî Gazete'de yayımlanan Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanunu Uygulama Yönetmeliğinin Ek madde-2) ile ilgili olarak Aksaray İl Tarım ve Orman Müdürlüğünden Jeotermal kaynak arama ile ilgili gerekli izinler alınmış olup, işletme sonrası meranın tekrar eski vasıf ve kapasitesine getirilmesi ve şirket tarafından meranın eski vasıf ve kapasitesine getirilmemesi durumunda Mera Komisyonu tarafından yerine getirilmesi için ilgili kurum tarafından istenen teminat miktarının belirlenmesi amacıyla mera geri dönüşüm projesi yapılmaktadır.

Proje alanının tamamı mera vasıflı (1328, 879, 616, 3809 nolu parseller) arazi olmasından dolayı, 28.02.1998 tarihli ve 23272 Sayılı Resmi Gazetede yayımlanarak yürürlüğe giren 4342 Sayılı Mera Kanunu ile Tarım ve Köyişleri Bakanlığı tarafından bu kanunun 31. maddesine dayanılarak hazırlanmış olan ve 08.05.2002 tarihli, 24749 Sayılı Resmi Gazetede yayımlanan Mera Yönetmeliği'nde Devletin Hüküm ve Tasarrufu altında bulunan mera arazisinde, açılacak maden ocakları için, tahsis amacı değişikliğinin hangi koşullarda gerçekleşeceği hükmüne bağlanmıştır.



Söz Konusu Yönetmeliğin, 8. maddesinin (b) bendinde, “Maden arama ve işletme ruhsat sahipleri ile kamu yatırımı kapsamındaki geri dönüşümü olan yatırımlarda yatırımı yapan kişi ve kurumlar zarar verdiği alanları eski vasıf ve kapasitesine geri getirmek için komisyonca belirlenecek teminatı yatırır ve sözleşmeyi imzalar” denilmektedir.

Aynı maddenin devamında; “Yatırımı yapan kişi ve kuruluşlar yirmi yıllık ot geliri ile öngörülen teminatları yatırmadan ve hazırlanan sözleşmeyi imzalamadan çalışmalara başlayamaz, başladığı takdirde verilen izinler veya tahsis amacı değişikliği iptal edilerek verdiği zararlar tazmin edilir.” hükmü yer almaktadır.

Yukarıda açıklanan hükümler gereğince, işletme süresinin bitiminde, tahrip olan meranın eski haline kavuşturulması için ne gibi işlemlerin yapılması gerektiğinin ve yapılacak ıslah ve amenajman çalışmalarının keşif bedellerinin ne olacağının geri dönüşüm projesiyle tespit edilmesidir.

Aksaray İl Tarım ve Orman Müdürlüğü ile mera geri dönüşüm sözleşmesi imzalanarak sözleşme hükümlerinde yer alan hükümler doğrultusunda doğaya yeniden kazandırma çalışmaları yapılacaktır.

Çayır meralar yeryüzünde hayatın varoluşundan günümüze kadar insanoğlunun beslenme ihtiyacını karşılayan en önemli kaynaklardan birisi durumundadır. Başlangıçtan bugüne kadar insanoğlunun yaşam tarzında her ne kadar köklü değişiklikler olsa da çayır ve meraların onların yaşamındaki önemini muhafaza etmiştir. Çayır ve meraların gelecekte de insanoğlunun yaşamında önemli bir yere sahip olması kaçınılmazdır.

ÇAYIR

Çayırlar genellikle düz ve taban suyu yüksek olan taban arazilerde teşekkül etmişlerdir. Toprak uzun süre nemli olduğundan bitki örtüleri sık ve yüksek boyludur. Dolayısıyla bitki örtülerinde mezofitler (suyu seven bitkiler) hâkim durumdadır. Sık ve yüksek boylu olan bitki örtüleri sıkı bir çim kapağı meydana getirerek toprağı sıkıca tutar. Aktif büyüme döneminde yapraklar tüm yüzeyi kapatır. Biçilerek değerlendirilen bu alanlardan elde edilen ot kış aylarında hayvanlara verilir. Toprak yaklaşık biçim zamanına kadar ıslak olduğundan otlatma açısından elverişli değildir. Bu dönemde yapılacak otlatma hayvanların çiğnemesinden dolayı toprağın sıkışmasına, bu da toprak strüktürünün bozulmasına neden olur. Şahıs malı olmalarından dolayı idaresi de kolaydır. Çayır toprakları mera topraklarına göre organik maddece daha zengindir ve PH'sı daha düşüktür, su bilançosu daha yüksektir.

MERA

Çayırların aksine taban suyunun bulunmadığı veya derinde olduğu meyilli ve engebeli alanlarda teşekkül etmişlerdir. Engebe sebebiyle yağış sularının bir kısmı sızarak veya yüzey akışıyla kaybolur. Buraların toprakları sığ, kumlu veya çakıllı ve su tutma kapasitesi düşüktür. Yağışlı dönemin haricinde toprak kurudur. Genellikle su, bitkiler için yeterli değildir. Bitki örtüleri seyrek ve kısa boyludur. Dolayısıyla açık vejetasyona sahiptirler. En iyi değerlendirme şekli otlatmadır. Mera kavramı ile ilgili olan fakat çoğu zaman tanım olarak karıştırılan otlak ve otlakiye tanımları vardır. Otlakiye: Nispeten düz arazilerde meydana gelmiş bitki örtüleri daha iyi durumda olan meralardır.



MERALARIN ÖNEMİ

Alınan tedbirlere rağmen bir türlü istenilen seviyelere ulaşamayan hayvancılığımızın en önemli sorunu olan yıllık 25 milyon ton civarındaki kaba yem açığının en ucuz temin edilebileceği yerler, çayır-meralarla birlikte yaylak ve kışlaklarımızdır. Çayır ve meralarımızın, üzerinde dikkatle durulması gereken bir diğer faktör ise erozyonun önlenmesinde oynadığı roldür.

Meralar aşırı ve düzensiz otlatılması sonunda, kalite ve vasfını kaydederek erozyona açık alanlar haline gelmektedir. Ülkemizde meydana gelen erozyonun başlangıç noktalarını birçok yerde mera alanları oluşturmaktadır.

Gerek tarımsal yapı ve gerekse ekolojik denge açısından büyük önem arz eden meraların önemini kısaca şöyle gruplandırabiliriz.

- 1- Ekolojik sistemde bitki, temel faktör olup, bitkisiz insan ve hayvan yaşamı düşünülemez.
- 2- Hayvanlar için önemli yem kaynağıdır ve hayvan beslemede en ekonomik değerdir
- 3- Toprak ve su muhafazasında önemlidir.
- 4- Su kaynaklarının oluşumu, gelişimi ve kalitesini olumlu yönde etkiler.
- 5- Meraların büyük çoğunluğu (%87) V-VII. sınıf araziler olup marjinal alanlardır. Bu alanları en ekonomik şekilde koruyan bitki örtüleri, çayır ve meralardır.
- 6- Önemli karbon yutağı konumundaki alanlardır.
- 7- Biyolojik çeşitlilik ve gen merkezi konumundadırlar.

MERA ISLAHININ YARARLARI

Tekniğine uygun olarak uygulanan bir ıslah metodu aşağıda belirtilen faydalı beraberinde getirmektedir.

1- Verim artışı: Mera ıslahının en önemli hedeflerinden birisi yem üretiminde artış sağlamaktır. Vejetasyonun özellikleri, iklim durumu, toprak yapısı ve topografik yapı dikkate alınarak uygun bir metotla ıslah edilmesi ile verimde önemli artışlar sağlanabilmektedir. Nitekim Erzurum şartlarında sadece gübreleme ile meralarda verimin % 100-150 oranında arttırıldığı tespit edilmiştir. Benzer şekilde suni mera tesisinde verimin 3 katına çıkarılabileceği vurgulanmaktadır.

2- Yem kalitesinin yükseltilmesi: Uygun ıslah metoduyla verim artışı yanında elde edilen yemin kalitesi de önemli oranda yükseltilmektedir. Botanik kompozisyona uygun olarak yapılan gübrelemelerde otun ham protein, mineral madde ve hazmolunabilirlik oranında önemli artışlar görülebilmektedir.

3- Hayvansal ürün miktarında artış: Islah uygulamaları sonucu gerek verim ve gerekse kalitedeki yükselme o vejetasyonu değerlendiren hayvanların verimine yansımaktadır.

4- Hayvanların sevk ve idaresini kolaylaştırır: Mera üzerinde tesis edilen içme suyu tesisleri mera yolları, mera çitleri, gölgelikler ve hayvan barınakları gibi yapı ve tesisler, hayvanların sevk ve idaresini kolaylaştırarak gerek üniform otlatmayı sağlamakta ve gerekse hayvansal ürün miktarında artışlar sağlamaktadır.

5- Hayvanlarda zehirlenme ve hastalık zararları azalır: Yabancı ot mücadelesi ile özellikle zehirli bitkilerin hayvanlarda ortaya çıkaracağı zehirlenmeler en aza indiği gibi, meradan hayvanlara bulaşabilen hastalıklar da kontrol altına alınabilmektedir. Bazı yabancı otlar bir çok hastalık ve zararlının konukçusu durumundadır. Bunların yok edilmesiyle bu hastalık ve zararlıların da yayılmaları önlenmiş olur.

6- Havzalarda su verimi artar: Yağış sularının yüzey akışa geçmeden toprağa intikal etmesini sağlayan en önemli mekanizma toprağın iyi bir bitki örtüsüyle kaplı olmasıdır. Mera ıslahıyla bitki örtüsünde meydana gelen iyileşme havzaların su potansiyellerini de artıracaktır.

7- Erozyonun önlenmesi: Bitki örtüsünün güçlendirilmesiyle mera toprağı su ve rüzgar erozyonuna karşı önemli oranda korunmuş olacaktır.

8- Yangın tehlikesinin azaltılması: Özellikle orman altı meralarda yangın şeritleri oluşturularak uygun bir mevsimde orman altındaki bitki artıklarının yakılmasıyla daha sonra çıkabilecek yangın tehlikesi azaltılabilmektedir.

9- Diğer faydaları: Mera ıslahı sonucu daha önce faydalanılmayan mera kesimlerinin otlatmaya açılması, başta av hayvanları olmak üzere yabani hayatın canlandırılması, bitkiden yoksun alanların bitki ile kaplanması, toprak-su muhafazası ile akarsulara daha temiz su sağlanması ve bölgenin peyzajını güzelleştirerek rekreasyon imkanları sağlanabilmektedir.

MERA- EROZYON İLİŞKİSİ

Mera alanlarındaki tahribatın sonucu olarak hem hayvansal üretimde düşüş görülmekte hem de erozyon problemi ortaya çıkmaktadır. Bu tahribatta; Mera alanlarının tarla arazisine dönüştürülmesi, Fiyat politikalarının tarla ve endüstri ürünlerinin lehine geliştirilmesi ve Özellikle son yıllarda hayvansal ürünlere yeterli teşvik yapılmayıp et ve süt gibi hayvansal ürünlerin ithalatının yapılması gibi birçok faktör etkili olmuştur. Dolayısıyla meraların önemini kavrayamamanın sonucu gerek tarım alanlarında ve gerekse yerleşim yerlerinde önemli tahribatlara yol açan, can ve mal kayıplarına yol açan sel baskınlarında artışlar görülmektedir.



İyi bir mera vejetasyonu:

a- Toprağı yerinde tutar,

b- Yerinde tutulan mera toprağında kaliteli mera bitkileri gelişir ve ekonomik hayvancılık yapılabilir.

c- Mera alanlarının daha aşağısında bulunan araziler ve tesisler tahrip olmaktan korunmuş olur.

Mutlak çayır-mera arazilerinin vasfını değiştirmek yukarıda bahsedilen problemleri beraberinde getirmektedir. Nitekim bilimsel verilere göre bu alanlardan hayvan otlatma veya ot üretimi yaparak faydalanma teknik bir zorunluluktur. Konuyla ilgili olarak bir Fransız bilim adamı “Çayır meraların dengesini bozmak o alana atom bombası kadar zarar verir” ifadesini kullanmıştır.

2.COĞRAFİ KONUM

Aksaray İli, Orta Anadolu'nun ortasında, kuzey-güney, doğu-batı doğrultusunda bulunan karayollarının ortak noktasındadır. 33-35 derece doğu meridyenleri ile 38-39 derece kuzey paralelleri arasında yer alan Aksaray'ın, kuzeyinde Kırşehir ve Ankara, doğusunda Nevşehir, güneydoğusunda Niğde, güneyinde ve batısında Konya, kuzeybatısında Tuz Gölü bulunmaktadır.

Aksaray İli, yüzey şekilleri itibarı ile düz bir arazi yapısına sahiptir. Karadeniz Akdeniz'e, Doğu Anadolu Batıya Aksaray'dan ulaşır. İlin orta kesimleri, kuzeyi ve güneyi tamamen ovalıklarla kaplıdır. Aksaray İli, Tuz Gölü kapalı havzası içerisinde bulunmaktadır.

2.A. RUHSAT ALANI, KOORDİNATLARI, PAFTASI

Ruhsat Alanı Koordinatları:

NOKTA NO	Y	X
1	616988	4241558
2	616974	4247000
3	623000	4246999
4	623000	4245400
5	624600	4245400
6	625000	4243420
7	625000	4242000
8	625464	4241126
9	625691	4239999
10	623000	4239999

2.A.1.TOPOĞRAFYA

Aksaray Ovası'nın rakımı 900 ile 1100 arasında değişmektedir. Genel topoğrafik yapısı özellikle arızalı olan ovayı, doğudan Hasan Dağı, kuzey doğudan Tavşan ve Ekecik Dağları ile kuzeyde Tuz Gölü, batıda Boz Dağı ve Balık Dağı ile Güneyden Karaca Dağı silsilesi sınırlar. Bölgenin en yüksek rakımı 3253 metre, en düşük rakımı ise 905 metredir. Ovanın doğu ve kuzeydoğu kısımlarında arızalı arazi durumu mevcuttur. Sahanın merkezi kısmı ise düzlükler halindedir.

2.A.2.TOPRAK YAPISI

Aksaray İli'nde su erozyonundan etkilenmemiş veya hafif etkilenmiş topraklar % 45.4, orta su erozyonundan etkilenmiş topraklar % 35.5, şiddetli su erozyonundan etkilenmiş topraklar % 13.5, çok şiddetli su erozyonundan etkilenmiş topraklar % 5.6'dır.

Ayrıca İl topraklarının 65.625 hektarında çeşitli şiddette rüzgar erozyonu etkilidir. Toplam 134.870 hektar (% 23,6) arazide drenaj problemi vardır. Drenaj problemi görülen arazilerin % 91,9'u tuzlu veya tuzlu+sodiktir.

Çayır-mera arazilerindeki tuzluluk veya tuzluluk+sodiklik sorunu, toplam sorunlu arazilerin % 81'ini oluşturmaktadır. İl topraklarının % 11,5'i taşlıdır. Kayalık, İlde sorun değildir. Arazilerin % 15,4'ü dik, çok dik ve sarp meyilde olup, % 46.7'si sığ ve çok sığdır.

- Arazi sınıfları

Aksaray'da iki tip toprak hakimdir. Bunlar kahverengi ve alüvyal topraklardır. Kahverengi topraklar yaklaşık % 50'sini, Alüvyal topraklar % 20'sini ve diğer toprak grupları % 30'unu oluşturmaktadır. Aksaray'da toplam ekilebilir arazi 420.430 hektardır. İklimin kurak olması nedeniyle bunun yaklaşık 130.000 hektarı nadasa ayrılmaktadır.

İldeki tarım topraklarının arazi kullanma kabiliyeti sınıfları ise aşağıda belirtilmektedir.

Sınıf-1 : I.Sınıf arazilerin kapladığı alan 88.596 ha olup, il yüzölçümünün % 11.5'inin teşkil etmektedir. I.Sınıf arazilerin 49.347 hektar kuru tarım, 34.301 hektar sulu tarım yapılmaktadır.

Sınıf-2 : II. Sınıf arazilerin kapladığı alan 78.134 ha olup, İl yüzölçümünün % 10.1'ini teşkil etmektedir. II. Sınıf arazilerin 57.111 ha kuru tarım, 12.192 ha sulu tarım yapılmaktadır.

Sınıf-3 : III. Sınıf arazilerin kapladığı alan 183.988 ha olup, İl yüzölçümünün % 23.8'ini teşkil etmektedir. III. Sınıf arazilerin 119.060 ha kuru tarım, 16.902 ha ise sulu tarım yapılmaktadır.

Sınıf-4 : IV Sınıf araziler İlin 119.125 ha alanı ile % 15.4'ünü kaplamaktadır. IV. Sınıf araziler üzerinde de 77.311 ha kuru tarım, 2.693 ha sulu tarım yapılmaktadır.



İlde, toplam 420.430 ha tarım arazinin % 96.6'sı I-IV sınıf olup, % 3.4'ü ise V-VII sınıf arazidir. I-IV sınıf arazilerin dışında V-VII sınıf arazilerde, tarıma çok elverişli olmamasına rağmen bir kısmında tarım yapılmaktadır. İlin toplam arazisinin yaklaşık % 84.3'ünde su erozyonu sorunu vardır. Tarım arazilerini oluşturan III. Sınıf araziler üzerinde orta derecede su erozyonu görülmektedir. Ayrıca toplam tarım arazisinin % 5'i de kullanım dışıdır.

- Toplam Arazi Kullanım Durumu

ARAZİNİN CİNSİ	MİKTARI (HA)	MİKTARI %
Tarım Arazisi	420,430	60,60
Çayır Mera Arazisi	188,503	27,17
Orman Arazisi	22,767	3,28
Diğer	61,724	8,95
TOPLAM	693,724	100,00

- İşlenen Arazi Kullanım Durumu

ARAZİNİN CİNSİ	MİKTARI(HA)	TARIM ALANLARI İÇİNDEKİ ORANI %
Tarla Arazisi -Sulu tarım yapılan arazi -Kuru tarım yapılan arazi	407.441	96,9
Bağ Arazisi	2.675	0,64
Meyve Arazisi	6.832	1,63
Sebze Arazisi	3.483	0,83
TOPLAM	420.430	100

2.A.3.İKLİM

Aksaray İli iklimi, tipik karasal iklimdir. Yazları sıcak ve kurak, kışları soğuk ve yağışlıdır. Bitki örtüsü step ikliminin tipik bitki örtüsü olup, daha çok kökü derine inmeyen ot ve bodur bitkiler görülür.

Aksaray İli orta iklim kuşağında olup, soğuk, kara iklim tipine sahiptir. Yazları sıcak ve kurak, kışları soğuktur. Yağışlar genellikle ilkbahar ve kış aylarında görülmektedir. Yaz-kış ve gece-gündüz sıcaklık farkları çok fazladır.

Ormanların yoğunlukta bulunduğu alan Hasandağı ve Ekecik Dağı'dır. Hasandağı'nın denizden yüksekliği 3258 m.dir. Hasandağı ve çevresinde yağış miktarı 700 mm.ye yükselmekte ve sıcaklık değerleri ise düşmektedir. Hasandağı eteklerinde ormanlar 1400 m civarında yükseltiden başlayıp 1850-1900 m.ye kadar yükselmektedir.



2.A.4.BİTKİ ÖRTÜSÜ

Bitki örtüsü bakımından zengin değildir. Dağlık bölgelerde ormanlara rastlanır. Obruk ve Kızılırmak platosu bozkır bitkileri dışında çıplaktır.

Aksaray'ın iklimine bağlı olarak tabii bitki örtüsü, ilkbaharda yeşeren çayırlar, gelincik, papatya, keven ve diğer vs. otlarla, yaprakları dikensi bir görünüme sahip, yarı kurakçıl bitkilerdir. Yazları sıcak ve kurak iklim yapısı hâkim olduğundan ilkbaharda yeşeren otlar, sonbaharda kurur ve arazi bozkır yapısını alır.

Hasandağı ve Ekecik Dağları üzerinde meşe koruluklarına rastlanır. Ayrıca bölgede palamut, alıç, kızılıçık, kavak, söğüt, yabancı armut ve meyve ağaçları yanında keven ve deve dikenini çok sık rastlanan bitki türleridir.

Aksaray İli'nin orman varlığı baltalık ve orman dışı ağaçlandırmalardan ibarettir. Baltalık ormanlarımızın tamamında doğal olarak bulunan ağaç türü meşedir. Orman dışı ağaçlandırmalarda ise ibreli türlerden Sedir, Karaçam, Sarıçam, Kızılcım, Mavi Servidir. Yapraklı türlerden ise Dişbudak, Akçaağaç, Ailanthus, Akasya, Badem, Mahlep, İğde, Gleditschia vs. türler kullanılarak ağaçlandırma faaliyetleri yürütülmektedir. İlimizde ağaçlandırma potansiyel sahası yaklaşık 50.000 hektar olduğu tahmin edilmekte olup, bu sahaların hemen hepsi mera vasfındadır.

2.B.1. METEOROLOJİK BİLGİLER VE VERİLER

Aksaray İli, karasal iklim özelliği göstermekte olup genel olarak kurak bir yapıya sahiptir. Bölge hemen hemen Türkiye'nin en kurak havzası içerisinde yer almaktadır. Özellikle Temmuz-Ağustos ayları en kurak geçen aylardır. Yıllık sıcaklık dalgalanmaları, havzanın karasal iklimini karakterize eder.

İç Anadolu'nun en az yağış alan bir bölümünü oluşturan Tuz Gölü havzasının uzun yıllara göre ortalama yağış yüksekliği 300 mm ile karakterize edilir. Aksaray civarı ise, 40 yıllık rasat ortalamalarına göre 327.6 mm toplam yağış miktarına sahiptir.

İç Anadolu Bölgesi'nin etrafı yüksek dağlarla çevrili olduğundan denizlerden gelen nemli hava bölge içlerine kadar ilerleyememekte ve bu nedenle iç bölgeler ve Aksaray oldukça kurak kalmaktadır.

Sıcaklık Ortalama Değerleri

AKSARAY	Ocak	Şubat	Mart	Nisan	Mayıs	Haziran	Temmuz	Ağustos	Eylül	Ekim	Kasım	Aralık
	Uzun Yıllar İçinde Gerçekleşen Ortalama Değerler (1929 - 2021)											
Ortalama Sıcaklık (°C)	0.5	2.1	6.4	11.5	16.2	20.2	23.5	23.2	18.7	13.3	7.2	2.6
Ortalama En Yüksek Sıcaklık (°C)	5.5	7.5	12.6	18.0	23.1	27.1	30.7	30.7	26.7	21.0	13.8	7.7
Ortalama En Düşük Sıcaklık (°C)	-3.6	-2.2	1.3	5.5	9.7	13.1	16.2	15.9	11.4	6.8	2.0	-1.4
Ortalama Güneşlenme Süresi (saat)	3.1	4.5	5.7	7.0	9.1	11.1	12.1	11.4	9.7	7.1	5.0	3.2
Ortalama Yağışlı Gün Sayısı	7.31	7.15	9.46	7.62	9.85	7.31	1.38	2.23	2.77	4.62	4.85	8.69
Aylık Toplam Yağış Miktarı Ortalaması (kg/m ²)	40.1	35.2	41.0	45.7	43.8	29.3	7.1	5.4	11.9	23.7	31.8	46.7
	Uzun Yıllar İçinde Gerçekleşen En Yüksek ve En Düşük Değerler (1929- 2021) *											
En Yüksek Sıcaklık (°C)	20.4	21.8	29.0	31.8	34.4	36.9	40.0	38.8	38.7	34.5	29.5	22.0
En Düşük Sıcaklık (°C)	-26.4	-29.0	-19.0	-7.5	-0.2	2.9	6.8	5.9	1.0	-6.0	-14.0	-21.9



2.B.2.FLORA-FAUNA

Aksaray İl sınırları içerisinde, birçok bitki ve hayvan türü yaşamaktadır. Sadece Ihlara Vadisi'nde 43 adet endemik bitki bulunmaktadır. Bunun yanında özel çevre koruma bölgesi olan Tuz gölü' n de de önemli miktarda endemik bulunmaktadır.

Bölgede tuzcul stepler ve endemik türlerden oluşan ekolojik açıdan hassas bitki toplulukları bulunmaktadır. Tuz Gölü, ülkemizde bozulmadan bugüne kadar gelmiş ova bozkırlarının en güzel örneklerini barındırır.

Kanal ve çayların göle giriş yaptığı yerlerde hafif tuzlu bataklıklar oluşmuştur. Konya tahliye kanalı boyunca ve göle ulaştığı noktada gür sazlık alanlar bulunur. Gölün kuzey, batı ve doğusunda sadece bir bölümü sulanan hububat tarlaları bulunurken, özellikle güneybatıda, yağışlı dönemlerde sular altında kalan geniş tuzcul stepler uzanır.

Tuzun ve kuraklığın hâkim olduğu zor şartlara uyum sağlamış doğal bozkır bitkileri, Tuz Gölü'ndeki nadir türlerin başında gelmektedir. Alan, bozkır bitkileri için Türkiye'deki en önemli alandır.

FAUNA

Kışın Tuz Gölü'nün kapladığı çok geniş alan su kuşları için ideal bir yaşama ortamı sunar. Gölün güneyindeki çamur adacıkları flamingoların dünyadaki en büyük doğal üreme kolonilerinden birini barındırır. 1992'de havadan yapılan bir sayımda, koloninin 14.000 çift flamingo barındırdığı belirlenmiştir. Gölün orta kesimlerinde her biri 5 – 6 bin yuvadan oluşan dev kuluçka kolonileri bulunmaktadır. Doğa Derneği, 2003'ten beri flamingo popülasyonunun izlenmesi için havadan sayım yapmaktadır.

Kuzeydeki kayalık adalarda Van Gölü martısı, ince gagalı martı ve yırtıcı kuşlar üremektedir. Küçük kerkenez göl çevresindeki köylerde yaygın olarak üreyen bir türdür. Kılıçgaga ve büyük cılıbit da kuluçkaya yatar. Sakarca kazının da ikinci büyük üreme merkezidir.

Sonbahar aylarında binlerce turna, kış aylarında ise çok sayıda kaz alanda geceler. Tuz Gölü, nesli dünya çapında tehlikede olan toyun Orta Anadolu'daki en önemli yaşam alanıdır. Su çulluğunun Türkiye'deki tek üreme popülasyonunu barındırır.

Göl çevresinin nispeten ıssız oluşu nedeniyle kuşlar, etraftaki su birikintilerinde, meralarda ve ekili alanlarda rahatça beslenmekte, kışın en soğuk günlerinde dahi donmayan göl sularında yüzebilmektedirler. İlkbaharda Göl içinde oluşan adalar ve bataklıklar Bataklık Kırlangıcı (*Glareola pratincola*), Suna (*Tadorna tadorna*), Angıt (*Tadorna ferruginea*), Çamurcun (*Anas crecca*), Kılıçgaga (*Recurvirostra avocetta*), Kocagöz (*Burhinus oedicnemus*) ve martı türlerinin (*Larus sp.*) kuluçka yapmalarına imkân sağlar.

Bölgede görülen önemli kuş türleri arasında; Kızılboyunlu batağan, leylek, sakarca, macar ördeği, dikkuyruk, bozkır delicesi, çayır delicesi, küçük kerkenez, turna, bataklık kırlangıcı, gülen sumru, su kuşu, mahmuzlu kızkuşu sıralanabilir.



2.B.3.MEVcut TARIMSAL FAALİYETLER

Aksaray İline 7 ilçe, 15 belde ve 152 köy bağlıdır. Aksaray'ın sosyo-ekonomik yapısı tarım ve hayvancılığa dayanmaktadır. Faal nüfusun % 70'i tarım ve hayvancılıktan geçimini sağlamaktadır. İlimizde, toprakların % 54,4'ü tarıma elverişli olup, geri kalan % 45,6'sı ise çayır, mera, bozuk ormanlık ve tarıma elverişsiz ormanlardır. 420.430 hektar olan İlimiz tarım alanlarında; hububat, baklagiller, endüstriyel bitkiler, yumrulu bitkiler, meyve ve sebze yetiştirilmektedir. Tarıma elverişli arazilerin % 86'sında kuru, %14'ünde sulu tarım yapılmaktadır. Tarımda çalışan nüfusun yüzdesini aşağıya çekmek için, sanayi ve hizmet sektörünü geliştirmek, tarımda üretimi ve verimliliği artırmak için ürün deseninde değişiklik yapmak, toprak işlemedeki yanlışlıkları gidermek, kaliteli ve uygun girdi kullanımına ağırlık vermek, makineleşmeyi teşvik ederek kullanımını yaygınlaştırmak suretiyle birim alandan daha çok ürün alınması ve çiftçilerin eğitilmesine çalışılmaktadır.

2.B.4.JEOLOJİK DURUM

Aksaray İli birçok özelliği bakımından Türkiye'nin diğer bölgelerinden farklılıklar gösterir. Bölge yüksekliği ortalama 950-1100 m olan bir yüksek platodur. Basamaklarla ya da fay kırıkları ile birbirinden ayrılan düz ovalar ve bu ovaları çevreleyen tepeler ve dağlar bölgenin jeomorfolojik karakteridir.

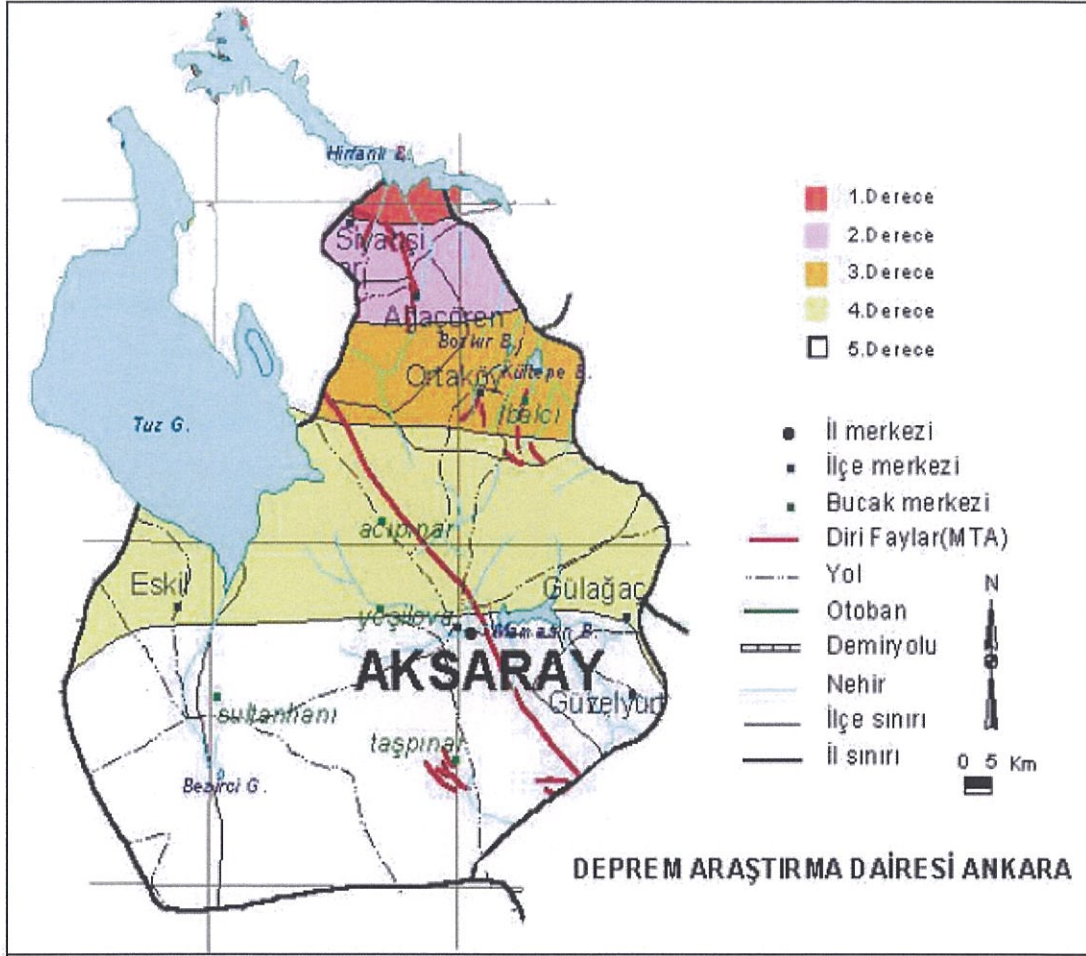
Aksaray İli sınırları içerisinde mağmatik, metomorfik sedimenter ve karasal kökenli kayalar mevcut olup bunlar metomorfik kayalar, plütonik kayalar, sedimenter kayalar, volkanik kayalar, gısel ve volkanosedimenter kayalar, güncel oluşuklar, allokton ofiyolit karmaşığdır.

Stratigrafik olarak en altta metomorfik kayalar üzerine volkanosedimenter kayalar ve volkanik kayalar, tüm bu kayaların üzerinde ise Holosen yaşlı alüvyon çökeller gelmektedir.

Aksaray İli İç Anadolu bölgesinde göller hariç 7.626 km² alana sahiptir. İlde karasal iklim hüküm sürdüğünden Türkiye ortalamasının altında yağış almaktadır. Melendiz Çayı ve Karasu haricinde akarsu ve nehir yoktur. Doğal bitki örtüsü az olduğundan insan eliyle yetiştirilen bahçeler önem kazanmıştır.



2.B.5.BÖLGENİN DEPREM HARİTASI



HARİTA P.1. Aksaray İli Deprem Haritası

Aksaray ve yakın çevresinde gözlenen bir diğer yapısal unsur kıvrımlı yapılardır. Tuz Gölü fay zonu içerisinde fay zonunun gidişine uymayan yaklaşık KD-GB gidişli kıvrım eksenleri antiklinal ve senkinal çiftlerinden oluşmaktadır. Antiklinal ve senkinal eksenleri Tuz Gölü fayına yaklaşık 35-40 derecelik açılar oluşturmakta ve birbirine paralellik sunmaktadır.

Tuz Gölü fayının sismik etkinliği günümüzde de devam etmektedir. Deprem kayıtlarına göre tarihsel dönemlerde oldukça yoğun bir sismik etkinlik gösteren bölgede, aletsel dönemde (1900 ve sonrası) yıkıcı bir deprem görülmemiştir.

Aksaray ve çevresi, kırılma mekaniği prensiplerine göre potansiyel sismik risk alanları içerisinde kalmaktadır. Türkiye Deprem Bölgeleri Haritası 'na göre Aksaray İli Merkez İlçe ve Güzelyurt İlçesi'nin 5. Derece deprem bölgesinde, Ortaköy, Sarıyahşi ve Ağaçören İlçelerinin 2. Derece deprem bölgesinde, Eskişehir ve Gülağaç ilçelerinin 4. Derece deprem bölgesinde olduğu bilinmektedir.

2.B.6.EROZYON DURUMU

Aksaray İli su erozyonundan etkilenmemiş veya hafif etkilenmiş topraklar % 45,4 orta su erozyonundan etkilenmiş topraklar % 35,5, şiddetli su erozyonundan etkilenmiş topraklar % 13,5, çok şiddetli su erozyonundan etkilenmiş topraklar % 5,6'dır. Ayrıca il topraklarının 65.625 hektarında çeşitli şiddette rüzgâr erozyonu etkilidir. Toplam 134,870 hektar (% 23,6) arazide drenaj problemi vardır. Drenaj problemi görülen arazilerin % 91,9'u tuzlu veya tuzlu + sodiktir. Çayır-mera arazilerindeki tuzluluk veya tuzluluk + sodiklik sorunu, toplam sorunlu arazilerin % 81'ini oluşturmaktadır. İl topraklarının % 11,5'i taşlıdır. Kayalık ilde sorun değildir. Arazilerin % 15,4'ü dik, çok dik ve sarp meyilde olup, % 46,7'si sığ ve çok sığdır. (KHGM, 1993)

Aksaray'da bugüne kadar erozyon kontrolü ve ağaçlandırma çalışması olmak üzere 16 proje gerçekleştirilmiştir. Toplam 8.638 Ha sahada ağaçlandırma faaliyetleri gerçekleştirilmiştir.

3.PROJE ALANI İÇİN FAALİYET ESNASINDA VE SONRASINDA YAPILACAK İŞLEMLER

Etüt sahası kahverengi toprak grubundan olup tuf kayaları üzerinde yer almaktadır. Toprak derinliği tepe yamaç boyunca değişmekte sığ (40-50cm), kumlu tın (SL) bünyeli, kireçli granüler yapılı, orta (% 7-8) eğimli, kuruda açık grisi kahve K(10YR-5/3) renkli, erozyona açık, sahada drenaj ve tuzluluk problemi yoktur.

Bitkisel toprak miktarı toprak etüt raporlarında ortalama 40-50 cm olarak belirtilmiştir. Sondaj işlemi sırasında sahadan herhangi bir toprak ve malzeme alınmayacaktır. Sondaj faaliyeti esnasında etrafında bulunan arazilere zarar vermemesi için gerekli tedbirler alınarak, etrafındaki arazilere atık atılmayacaktır.



3.A. MERA GERİ DÖNÜŞÜMÜ ÖNCESİ YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

Sondaj sahasında meydana gelen çukurlar ve şevler emniyet sahası içerisinde alınmalı ve sondaj sahasına giriş çıkışların kontrol altına alınması adına sondaj sahası etrafına uyarıcı tabelalar konulmalıdır.

Çalışma başlamadan önce sondaj lokasyon alını olarak belirlenen sahadaki bitkisel toprak sıyrılarak, iş bitiminde tekrar serilmek üzere stoklanmalıdır.

3.B. MERA ARAZİ HAZIRLANMASI SONRASI YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

Proje Alanı Arazi, Toprak Yapısı ve Bitki Vejetasyonu

Etüt sahası kahverengi toprak grubundan olup tuf kayaları üzerinde yer almaktadır. Toprak derinliği tepe yamaç boyunca değişmekte sığ (40-50cm), kumlu tın (SL) bünyeli, kireçli granüler yapılı, orta (% 7-8) eğimli, kuruda açık grisi kahve K(10YR-5/3) renkli, erozyona açık, sahada drenaj ve tuzluluk problemi yoktur.

Etüt sahası; dördüncü sınıf (IVse) mera arazisidir.

Etüdü yapılan arazi, Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü, sınırları içerisinde bulunan 1328, 879, 616, 3809 nolu mera parselleri üzerindedir. Etüt sahası; 4,47 hektar büyüklüğündedir. Etüdü yapılan sahada mera bozulmuş, toprak sürülmüştür.

Jeotermal kaynak arama süresi bittikten sonra arazinin ekime hazırlanması amacıyla, sondaj yapılması esnasında oluşan çukur, çamur havuzu ve stok alanları düzeltilip topografyaya uygun hale getirilir. Bölgenin mera vejetasyonuna uygun olan mera bitkileri belirlenir, mera bitkilerinin ilk ekim dönemlerinde zayıf gelişmeleri nedeniyle ilk yıl ön ekim yapılması gerekmektedir.



4.MERANIN ESKİ HALİNE GETİRİLMESİ İÇİN YAPILACAK GERİ DÖNÜŞÜM ÇALIŞMALARI

12.04.2005 tarih ve 25784 sayılı Resmî Gazetede yayımlanan Mera Yönetmeliğinin 8. maddesine istinaden işletme izin süresi bittikten sonra, işletme sahibi şirket tarafından mera arazisinin tekrar eski haline getirilmesi için, yapılması gereken işlemler ve mera geri dönüşüm çalışmaları ve maliyetleri şöyledir:

4.A. ÇALIŞMA ALANININ DÜZELTİLMESİ VE BİTKİSEL TOPRAĞIN SERİLMESİ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü, sınırları içerisinde yer alan, Güzelyurt Jeotermal Enerji A.Ş tarafından işletilecek olan ve Jeotermal kaynak arama izni verilen 1328, 879, 616, 3809 parsel numaralı mera vasıflı taşınmazların 44.751,81m² lik kısmında yapılacak Jeotermal kaynak aramama işlemi ve Sondaj işlemi sonrası söz konusu mera arazisinin geri dönüşümü planlanmaktadır.

Bitkisel toprak yoğunluğu 1,6 g/cm³ alınmıştır. Sahada mevcut bitkisel toprak miktarı 40 cm olarak alınacak hesaplamalar buna göre yapılacaktır.

Faaliyet alanından çalışma sırasında oluşan çukur ve derinlikler taş, moloz gibi kaba malzemeler en alta, daha küçük malzemelerde en üste gelecek şekilde yerleştirilecektir.

4.B. TOPRAK VE TOHUM YATAĞININ HAZIRLANMASI

Tohum yatağının hazırlanması için toprak, kum, taş ve diğer iri cisimlerden arındırılmalıdır, derin sürme yapılarak toprağın havalandırılması sağlanmalıdır. Tohum yatağı ne kadar iyi hazırlanırsa o kadar iyi bir ekim alanı elde edilir. Zeminin hafifçe meyilli olması problem değildir, fakat tümsek ve çukurlar tamamen düzeltilmelidir

Tohum yatağı için ideal toprak elde edildikten sonra çok iyi bir tesviye yapılmalıdır. İyi bir tesviye ekim esnasında kolaylık sağlayacaktır. Tırmıkla iyice düzeltilen toprağa çimlenmede fayda sağlayacak taban gübresi tatbik edilmelidir.

4.C. MERA BİTKİLERİN EKİLMESİ

Ekim için hazır hale gelen toprağın, çimlenmeyi sağlayacak nemi barındırması için ekimin sonbahar yağmurları sonrası yapılması uygun olacaktır.

Tohum miktarının eşit düşmesi için ekimin mibzerle yapılması tavsiye edilir, fakat topografik koşulların elverişsiz olduğu durumlarda elle serpme yöntemiyle ekim yapılabilir. Sahada elle serpme metodu uygun olacaktır.

Karasal iklimin hâkim olduğu sahada buğdaygil bitkileri tercih edilmesi uygun olacaktır, kırıaç araziye ekimi yapılacak tohum karışımı hazırlanırken % 60 buğdaygil % 40 baklagil olması uygun olacaktır.



Karışımında 4 adet bitki tercih edilmiştir, buğdaygillerden kıraç arazi ve karasal iklim şartlarına uygunluk sağlaması bakımından kılçıksız brom, mavi ayrık ve çok yıllık çim tercih edilirken, baklagillerden ise ak üçgül tercih edilmiştir.

Karışımında yer alan bitki tohumlarının dekara atılacak miktarları ve karışım oranları aşağıda tabloda belirtilmiştir. Ocağın sahası çalışmalar sırasında, vejetasyon ağırlıklı olarak tahrip olacağından yalın ekim miktarlarının 2 katı olarak ekilmesi uygundur.

Bitki Türü	Ekim Yeri	Yalın Ekim Tohum Miktarı (kg/da)		Ekim Derinliği (cm)	Karışım Oranı (%)	Karışımındaki Tohum Miktarı (kg/da)
Kılçıksız Brom (Bromus inermis)	Kıraç	2,5	(*) 5	1,5-2	20	1
Mavi Ayrık (Agropyron Intermedium)	Kıraç	2,5	5	3-4	20	1
Çok Yıllık Çim (Lolium perenne)	Kıraç	2	4	1,5-2	20	0,80
Ak Üçgül (Trifolium Repens)	Kıraç	1,5	3	0,5-1	40	1,20
TOPLAM					100	4

4.D. GÜBRELEME

Yem bitkilerinde ihtiyaç duyduğu bitki besin elementini uygun zaman ve uygun özellikte gübre ile sağlamak hem verim artışını hem yemin kalitesini artırır. Buğdaygil bitkileri için N (azot), baklagil bitkileri için K (potasyum) içeren gübreler kullanmak uygun olacaktır. Sahada bu ayırım yapılamayacağından kompoze gübre kullanılacaktır. Tabloda belirtilmiştir.

1 dekar arazi için kullanılacak kompoze gübre miktarı: $100 \cdot 5 / 15 = 33,33$ kg/da

ALAN (da)	AZOT (N)	FOSFOR (P)	POTASYUM (K)	GÜBRE ÇEŞİDİ	KULLANILACAK MİKTAR(kg)
44,75	5	5	5	Kompoze (15+15+15)	1.491,51

5.PROJE MALİYETİ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan toplam 44.751,81 m² büyüklüğündeki 1328, 879, 616, 38209 nolu mera vasıflı parsellerde Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi planlanmaktadır.

12.04.2005 tarihli ve 25784 sayılı Resmî Gazetede yayımlanan Mera Yönetmeliğinin 8 inci maddesinin (b) bendinde “Yatırımı yapan kişi ve kuruluşlar yirmi yıllık ot geliri ile öngörülen teminatları yatırmadan ve hazırlanan sözleşmeyi imzalamadan çalışmalara başlayamaz, başladığı takdirde verilen izinler veya tahsis amacı değişikliği iptal edilerek verdiği zararlar tazmin edilir.” denilmektedir.

Jeotermal kaynak arama izni talep edilen parsellerin toplam büyüklüğü 44.751,81 m² dir. Sondaj işleminin bu parsellerin sadece 30m x 50m=1.500 m² lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır.616 parsel (1.110,52 m²) yol olarak kullanılacaktır. Sondaj alanında sondaj makinesinin yerleşmesi için 185 m² 'lik kısma 40 cm kalınlığında dolgu ve beton yapılacaktır. Lokasyon alanının geri kalan kısmı ise 5 cm kalınlığında mıcır dökülerek sıkıştırılacaktır.Sondaj işlemi tamamlandıktan sonra tabla betonu ve mıcır, saha üzerinden kaldırılarak ekime uygun hale getirilecektir.

Sondaj lokasyon alanı krokisi ve görselleri proje ekinde sunulmaktadır.

Sahada gerekli düzenlemeler yapıldıktan sonra 50 cm bitkisel toprak serilecek olup, sahada 40 cm bitkisel toprak olduğu kabul edilerek, 10 cm derinliğine tekabül eden bitkisel toprak dışarıdan temin edilecektir.

5.1 İNŞAAT İŞLERİ MALİYETİ

Jeotermal kaynak arama izni alınan parsellerde sadece 30m x 50m=1.500 m² 'lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır. Yapılacak hesaplamalar her parsel (3 parsel) için 1.500 m² 'lik saha üzerinden yapılacaktır.Diğer kısımlarda mera bozulmayacağı için ekim maliyet hesabı yapılacaktır.

Jeotermal kaynak arama sondajı tamamlandıktan sonra meranın geri dönüşüm işleminin yapılması için sondaj lokasyon alanlarındaki lokasyon beton alını kırılarak, mıcır toplanarak sahadan taşınacaktır. Kullanılan konteynır ve çamur tankları kaldırılacak olup açılan çamur havuzu kapatılacaktır.

Yapılan işlemler her parsel (3 parsel) için ayrı hesaplanacaktır. (Tablo-8)

Söküm-yıkım işlemi yapılacak lokasyon beton alanı: 185 m² x 3 (parsel) =**555 m²**

Taşınacak olan lokasyon beton alanı molozu: 555 m² x 0,40 m = **222 m³**

Sondaj lokasyon alanına serilen ve taşınacak mıcır miktarı: (1.315 m² x 0,05 m) x (parsel) =**197,25 m³**



Tablo-8:İnşaat İşleri Birim Fiyat Tablosu

Poz No	Yapılacak İşin Beyanı	Birimi	Miktarı	Birim Fiyatı (m ³ -ton /TL)	Tutarı (TL)
KGM/18.189	Parke, beton plak, adi kaldırım ve blokaj sökülmesi	m ²	555,00	57,44	31.879,20
15.100.1002	kum, çakıl, tuvenan, stabilize ,kırmataş taşıtlara yükleme,boşaltma	m ³	197,25	16,94	3.341,42
07.006/K (Tml-Mlz)	Temel malzemesi nakli(20 km)	m ³	222,00	41,45	9.201,90
07.006/K(km)	Kum nakli (20 Km)	m ³	197,25	36,85	7.268,66
TOPLAM (TL)					51.691,18

Jeotermal kaynak arama izni talep edilen parsellerin toplam büyüklüğü 44.751,81 m² dir. Sondaj işlemin bu parsellerin sadece 30m x 50m=1.500 m² lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır.616 parsel (1.110,52 m²) yol olarak kullanılacaktır. Sondaj alanında sondaj makinesinin yerleşmesi için 185 m² 'lik kısmına 40 cm kalınlığında dolgu ve beton yapılacaktır. Lokasyon alanın geri kalan kısmı ise 5 cm kalınlığında mıcır dökülerek sıkıştırılacaktır.Sondaj işlemi tamamlandıktan sonra tabla betonu ve mıcır, saha üzerinden kaldırılarak ekime uygun hale getirilecektir.

Sahada gerekli düzenlemeler yapıldıktan sonra 50 cm bitkisel toprak serilecek olup, sahada 40 cm bitkisel toprak olduğu kabul edilerek, 10 cm derinliğine tekabül eden bitkisel toprak dışarıdan temin edilecektir

Bu durumda 1 m² alana 100 cm x 100 cm x 10 cm = 100.000 cm³ = 0,10 m³ toprak serilir. 1 da alana ise 1000 m² x 0,10 m³= 100 m³ toprak kullanılacaktır. Sondaj lokasyon alanları için ise; 100 m³ x 1,50 da x 3 parsel = 450,00 m³ toprağa ihtiyaç vardır. İnşaat işleri birim fiyat tarifeleri esas alındığında 1 m³ yumuşak toprak 1,6 ton, 1 m³ sert toprak ise 1,8 ton olarak alınmış olup, maliyet hesabımızda 1 m³ toprak 1,70 ton olarak alınmıştır. Bu durumda bir dekar alana 100 m³ x 1,70 ton= 170 ton/da toprak kullanılacaktır. Jeotermal kaynak arama izni talep edilen sondaj lokasyon alanları toplamı 4,50 da alan için ise; 170 ton x 4,50 da= 765,00 ton toprağa ihtiyaç olacaktır.

Tablo-9: İnşaat İşleri Birim Fiyat Tablosu

Poz No	Yapılacak İşin Beyanı	Birimi	Miktarı	Birim Fiyatı (m ³ -ton /TL)	Tutarı (TL)
15.120.1001	Makine ile her derinlikte geniş derin yumuşak ve sert toprağın kazılması	m3	450,00	27,85	12.532,50
15.100.1002	Toprak Yükleme ve Boşaltılması	ton	765,00	16,94	12.959,10
07.005/K-1	Toprak Nakli (5000 m ye kadar)	ton	765,00	29,44	22.521,60
KGM15.040/K	Makine ile Dolgu (Serme ve Düzeltme Dahil)	m3	450,00	8,88	3.996,00
TOPLAM (TL)					52.009,20

*: Hesaplamalarda 2023 yılı birim fiyatları baz alınmıştır.



2023 Yılı 1 Dekar Yapay Mera Hazırlanması İçin Yapılan Masraflar

Yapılacak İşler	Birimi	Miktarı	Birim Fiyat (TL)	Toplam Tutar (TL/da)
Toprak Hazırlığı (OGM 3107.1)	Da	1	122,80	122,80
Tohum Bedeli	Kg/da	4	126,00	504,00
Gübreleme (15-15-15 Kompoze)	Kg/da	33,33	14,00	466,62
Ekim İşçiliği (Gübreleme Dahil) (OGM)	Da	1	212,96	212,96
Üst Gübreleme A.Sülfat(%21)	Kg/da	30	9,00	270,00
Üst Gübreleme Atım İşçiliği (OGM)	Da	1	45,22	45,22
Bakım (OGM)	Da	1	368,68	368,68
Toplam Maliyet (TL/da)				1.990,28

Jeotermal kaynak arama sondajı yapılan toplam 44.75 dekar alanın ekim maliyeti:

44,75 da x 1990,28 TL = **89.065,03 TL (Seksendokuzbin Altmışbeş TL Üç Krş)**

TOPLAM MALİYET

İşletme faaliyeti sonrası tahsis amacı değişikliği yapılan meranın eski haline getirilmesi için yapılması öngörülen toplam maliyet;

İnşaat İşleri Maliyeti(tablo-8):	51.691,18 TL
İnşaat İşleri Maliyeti(tablo-9):	52.009,20 TL
Ekim Maliyeti:	89.065,03 TL
TOPLAM MALİYET:	192.765,41 TL

Jeotermal Kaynak Arama izni verilen 44,75 dekar alanın için:

192.765,41 TL (Yüzdoksan ikibin Yediyüzaltmışbeş TL Kırkbir Krş)

olarak hesaplanmıştır.

Bu konuda yapılan gerek arazi ve gerekse büro çalışmaları sonucu bahse konu izne esas toplam 44,75 dekar mera arazisinin yeniden geri dönüşümü için gerekli proje tanzim edilmiştir. Projenin çevreye ve kalan mera alanlarına olumsuz etkisi olmayacağı, meraya gidiş gelişi engellemeyeceği öngörülmektedir. Yapılan proje sonucu, proje sahasında yer alan 44,75 dekar mera arazisinin "Geri Dönüşüm Maliyeti" **192.765,41 TL (Yüzdoksan ikibin Yediyüzaltmışbeş TL Kırkbir Krş)** olarak hesaplanmıştır.



6.SONUÇ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan 9.950,00 m² büyüklüğündeki 1328 parselin tamamı, 14.400,00 m² büyüklüğündeki 879 parselin tamamı, 10.400,00 m² büyüklüğündeki 616 parselin 1.110,52 m²'lik kısmında, 101.600,00 m² büyüklüğündeki 3809 parselin 19.291,29 m² lik kısmında Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi için "Mera Geri Dönüşüm Projesi"nin hazırlanması ve uygulanması Aksaray İl Mera Komisyon Başkanlığınca istenmiştir.

Yapılacak maden üretimi işlemi ve vasıf değişikliği sonrası söz konusu mera vasıflı arazinin yeniden dönüşümü yapılacak, bozulan mera arazisinin tekrar düzenlenerek rehabilite edilmesi, ekolojik dengenin sağlanması ve ülke ekonomisine katkı sağlaması açısından önem arz etmektedir.

Mera Yönetmeliği ve Tarım ve Orman Bakanlığı 2014/2 ve 2014/4 nolu talimatları gereği hazırlanan mera dönüşüm projesiyle; gerekli güvenlik önlemleri alınarak, çevre arazilere ve kalan mera alanlarına zarar verilmeyecek, merada maden işletme faaliyeti ve diğer faaliyetler esnasında daha fazla alan çığnıenmeyip mera bozulmayacaktır. Projeye göre geri dönüşümün uygulanması ve tanıtım dosyasında verilen taahhütlerin yerine getirilmesine önem verilecektir.

Bu projenin uygulaması ile ülkemiz hayvancılığı için çok kıymetli olan mera arazilerimiz tekrar otlatılmaya açılacaktır.

İl Mera Komisyon Başkanlığınıza Arz Ederim.



EKLER

EK-1 PROJE ALANI VE ÇEVRESİNİ GÖSTEREN FOTOĞRAFLAR

EK-2 İŞLETME RUHSATI

EK-3 VAZİYET PLANI

EK-4 SONDAJ LOKASYON ALANI

EK-5 PROJEYİ HAZIRLAYAN TANITIMI





3



3

T.C.
AKSARAY İL ÖZEL İDARESİ

JEOTERMAL KAYNAK İŞLETME RUHSATI

İli : AKSARAY
İlçesi : MERKEZ
Belde : ...
Köyü : ...
Kaynağın Cinsi : JEOTERMAL KAYNAK
Ruhsat Numarası : 2023/17
Ruhsatın Yürürlüğe Giriş Tarihi : 15.08.2023
Ruhsat Süresi Bitim Tarihi : 15.08.2053
Ruhsat Alanı (hektar) : 4674.89 Hektar
Ruhsat Sahibi : GMK YENİLENEBİLİR ENERJİ MÜH. İMALAT
SANAYİ VE TİCARET A.Ş.
T.C. Kimlik No :
Vergi Daire No : KARŞIYAKA V.D. 396 073 7289
Ruhsatın Ait Olduğu paftalar : L32d2 , L32a3
Erişim No : 3385498
Ruhsat Koordinatları:

Poligon 1	1. Nokta	2. Nokta	3. Nokta	4. Nokta	5. Nokta	6. Nokta	7. Nokta
Sağa (Y)	609177	602619	601725	601369	600283	600184	601053
Yukarı (X)	4229999	4230012	4230435	4231363	4233538	4234523	4235198

	8. Nokta	9. Nokta	10. Nokta
Sağa (Y)	607648	608036	607709
Yukarı (X)	4237500	4235656	4234637

Ruhsat Sahibinin Adresi :
Adalet Mah. Manas Blv. Folkart Towers A-Kule 47/B Daire:2601 Bayraklı /İZMİR

Mehmet Emre CANPOLAT
Vali a.
Vali Yardımcısı
Genel Sekreter v.

Valilik Makamının 15.08.2023 tarih ve 29599 sayılı Oluru ile İşletme Ruhsatına geçişi yapılmıştır.

GAZİEMİR-9

NoktaNo		Y	X
B1	kuyu alanı	620082.46	4244425.97
B2	kuyu alanı	620079.32	4244455.81
B3	kuyu alanı	620129.05	4244461.04
B4	kuyu alanı	620132.19	4244431.21
K1	kuyu noktası	620095.82	4244442.47

GAZİEMİR-5

NoktaNo		Y	X
B1	kuyu alanı	620101.13	4244362.29
B2	kuyu alanı	620097.99	4244392.12
B3	kuyu alanı	620147.71	4244397.36
B4	kuyu alanı	620150.85	4244367.52
K1	kuyu noktası	620114.48	4244378.78

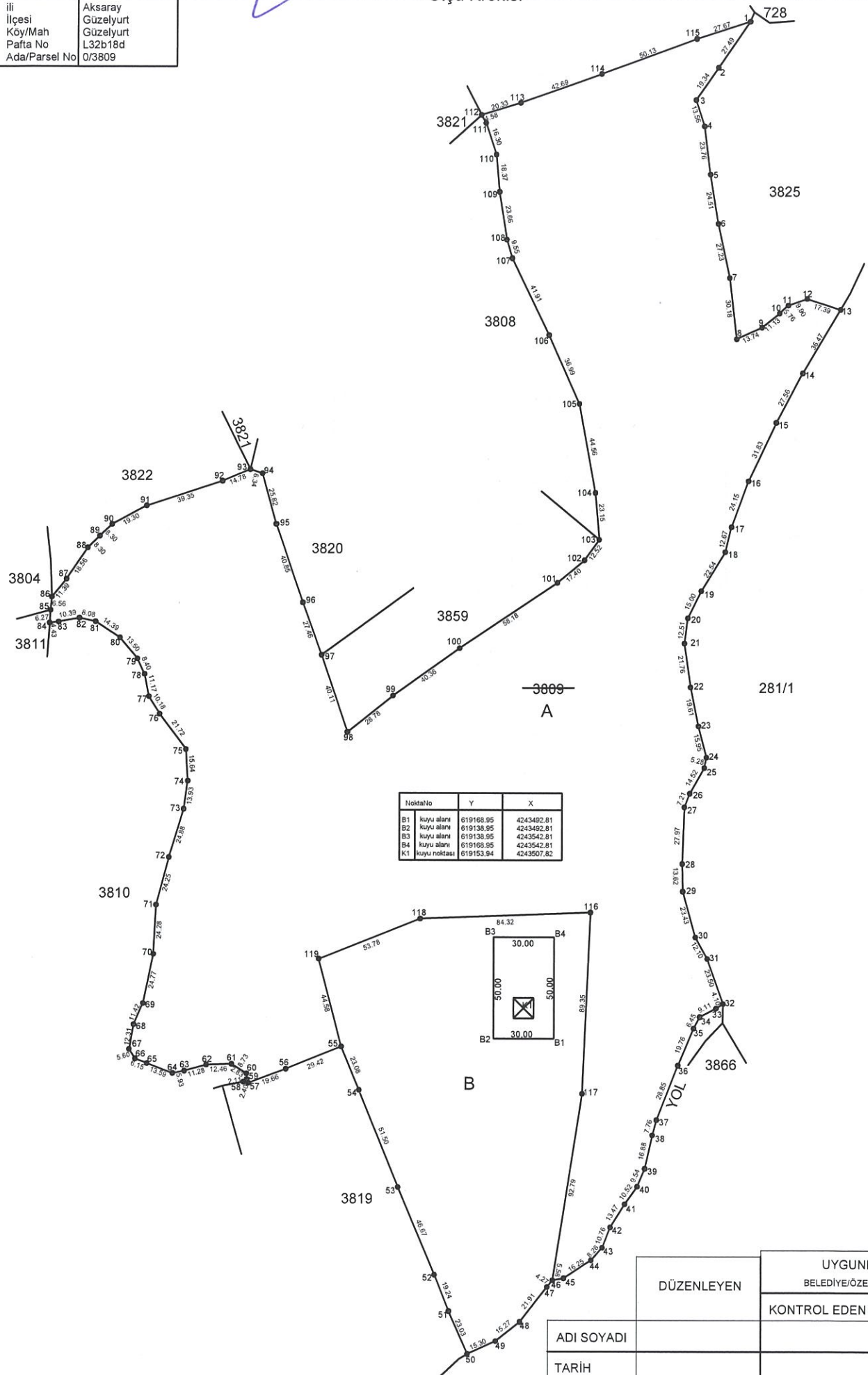
AG4

NoktaNo		Y	X
B1	kuyu alanı	619168.95	4243492.81
B2	kuyu alanı	619138.95	4243492.81
B3	kuyu alanı	619138.95	4243542.81
B4	kuyu alanı	619168.95	4243542.81
K1	kuyu noktası	619153.94	4243507.82

3

Ölçü Krokisi

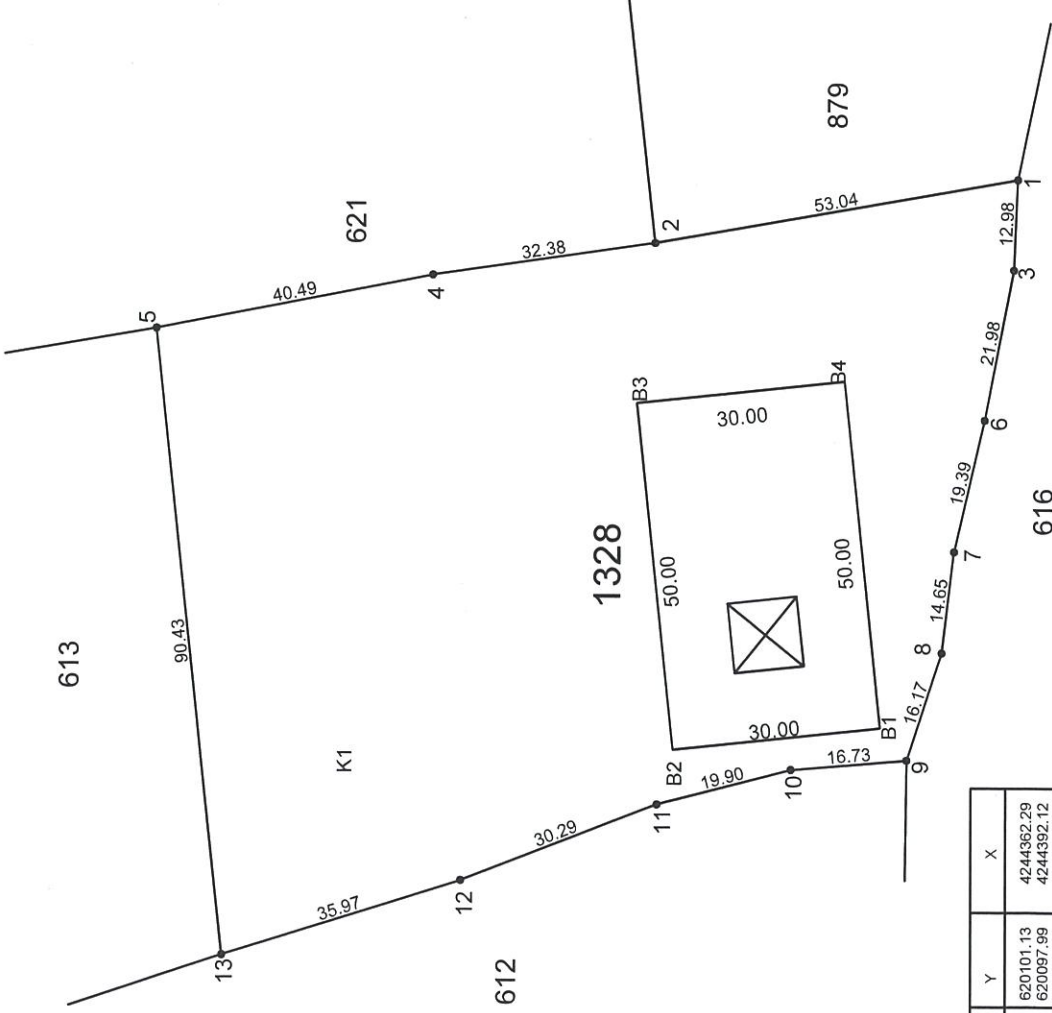
ili Aksaray
İlçesi Güzelyurt
Köy/Mah Güzelyurt
Pafta No L32b18d
Ada/Parsel No 0/3809



DÜZENLEYEN	UYGUNDUR BELEDİYE/ÖZEL İDARE	
	KONTROL EDEN	ONAYLAYAN
ADI SOYADI		
TARİH		
İMZA		

RÖLEVE ÖLÇÜ KROKİSİ

İli : AKSARAY
İlçesi : MERKEZ
Mahallesi : AKYAMAÇ
Pafta No : 18C
Ada / Parsel : 0/1328



ED50(3 DERECE) KOORDİNATLAR

NoktaNo	Y	X	NoktaNo	Y	X
1	620179.88	4244342.59	2	620170.71	4244394.83
3	620166.92	4244343.14	4	620166.08	4244426.87
5	620158.30	4244466.61	6	620145.33	4244347.31
7	620126.44	4244351.67	8	620111.90	4244353.42
9	620096.52	4244358.43	10	620095.13	4244375.10
11	620090.13	4244394.36	12	620079.20	4244422.61
13	620068.39	4244456.92			

ALAN ÖZETİ

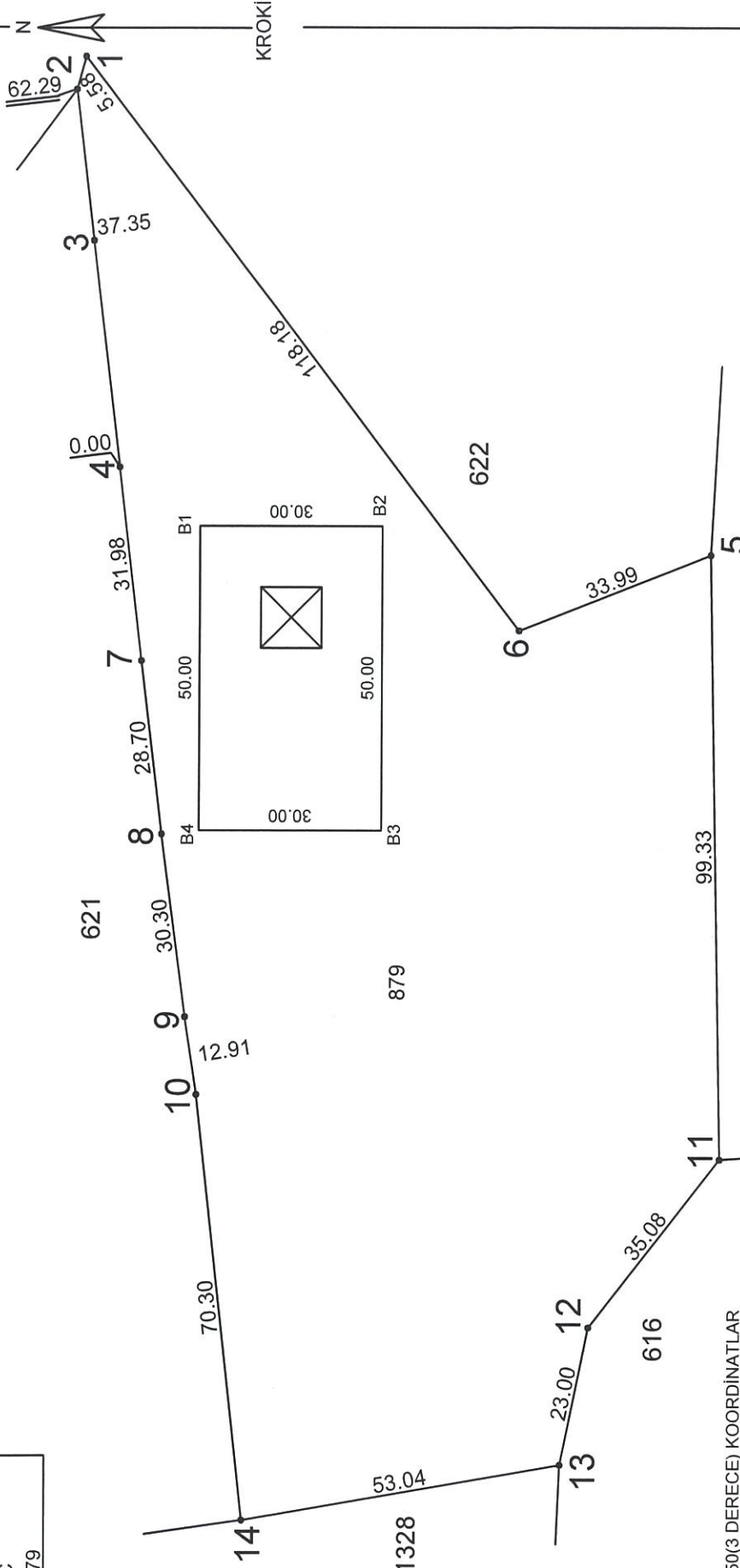
Ada/Parsel	Noktalar	HesapAlan	Düzeltilme	Deng.Alan
1328	2,4,5,13,12,11,10,9,8,7,6,3,1	9524.96	+0.00	9524.96
		TOPLAM	+0.00	9524.96
TAPU ALANI		9524.96		
HESAPLANAN		9524.96		
FARK		0.00		
TECVİZ		42.88		

NoktaNo	Y	X
B1	620101.13	4244362.29
B2	620097.99	4244392.12
B3	620147.71	4244397.36
B4	620150.85	4244367.52
K1	620114.48	4244378.78

UYGUNDUR BELEDİYE/ÖZEL İDARE	
DÜZENLEYEN	KONTROL EDEN
ADI SOYADI	
TARİH	
İMZA	

RÖLEVE ÖLÇÜ KROKİSİ

İli : AKSARAY
 İlçesi : MERKEZ
 Mahallesi : AKYAMAÇ
 Pafta No : 18C
 Ada / Parsel : 0/879



ED50(3 DERECE) KOORDİNATLAR

NoktaNo	Y	X	NoktaNo	Y	X
1	620410.89	424421.42	2	620405.51	424422.91
3	620380.74	424419.95	4	620343.66	424415.53
5	620329.39	4244318.06	6	620316.96	4244349.69
7	620311.89	4244411.85	8	620283.40	4244408.41
9	620253.36	4244404.48	10	620240.59	4244402.56
11	620230.07	4244316.38	12	620202.41	4244337.96
13	620179.88	4244342.59	14	620170.71	4244394.83

ALAN ÖZETİ

Ada/Parsel	Noktalar	HesapAlan	Düzeltilme	Deng.Alan
879	5,11,12,13,14,10,9,8,7,4,3,2,1,6	14582.49	+0.00	14582.49
	TOPLAM	14582.49	+0.00	14582.49
TAPU ALANI		14582.49		
HESAPLANAN FARK		0.00		
TECVİZ		54.02		

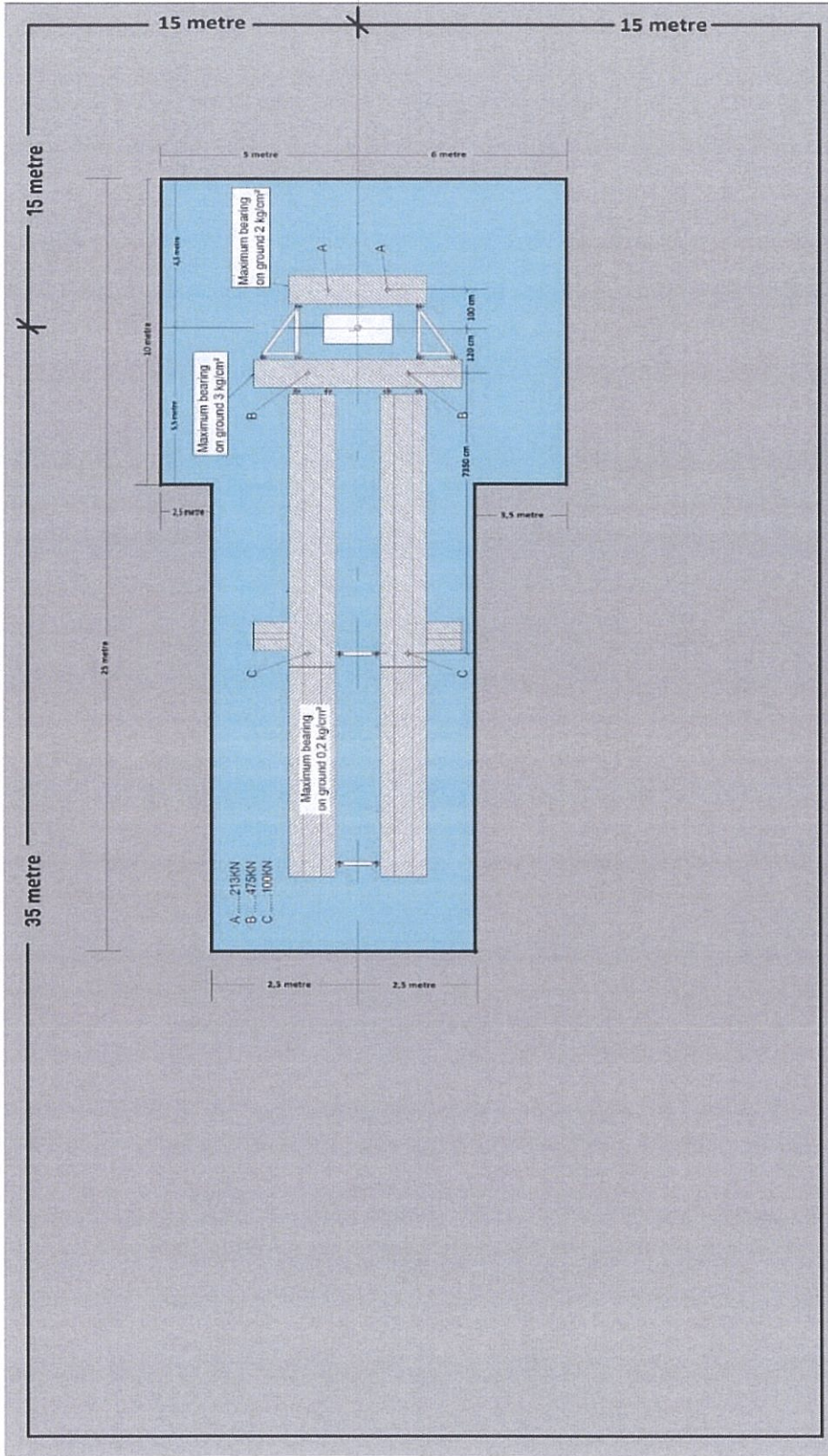
NoktaNo	Y	X
B1	620334.02	4244402.31
B2	620334.02	4244372.31
B3	620284.02	4244372.31
B4	620284.02	4244402.31
K1	620319.01	4244387.30

UYGUNDUR BELEDİYE/ÖZEL İDARE	
DÜZENLEYEN	KONTROL EDEN
ADI SOYADI	TARİH
	İMZA

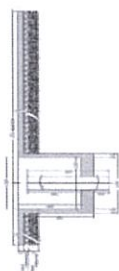


3

SONDAJ LOKASYON ALANI



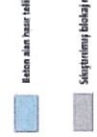
- A.....2134N
- B.....475KN
- C.....1000KN



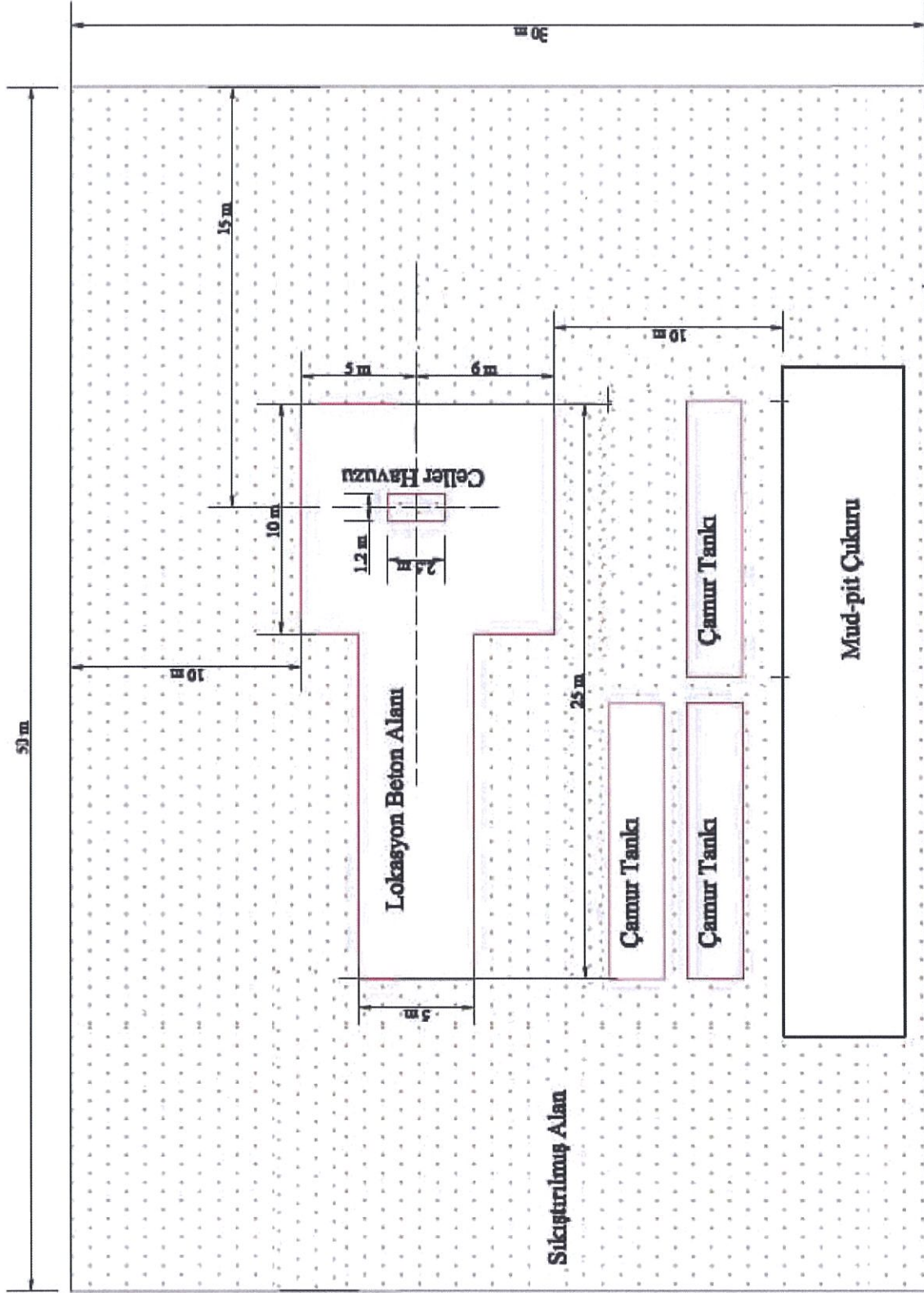
Çukür İyiliği 120x250x250 ebatları.
Derinlik kuyuya göre operatör tarafından değiştirilebilir.

Mud pit ölçüleri operatör tarafından ayarlanacak

Çukürün ölçülendirme yatağı.



3



3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
ZİRAAT MÜHENDİSLİĞİ
SERBEST MÜŞAVİRLİK MÜHENDİSLİK BELGESİ

BELGE SAHİBİNİN:

Adı ve Soyadı : MUSTAFA PİŞKİN
T.C. Kimlik No : 20372789884
Ünvanı : ZİRAAT MÜHENDİSİ
ZMO Sicil No'su : 33162
Ana Çalışma Konuları : GIDA, TARIM, DANIŞMANLIK, PEST KONT. MERA
ISLAHI, AMENAJMAN VE GERİ
DÖNŞ. PRJ. HAZ. MARKET, HAŞERE İLAÇLAMA
Büro ile Bağlantı Şekli : KENDİSİ
SMM Belgesi No'su ve Tarihi : 1746 / 18.11.2022
Geçerlilik Tarihi : 18.11.2023



TESCİL EDİLEN BÜRONUN(Var isel):

Ünvanı : EMİN HAŞERE İLAÇLAMA HİZMETLERİ
Adresi : K. BÖLCEK MAH. 2601. SOK. ÖZMENLER APT. NO:
12/D AKSARAY
Tescil Belgesi No'su ve Tarihi : 0720/18.11.2022

Yukarıda bilgileri verilen üyemiz MUSTAFA PİŞKİN' in, ODA'ya kayıtlı olarak bu belge ile tescil olduğu bürosun, yukarıda belirtilen faaliyet alanlarında yürüteceği Ziraat Mühendisliği hizmetlerini yaptığını beyan ederiz.



3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
ZİRAAT MÜHENDİSLİĞİ
BÜRO TESCİL BELGESİ

BÜRONUN ÜNVANI : EMİN HAŞERE İLAÇLAMA HİZMETLERİ
BÜRONUN ADRESİ : K. BÖLCEK MAH. 2601. SOK. ÖZMENLER APT.
NO: 12/D AKSARAY
ÇALIŞMA ALANLARI : GIDA, TARIM, DANIŞMANLIK, PEST KONT. MERA
İSLAHİ, AMENA/MAN VE GERİ DÖNS. PRJ. HAZ.
MARKET, HAŞERE İLAÇLAMA
VERGİ DAİRESİ VE NO : AKSARAY 7300223974
BÜRO TESCİL NO ve TARİHİ : 0720 / 18.11.2022
GEÇERLİLİK TARİHİ : 18.11.2023

ADI SOYADI : MUSTAFA AŞKIN
TC KİMLİK NO : 20372789584
ÜNVANI : ZİRAAT MÜHENDİSİ
ZMO SİYİL NO : 33162
SMM BELGE NO / TARİHİ : 1748 / 18.11.2022
BÜRO İLE BAĞLANTI ŞEKLİ : KENDİSİ



Yukarıda bilgileri verilen üyenizin ODA'mıza kayıtlı olarak bu belge ile tescil olduğu görülmektedir. Yukarıda belirtilen çalışmaya alanlarında yürüteceği Ziraat Mühendisliği hizmetlerini yapmaya yetkili olduğu anlaşılmıştır.

3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
Meslek İçi Eğitim Merkezi

BELGE NO : 88

TARİH : 30.11.2014

KATILIM BELGESİ

Mustafa Pişkin (33162)

ZİRAAT MÜHENDİSLERİ ODASI MESLEK İÇİ EĞİTİM MERKEZİ TARAFINDAN
28-30 KASIM 2014 TARİHLERİNDE KONYA ŞUBEMİZDE DÜZENLENEN 3 GÜN SÜRELİ

“MERA ISLAH, AMENAJMAN ve GERİ DÖNÜŞÜM PROJESİ”
EĞİTİMİNE KATILARAK BU KATILIM BELGESİNİ ALMAYA HAK KAZANMIŞTIR.

Özden GÜNGÖR
ZMO Genel Başkanı



T.C.
SELÇUK ÜNİVERSİTESİ
ZİRAAT FAKÜLTESİ

LİSANS DİPLOMASI

Selçuk Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümünün dört yıllık
eğitim-öğretimini başarıyla tamamlayan
Emin oğlu 22.02.1978 Ermenek doğumlu

MUSTAFA PIŞKİN

Kanunların verdiği hak ve yetkilerden faydalanmak üzere Ziraat Mühendisi ünvanı ile bu diplomayı
almaya hak kazanmıştır.

Mehmet Kara

Prof.Dr..Mehmet KARA
DEKAN

Abdullah Kutlu

Prof.Dr.Abdullah KUTLU
REKTÖR

Diploma No : 0215030037
Mezuniyet Tarihi : 28.06.2002



Fen Bilimleri Enstitüsü

Yüksek Lisans Diploması

Diploma No : 1806
TC Kimlik No : 20372789884
Öğrenci No : 04824502010
Mezuniyet Tarihi : 27.06.2007

Tarla Bitkileri Anabilim Dalı Yüksek Lisans programında öngörülen çalışmalarını başarı ile tamamlayan Emin oğlu 22.02.1978 Ermenek doğumlu Mustafa PİŞKİN kanunların verdiği hak ve yetkilerden faydalanmak üzere bu diplomayı almaya hak kazanmıştır.


Prof. Dr. İbrahim KARATAŞ
Müdür




Prof. Dr. Süleyman OKUDAN
Rektör

ÇED DEVRİ İLE İLGİLİ YAZILAR



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-5824983

24.02.2023

Konu : ÇED Gerekli Değildir Kararı Belgesi

GÜZELYURT JEOTERMAL ENERJİ A.Ş. YE
Kazım Özalp Mahallesi Reşit Galip Caddesi No:97 Çankaya/ANKARA

İlgi : 16.02.2023 tarihli yazınız.

İlimiz Güzelyurt ilçesi Akyamaç Mahallesi Bozcayurt köyü mevkiinde GMK Yenilenebilir Enerji Müh. İmalat San. ve Tic. A.Ş. uhdesinde bulunan 2019680002 Ruhsat Numaralı Jeotermal Kaynak arama projesi faaliyetinin Güzelyurt Jeotermal Enerji A.Ş. 'ye devredildiği bildirilmiş olup İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesinin yeni unvan adına düzenlenmesi İlgi (b)'de kayıtlı yazı ile talep edilmiştir.

Bilindiği üzere 29 Temmuz 2022 tarihli ve 31907 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği'nin, Proje Sahibinin Değişmesi ve Projenin Devri başlıklı 21 inci maddesinin 1 inci fıkrasında;

"Proje sahibinin herhangi bir nedenle değişmesi durumunda; projenin yeni sahibi, projenin devrine konu bilgi ve belgeleri (noter onaylı devir sözleşmesi, tapu senedi, ilgili idaresince onaylı icra/ihale sonuç belgeleri ve benzeri), nihai ÇED raporu/proje tanıtım dosyası ve eklerinin proje sahibinin taahhüdü altında olduğunu belirten taahhütnamesini ve taahhüdü imzalayan yetkilinin noter onaylı imza sirküleri ile ticari sicil gazetesini 6 ay içerisinde ilgili il müdürlüğüne sunmakla yükümlüdür(...)" hükmü bulunmaktadır.

İl Müdürlüğümüzce İlgi (b) dilekçe ve eklerinde yapılan inceleme ile maliallinde yapılan değerlendirme sonucunda İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesine esas koordinatlarda faaliyetin başlamış olduğu, mezkûr Yönetmelik gereği hazırlanması gereken bilgi ve belgelerin eksiksiz olarak sunulduğu tespit edilmiştir.

Bu kapsamda İlgi (a)'da kayıtlı ÇED Gerekli Değildir Kararı Belgesi mer'i mevzuata uyulması kaydıyla Güzelyurt Jeotermal Enerji A.Ş. adına geçerlidir.

Ancak faaliyette kapasite artışı, yer değişikliği, proses değişikliği vb. herhangi bir değişiklik olması durumunda ÇED Yönetmeliği başta olmak üzere Çevre Mevzuatı konusunda değerlendirme yapılabilmesi için Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) tekrar müracaat edilmesi ve 2872 sayılı Çevre Kanunu başta olmak üzere Çevre Mevzuatına uyulması hususunda;

Bilgilerini ve gereğini rica ederim.

" Belgenin aslı
elektronik imzalıdır."

Ali ÖZCAN

Vali a.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü

24-02-2023

Evrak Görevlisi
Neslihan Tokyan

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 1B27AA86-263E-4DD4-BFEF-4180CF1BAE2D

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Bilgi için: Çiğdem YILDIRIM

Tel: 0(382) 2175100 Faks: 0(382) 2175105

Mühendis

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>





T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
Çevresel Etki Değerlendirmesi, İzin ve Denetim Genel Müdürlüğü



T.C.
AKSARAY VALİLİĞİ
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜ

Karar Tarihi : 29-11-2022
Karar No : 13955465 220-02 E-2022283

ÇEVRESEL ETKİ DEĞERLENDİRME BELGESİ

25.11.2014 tarih ve 29186 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren Çevresel Etki Değerlendirmesi Yönetmeliği'nin Ek-II listesinde yer alan '**Jeotermal Kaynak Arama Sondajları**' projesi ile ilgili olarak inceleme-değerlendirme yapılmış ve Proje Tanıtım Dosyasında çevresel etkilere karşı alınması öngörülen önlemler yeterli görülmüştür. Ayrıca ÇED Raporu hazırlanmasına gerek bulunmadığı tespit edilmiş olup, söz konusu projeye ÇED Yönetmeliğinin 17. Maddesi gereğince Valiliğimizce "**Çevresel Etki Değerlendirmesi Gerekli Değildir**" kararı verilmiştir.

Ali OZCAN
Vali a.
Çevre, Şehircilik ve İklim Değişikliği İl Müdürü



Proje Sahibi : GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET A.Ş.
Proje Yeri : Aksaray İli, Güzelyurt İlçesi, Güzelyurt İlçesi, Akyamaç Mahallesi, Bozcayurt Köyü
Kapasite : 7 Adet Jeotermal Kaynak Arama Sondajı

KOORDİNATLAR

Ruhsat Koordinatları

2019680002 Nolu (Erişim no: 3382865) Ruhsat Sahası Koordinatları

NO	X	Y	ENLEM	BOYLAM
1	616988	4241558	38,312859	34,337820
2	616974	4247000	38,361892	34,338562
3	623000	4246999	38,361076	34,407517
4	623000	4245400	38,346669	34,407238
5	624600	4245400	38,346448	34,425543
6	625000	4243420	38,328554	34,429768
7	625000	4242000	38,315760	34,429517
8	625464	4241126	38,307821	34,434668
9	625691	4239999	38,240714	34,361773
10	623000	4239999	38,241195	34,345807
ALANI	4869,77 Hektar			

SONDAJ KOORDİNATLARI (Sondağın delineceği noktalar)

SONDAJ ADI	X	Y	ENLEM	BOYLAM
Gaziemir-1	617986,56	4241661,10	38,313658	34,349261
Gaziemir-2	618937,57	4242360,11	38,319830	34,360254
Gaziemir-3	618962,57	4242200,11	38,318385	34,360512
Gaziemir-4	619445,57	4243107,11	38,326493	34,366190
Gaziemir-5	620150,57	4242618,95	38,322000	34,374170
Gaziemir-6	617221,56	4241734,10	38,314416	34,340525
Gaziemir-7	617306,56	4242372,11	38,320153	34,341602



T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-13955465-220.02-5159791 -2022285

02.12.2022

Konu : ÇED Ek-2 Proje Tanıtım Dosyası

GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET ANONİM
ŞİRKETİNE

Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

İlimiz Güzelyurt ilçesi Akyamaç Mahallesi ve Bozcayurt Köyü adreslerinde Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Kaynak Arama Sondajları" projesine ait Proje Tanıtım Dosyası, Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği'nin 15. maddesinin birinci fıkrasının (a) bendi uyarınca incelenmiş ve değerlendirilmiştir.

29.07.2022 tarihli ve 31907 Sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği'nin 17. maddesi gereğince, söz konusu projeye Valiliğimizce "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilmiştir.

Bu kapsamda "Çevresel Etki Değerlendirmesi Gerekli Değildir" kararı verilen projeye ilişkin Proje Tanıtım Dosyası ve eklerinde belirtilen hususlar ile 2872 sayılı Çevre Kanunu ve bu Kanuna istinaden yürürlüğe giren mer'i mevzuata uygun faaliyet gösterilmesi, ilgili kurum/kuruluşlardan gerekli izinlerin alınması, ÇED Yönetmeliği'nin 18. maddesinin üçüncü fıkrası gereğince projede yapılacak mezkûr yönetmeliğe tabi değişikliklerin Valiliğimize (Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü) iletilmesi hususunda;

Bilgilerini ve gereğini arz ve rica ederim.

Bülent MERT

Vali a.

Çevre, Şehircilik ve İklim Değişikliği İl Müdürü V.

Ek: Çevresel Etki Değerlendirme Belgesi (2 Sayfa)

Dağıtım:

Gereği:

GMK YENİLENEBİLİR ENERJİ
MÜHENDİSLİK İMALAT SANAYİ VE

Bilgi:

Tarım Ve Orman Bakanlığı 8. Bölge
Müdürlüğüne(Ek konulmadı)
DSİ 4. Bölge Müdürlüğüne(Ek konulmadı)
Su Yönetimi Genel Müdürlüğüne(Ek konulmadı)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevresehicilik@hsbt.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



TİCARİET ANONİM ŞİRKETİNE
Adalet Mah. Manas Blv. Folkart Towers A Kule
47/B Daire:2601 Bayraklı /İZMİR

Aksaray İl Özel İdaresine(Ek konulmadı)
Aksaray İl Tarım Ve Orman Müdürlüğüne(Ek
konulmadı)
Aksaray İl Kültür Ve Turizm Müdürlüğüne(Ek
konulmadı)
Konya Orman Bölge Müdürlüğüne(Ek
konulmadı)
Güzelyurt Kaymakamlığına(Ek konulmadı)
Bozcayurt Köyü Muhtarlığına(Ek konulmadı)
Akyamaç Mahallesi Muhtarlığına(Ek konulmadı)
Enpark Çevre Enerji Maden Müh. Dan. ve Müş.
Ltd. Şti.ne
Çayyolu Mah. Irmakent Sitesi 2681. Sok. No:12
Çankaya ANKARA

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: DF6C1723-EDFD-469E-AE7E-FE7B8709CF12

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: İstiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

KFP Adresi: aksaraycevrevesehirlik@bssd1.kon.tr

Bilgi için: Sadık PÖKÖN
Makine Mühendisi



**MERA BAŐVURUSU
İLE İLGİLİ YAZILAR**



T.C.
AKSARAY VALİLİĞİ
İl Tarım ve Orman Müdürlüğü



Sayı : E-11254826-115.02-11660977

17.10.2023

Konu : Güzelyurt Jeotermal Enerji A.Ş. Arama
Amaçlı Sondaj Çalışmaları

GÜZELYURT JEOTERMAL ENERJİ ANONİM ŞİRKETİNE
KAZIM ÖZALP MAH. REŞİT GALİP CAD. NO: 97 ÇANKAYA / ANKARA

İlgi : Aksaray İl Özel İdaresinin 06.10.2023 tarihli ve 84035498-000-31363 sayılı yazısı.

İlgi yazı ile talep edilen Güzelyurt Jeotermal Enerji A.Ş. Firmasının uhdesindeki arama ruhsat sahası içerisinde bulunan İlimiz Güzelyurt İlçesi Merkezinde bulunan 3809 numaralı mera vasıflı taşınmazın 19.291,29 m² lik kısmında, Akyamaç Köyünde bulunan 1328 ve 879 numaralı mera vasıflı taşınmazların tamamında ve 616 numaralı mera vasıflı taşınmazın 1.110,52 m² lik kısmı olmak üzere toplamda 44.751,81 m² lik kısmındaki mera vasıflı taşınmazlarda jeotermal kaynak arama amaçlı sondaj çalışması amacıyla, 4342 Sayılı Mera Kanununun 14 üncü maddesinin (a) bendi hükmü gereği arama izni verilmesi talebi 16.10.2023 tarihli ve 11622659 sayılı Valilik Oluru ile uygun görülmüştür.

Şirketinizle geri dönüşüm sözleşmesine esas olacak Mera Yönetmeliğinin 8'inci maddesinin (a) bendi gereği yatırılacak teminat miktarı İl Mera Komisyonunun 12.10.2023 tarihli ve 729 sayılı kararı ile **192.765,41 TL** (Yüz Doksan İki Bin Yedi Yüz Atmış Beş TL Kırk Bir Kr.) olarak belirlenmiştir.

Belirlenen teminatın nakit(Defterdarlığa Ait Muhasebe Müdürlüğü Tahsilat Hesabı) veya teminat mektubu şeklinde 16.10.2023 tarihli Valilik Olurundan itibaren 6 ay içerisinde İl Mera Komisyonuna sunulması, teminat mektubu şeklinde sunulması durumunda ise teminatın aslının İl Mera Komisyonuna ibraz edilmesi gerekmektedir. Belirlenen teminatın yatırılmasından sonra arama ruhsat sahibi ile Geri Dönüşüm Sözleşmesi imzalanacak olup Mera Yönetmeliği'nin 8'inci maddesinin (a) bendinin 1'inci alt bendi "Ruhsat sahibi çalışmalara başlayabilmek için Komisyonca öngörülen teminatı yatırmış ve sözleşmeyi imzalamış olmalıdır." hükmü gereği ruhsat sahibi ile Valilik arasında imzalanan Geri Dönüşüm Sözleşmesinin imzalanmasına müteakip jeotermal kaynak sondaj arama amaçlı çalışmalarına başlanacağı hususunda;

Gereğini rica ederim.

Nejdet DEMİR
İl Müdürü

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: 0BB08101-4726-457F-A098-7A9D9573F593

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray
Tel: (0382) 213 15 85 Faks: (0382) 213 29 07

E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr

KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Erman TELL

Mühendis

Telefon No:(382) 217 22 07





T.C.
AKSARAY VALİLİĞİ
I Tarım ve Orman Müdürlüğü



Sayı : E-11254826-115.02-11622659

16.10.2023

Konu : Güzelyurt Jeotermal Enerji A.Ş. Jeotermal
Kaynak Arama Amaçlı Sondaj Çalışmaları
Arama İzni

VALİLİK MAKAMINA

Aksaray İl Özel İdaresinin 06/10/2023 tarih ve 31363 sayılı yazısı ile GMK Yenilenebilir Enerji Mühendislik İmalat San. ve Tic. A.Ş. uhdesinde bulunan 2019680002 ruhsat numaralı Jeotermal arama ruhsatının 29.11.2022 tarihli olur ile Güzelyurt Jeotermal Enerji A.Ş.' ye devir edilmiş olduğu ve bu ruhsatın 15.08.2023 tarihinde 2023/15 numaralı Jeotermal Kaynak İşletme ruhsatına dönüştüğü bildirilmiştir.

2023/15 numaralı jeotermal işletme ruhsatı içerisinde bulunan İlimiz Güzelyurt İlçesi merkezindeki **3809** numaralı mera vasıflı taşınmazın **19.291,29 m²** ilk kısmında, **Akyamaç Köyünde** bulunan **1328** ve **879** parsel numaralı mera vasıflı taşınmazların tamamında ve **616** parsel numaralı mera vasıflı taşınmazın **1.110,52 m²** lik kısmında olmak üzere toplamda **44.751,81 m²** lik kısmında, 4342 Sayılı Mera Kanununun 14 üncü maddesinin (a) bendi hükmü gereği jeotermal kaynak arama amaçlı arama izni verilmesi talep etmektedir.

Taleple ilgili bilgi ve belgeler temin edilerek, Teknik Ekip tarafından istenilen alanlar ile ilgili 11/10/2023 tarihli inceleme raporu hazırlanmış ve 12/10/2023 tarihinde Mera Komisyonunda konu görüşülmüştür.

Komisyon, 12/10/2023 tarihli ve 729 sayılı kararı ile, Güzelyurt İlçesi merkezinde bulunan **3809** parsel numaralı mera vasıflı taşınmazın **19.291,29 m²** lik kısmında, Akyamaç Köyünde bulunan Köyü **616** numaralı mera vasıflı taşınmazın **1.110,52 m²** lik kısmında, ayrıca **1328** ve **879** numaralı mera vasıflı taşınmazların tamamında olmak üzere toplamda **44.751,81 m²** lik kısmında jeotermal kaynak arama amaçlı sondaj çalışmaları amacıyla **arama izni verilmesine**,

Mera Yönetmeliğinin 8'inci maddesinin (a) bendinin 1'inci alt bendi hükmü gereği, ruhsat süresi bitimi olan **15/08/2053** tarihine kadar jeotermal kaynak arama amaçlı sondaj çalışmaları amacıyla arama izni verilmesi uygun görülen alanların, Geri Dönüşüm Projesine uygun olarak eski vasıf ve kapasitesine getirilmesi amacıyla yatırılacak teminat miktarının **192.765,41 TL** (Yüz Doksan İki Bin Yedi Yüz Atmış Beş TL Kırk Bir Kr.) olarak belirlenmesine, arama ruhsat sahibi arama izni verilen alanları iş bitiminden sonra eski vasıf ve kapasitesine getirmediği takdirde alınan teminatın kullanılmasına karar vermiştir.

Milli Emlak Müdürlüğü, 11/10/2023 tarihli ve 7626806 sayılı yazıları ile uygun görüş bildirmiştir.

Makamınızca da uygun görüldüğü takdirde, Güzelyurt İlçesi merkezinde bulunan **3809** parsel numaralı mera vasıflı taşınmazda ve Akyamaç Köyünde bulunan **616**, **1328** ve **879** numaralı mera vasıflı taşınmazlarda jeotermal kaynak arama amaçlı sondaj çalışmaları amacıyla **arama izni verilmesine**,

Mera Yönetmeliğinin 8'inci maddesinin (a) bendinin 1'inci alt bendi hükmü gereği, ruhsat süresi bitimi olan **15/08/2053** tarihine kadar jeotermal kaynak arama amaçlı sondaj çalışmaları amacıyla arama izni verilmesi uygun görülen alanların, Geri Dönüşüm Projesine uygun olarak eski vasıf ve kapasitesine getirilmesi amacıyla yatırılacak teminat miktarının **192.765,41 TL** (Yüz Doksan İki Bin Yedi Yüz Atmış

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: 732629D6-C843-4530-B6E0-DD7A3F0062AF

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray

Tel: (0382) 213 15 85 Faks: (0382) 213 29 07

E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr

KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Erman TELL

Mühendis

Telefon No:(382) 217 22 07



Beş TL Kırk Bir Kr.) olmasını, arama ruhsat sahibi arama izni verilen alanları iş bitiminden sonra eski vasıf ve kapasitesine getirmedeği takdirde alınan teminatın bu faaliyetler için kullanılmasını, teminatın yatırılmasından sonra arama ruhsat sahibi ile Geri Dönüşüm Sözleşmesi imzalanmasını, Mera Yönetmeliği'nin 8'inci maddesinin (a) bendinin 1'inci alt bendi "*Ruhsat sahibi çalışmalara başlayabilmek için Komisyonca öngörülen teminatı yatırmış ve sözleşmeyi imzalamış olmalıdır.*" hükmü gereği ruhsat sahibinin Geri Dönüşüm Sözleşmesinin imzalanmasına mütekip çalışmalara başlamasını, Olurlarınıza arz ederim.

Nejdet DEMİR
İl Müdürü

Uygun görüşle arz ederim.

Murat Çağrı ERDİNÇ
Vali Yardımcısı

OLUR
Mehmet Ali KUMBUZOĞLU
Vali

Ek:

- 1 - Milli Emlak Müdürlüğü Görüşü (1 Sayfa)
- 2 - Komisyon Kararı (2 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: 732629D6-C843-4530-B6E0-DD7A3F0062AF

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray
Tel: (0382) 213 15 85 Faks: (0382) 213 29 07
E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr
KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Erman TELL
Mühendis
Telefon No:(382) 217 22 07



NERA GERİ DÖNÜŞÜM PROJESİ

GÜZELYURT JEOTERMAL ENERJİ A.Ş

JEOTERMAL KAYNAK ARAMA SONDAJLARI

**AKSARAY İLİ, GÜZELYURT İLÇESİ,
AKYAMAÇ KÖYÜ**

HAZIRLAYAN

**EMİN HAŞERE İLAÇLAMA PROJE YAZILIM
DANIŞMANLIK HİZMETLERİ**

ADRES: K. Bölcek Mahallesi 2601 Sokak Özmenler Apartmanı No: 13/D

E-MAIL: eminhasereilaclama@gmail.com

AKSARAY-2023

**PROJENİN ADI VE ADRESİ: JEOTERMAL KAYNAK ARAMA TESİSİ
GERİ DÖNÜŞÜM PROJESİ**

PROJENİN HAZIRLANDIĞI İL VE TARİH: AKSARAY- EKİM- 2023

PROJEYİ YAPTIRAN FİRMA: GÜZELYURT JEOTERMAL ENERJİ A.Ş

PROJEYİ HAZIRLAYAN

Adı Soyadı: MUSTAFA PİŞKİN

Unvanı: ZİRAAT YÜK. MÜH.

Oda Kayıt No: 33162

Tarih: 12.10.2023

İmza:

PROJEYİ İNCELEYENLER

Adı Soyadı:

Erman TELLİ

Ünvanı:

Ziraat Yük. Müh.

Tarih:

12.10.2023

İmza:

O. Atilla DİVANOĞLU

Ziraat Müh.

12.10.2023

PROJEYİ KONTROL EDEN

Adı Soyadı: Akın BOZDEMİR

Unvanı: Şube Müdürü

Tarih: 12.10.2023

İmza:

ONAY

12.10.2023

NEJDET DEMİR

İl Müdürü

İÇİNDEKİLER

1.PROJE ÖZELİKLERİ

1.A.PROJE TANITIMI VE AMACI

2.COĞRAFİ KONUM

2.A. PROJE ALANI, KOORDİNATLARI, PAFTASI

2.A.1.TOPOĞRAFYA

2.A.2.TOPRAK YAPISI

- Arazi sınıfları
- Toplam Arazi Kullanım Durumu
- İşlenen Arazi Kullanım Durumu

2.A.3.İKLİM

2.A.4.BİTKİ ÖRTÜSÜ

2.B.1. METEOROLOJİK BİLGİLER VE VERİLER

2.B.2.FLORA-FAUNA

2.B.3.MEV CUT TARIMSAL FAALİYETLER

2.B.4.JEOLOJİK DURUM

2.B.5.BÖLGENİN DEPREM HARİTASI

2.B.6.EROZYON DURUMU

3.PROJE ALANI İÇİN FAALİYET ESNASINDA VE SONRASINDA YAPILACAK İŞLEMLER

3.A.MERA GERİ DÖNÜŞÜMÜ ÖNCESİ YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

3.B. MERA ARAZİ HAZIRLANMASI SONRASI YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

4.MERANIN ESKİ HALİNE GETİRİLMESİ İÇİN YAPILACAK GERİ DÖNÜŞÜM ÇALIŞMALARI

4.A. ÇALIŞMA ALANININ DÜZELTİLMESİ VE BİTKİSEL TOPRAĞIN SERİLMESİ

4.B. TOPRAK VE TOHUM YATAĞININ HAZIRLANMASI

4.C. MERA BİTKİLERİN EKİLMESİ

4.D. GÜBRELEME

5.PROJE MALİYETİ

6.SONUÇ VE ÖNERİLER

1.PROJE ÖZELİKLERİ

1.A.PROJE TANITIMI ve AMACI

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan 9.950,00 m² büyüklüğündeki 1328 parselin tamamı, 14.400,00 m² büyüklüğündeki 879 parselin tamamı, 10.400,00 m² büyüklüğündeki 616 parselin 1.110,52 m²'lik kısmında, 101.600,00 m² büyüklüğündeki 3809 parselin 19.291,29 m² lik kısmında Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi planlanmaktadır.

Güzelyurt Jeotermal Enerji A.Ş tarafından yapılması planlanan Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyünde yapılacak olan jeotermal sondaj faaliyeti sadece arama amaçlı olup üretim yapılmayacaktır. Sondaj faaliyetleri neticesinde; jeotermal kaynak rezerv miktarı, kalite, uygunluk gibi değerlendirmeler yapılacaktır. İleriki yıllarda değerlendirme sonuçlarına göre gerekiyorsa yeni sondaj lokasyonları belirlenecek, kaynakların uygun olması durumunda da üretim aşamasına geçilecektir.

Sondaj alanının tamamı mera vasıflı (1328, 879, 616, 3809 nolu parseller) taşınmaz parsellerin içerisinde kalmaktadır. Sondaj sahalarına ilişkin arama izni alınması (26727 sayılı Resmî Gazete'de yayımlanan Jeotermal Kaynaklar ve Doğal Mineralli Sular Kanunu Uygulama Yönetmeliğinin Ek madde-2) ile ilgili olarak Aksaray İl Tarım ve Orman Müdürlüğünden Jeotermal kaynak arama ile ilgili gerekli izinler alınmış olup, işletme sonrası meranın tekrar eski vasıf ve kapasitesine getirilmesi ve şirket tarafından meranın eski vasıf ve kapasitesine getirilmemesi durumunda Mera Komisyonu tarafından yerine getirilmesi için ilgili kurum tarafından istenen teminat miktarının belirlenmesi amacıyla mera geri dönüşüm projesi yapılmaktadır.

Proje alanının tamamı mera vasıflı (1328, 879, 616, 3809 nolu parseller) arazi olmasından dolayı, 28.02.1998 tarihli ve 23272 Sayılı Resmi Gazetede yayımlanarak yürürlüğe giren 4342 Sayılı Mera Kanunu ile Tarım ve Köyişleri Bakanlığı tarafından bu kanunun 31. maddesine dayanılarak hazırlanmış olan ve 08.05.2002 tarihli, 24749 Sayılı Resmi Gazetede yayımlanan Mera Yönetmeliği'nde Devletin Hüküm ve Tasarrufu altında bulunan mera arazisinde, açılacak maden ocakları için, tahsis amacı değişikliğinin hangi koşullarda gerçekleşeceği hükmüne bağlanmıştır.



Söz Konusu Yönetmeliğin, 8. maddesinin (b) bendinde, “Maden arama ve işletme ruhsat sahipleri ile kamu yatırımı kapsamındaki geri dönüşümü olan yatırımlarda yatırımı yapan kişi ve kurumlar zarar verdiği alanları eski vasıf ve kapasitesine geri getirmek için komisyonca belirlenecek teminatı yatırır ve sözleşmeyi imzalar” denilmektedir.

Aynı maddenin devamında; “Yatırımı yapan kişi ve kuruluşlar yirmi yıllık ot geliri ile öngörülen teminatları yatırmadan ve hazırlanan sözleşmeyi imzalamadan çalışmalara başlayamaz, başladığı takdirde verilen izinler veya tahsis amacı değişikliği iptal edilerek verdiği zararlar tazmin edilir.” hükmü yer almaktadır.

Yukarıda açıklanan hükümler gereğince, işletme süresinin bitiminde, tahrip olan meranın eski haline kavuşturulması için ne gibi işlemlerin yapılması gerektiğinin ve yapılacak ıslah ve amenajman çalışmalarının keşif bedellerinin ne olacağının geri dönüşüm projesiyle tespit edilmesidir.

Aksaray İl Tarım ve Orman Müdürlüğü ile mera geri dönüşüm sözleşmesi imzalanarak sözleşme hükümlerinde yer alan hükümler doğrultusunda doğaya yeniden kazandırma çalışmaları yapılacaktır.

Çayır meralar yeryüzünde hayatın varoluşundan günümüze kadar insanoğlunun beslenme ihtiyacını karşılayan en önemli kaynaklardan birisi durumundadır. Başlangıçtan bugüne kadar insanoğlunun yaşam tarzında her ne kadar köklü değişiklikler olsa da çayır ve meraların onların yaşamındaki önemini muhafaza etmiştir. Çayır ve meraların gelecekte de insanoğlunun yaşamında önemli bir yere sahip olması kaçınılmazdır.

ÇAYIR

Çayırlar genellikle düz ve taban suyu yüksek olan taban arazilerde teşekkül etmişlerdir. Toprak uzun süre nemli olduğundan bitki örtüleri sık ve yüksek boyludur. Dolayısıyla bitki örtülerinde mezofitler (suyu seven bitkiler) hâkim durumdadır. Sık ve yüksek boylu olan bitki örtüleri sıkı bir çim kapağı meydana getirerek toprağı sıkıca tutar. Aktif büyüme döneminde yapraklar tüm yüzeyi kapatır. Biçilerek değerlendirilen bu alanlardan elde edilen ot kış aylarında hayvanlara verilir. Toprak yaklaşık biçim zamanına kadar ıslak olduğundan otlatma açısından elverişli değildir. Bu dönemde yapılacak otlatma hayvanların çiğnemesinden dolayı toprağın sıkışmasına, bu da toprak strüktürünün bozulmasına neden olur. Şahıs malı olmalarından dolayı idaresi de kolaydır. Çayır toprakları mera topraklarına göre organik maddece daha zengindir ve PH'sı daha düşüktür, su bilançosu daha yüksektir.

MERA

Çayırların aksine taban suyunun bulunmadığı veya derinde olduğu meyilli ve engebeli alanlarda teşekkül etmişlerdir. Engebe sebebiyle yağış sularının bir kısmı sızarak veya yüzey akışıyla kaybolur. Buraların toprakları sığ, kumlu veya çakıllı ve su tutma kapasitesi düşüktür. Yağışlı dönemin haricinde toprak kurudur. Genellikle su, bitkiler için yeterli değildir. Bitki örtüleri seyrek ve kısa boyludur. Dolayısıyla açık vejetasyona sahiptirler. En iyi değerlendirme şekli otlatmadır. Mera kavramı ile ilgili olan fakat çoğu zaman tanım olarak karıştırılan otlak ve otlakiye tanımları vardır. Otlakiye: Nispeten düz arazilerde meydana gelmiş bitki örtüleri daha iyi durumda olan meralardır.



MERALARIN ÖNEMİ

Alınan tedbirlere rağmen bir türlü istenilen seviyelere ulaşamayan hayvancılığımızın en önemli sorunu olan yıllık 25 milyon ton civarındaki kaba yem açığının en ucuz temin edilebileceği yerler, çayır-meralarla birlikte yaylak ve kışlaklarımızdır. Çayır ve meralarımızın, üzerinde dikkatle durulması gereken bir diğer faktör ise erozyonun önlenmesinde oynadığı roldür.

Meralar aşırı ve düzensiz otlatılması sonunda, kalite ve vasfını kaydederek erozyona açık alanlar haline gelmektedir. Ülkemizde meydana gelen erozyonun başlangıç noktalarını birçok yerde mera alanları oluşturmaktadır.

Gerek tarımsal yapı ve gerekse ekolojik denge açısından büyük önem arz eden meraların önemini kısaca şöyle gruplandırabiliriz.

- 1- Ekolojik sistemde bitki, temel faktör olup, bitkisiz insan ve hayvan yaşamı düşünülemez.
- 2- Hayvanlar için önemli yem kaynağıdır ve hayvan beslemede en ekonomik değerdir
- 3- Toprak ve su muhafazasında önemlidir.
- 4- Su kaynaklarının oluşumu, gelişimi ve kalitesini olumlu yönde etkiler.
- 5- Meraların büyük çoğunluğu (%87) V-VII. sınıf araziler olup marjinal alanlardır. Bu alanları en ekonomik şekilde koruyan bitki örtüleri, çayır ve meralardır.
- 6- Önemli karbon yutağı konumundaki alanlardır.
- 7- Biyolojik çeşitlilik ve gen merkezi konumundadırlar.

MERA ISLAHININ YARARLARI

Tekniğine uygun olarak uygulanan bir ıslah metodu aşağıda belirtilen faydalı beraberinde getirmektedir.

1- Verim artışı: Mera ıslahının en önemli hedeflerinden birisi yem üretiminde artış sağlamaktır. Vejetasyonun özellikleri, iklim durumu, toprak yapısı ve topografik yapı dikkate alınarak uygun bir metotla ıslah edilmesi ile verimde önemli artışlar sağlanabilmektedir. Nitekim Erzurum şartlarında sadece gübreleme ile meralarda verimin % 100-150 oranında arttırıldığı tespit edilmiştir. Benzer şekilde suni mera tesisinde verimin 3 katına çıkarılabileceği vurgulanmaktadır.

2- Yem kalitesinin yükseltilmesi: Uygun ıslah metoduyla verim artışı yanında elde edilen yemin kalitesi de önemli oranda yükseltilmektedir. Botanik kompozisyona uygun olarak yapılan gübrelemelerde otun ham protein, mineral madde ve hazmolunabilirlik oranında önemli artışlar görülebilmektedir.

3- Hayvansal ürün miktarında artış: Islah uygulamaları sonucu gerek verim ve gerekse kalitedeki yükselme o vejetasyonu değerlendiren hayvanların verimine yansımaktadır.

4- Hayvanların sevk ve idaresini kolaylaştırır: Mera üzerinde tesis edilen içme suyu tesisleri mera yolları, mera çitleri, gölgelikler ve hayvan barınakları gibi yapı ve tesisler, hayvanların sevk ve idaresini kolaylaştırarak gerek üniform otlatmayı sağlamakta ve gerekse hayvansal ürün miktarında artışlar sağlamaktadır.

5- Hayvanlarda zehirlenme ve hastalık zararları azalır: Yabancı ot mücadelesi ile özellikle zehirli bitkilerin hayvanlarda ortaya çıkaracağı zehirlenmeler en aza indiği gibi, meradan hayvanlara bulaşabilen hastalıklar da kontrol altına alınabilmektedir. Bazı yabancı otlar bir çok hastalık ve zararlının konukçusu durumundadır. Bunların yok edilmesiyle bu hastalık ve zararlıların da yayılmaları önlenmiş olur.

6- Havzalarda su verimi artar: Yağış sularının yüzey akışa geçmeden toprağa intikal etmesini sağlayan en önemli mekanizma toprağın iyi bir bitki örtüsüyle kaplı olmasıdır. Mera ıslahıyla bitki örtüsünde meydana gelen iyileşme havzaların su potansiyellerini de artıracaktır.

7- Erozyonun önlenmesi: Bitki örtüsünün güçlendirilmesiyle mera toprağı su ve rüzgar erozyonuna karşı önemli oranda korunmuş olacaktır.

8- Yangın tehlikesinin azaltılması: Özellikle orman altı meralarda yangın şeritleri oluşturularak uygun bir mevsimde orman altındaki bitki artıklarının yakılmasıyla daha sonra çıkabilecek yangın tehlikesi azaltılabilmektedir.

9- Diğer faydaları: Mera ıslahı sonucu daha önce faydalanılmayan mera kesimlerinin otlatmaya açılması, başta av hayvanları olmak üzere yabani hayatın canlandırılması, bitkiden yoksun alanların bitki ile kaplanması, toprak-su muhafazası ile akarsulara daha temiz su sağlanması ve bölgenin peyzajını güzelleştirerek rekreasyon imkanları sağlanabilmektedir.

MERA- EROZYON İLİŞKİSİ

Mera alanlarındaki tahribatın sonucu olarak hem hayvansal üretimde düşüş görülmekte hem de erozyon problemi ortaya çıkmaktadır. Bu tahribatta; Mera alanlarının tarla arazisine dönüştürülmesi, Fiyat politikalarının tarla ve endüstri ürünlerinin lehine geliştirilmesi ve Özellikle son yıllarda hayvansal ürünlere yeterli teşvik yapılmayıp et ve süt gibi hayvansal ürünlerin ithalatının yapılması gibi birçok faktör etkili olmuştur. Dolayısıyla meraların önemini kavrayamamanın sonucu gerek tarım alanlarında ve gerekse yerleşim yerlerinde önemli tahribatlara yol açan, can ve mal kayıplarına yol açan sel baskınlarında artışlar görülmektedir.



İyi bir mera vejetasyonu:

a- Toprağı yerinde tutar,

b- Yerinde tutulan mera toprağında kaliteli mera bitkileri gelişir ve ekonomik hayvancılık yapılabilir.

c- Mera alanlarının daha aşağısında bulunan araziler ve tesisler tahrip olmaktan korunmuş olur.

Mutlak çayır-mera arazilerinin vasfını değiştirmek yukarıda bahsedilen problemleri beraberinde getirmektedir. Nitekim bilimsel verilere göre bu alanlardan hayvan otlatma veya ot üretimi yaparak faydalanma teknik bir zorunluluktur. Konuyla ilgili olarak bir Fransız bilim adamı “Çayır meraların dengesini bozmak o alana atom bombası kadar zarar verir” ifadesini kullanmıştır.

2.COĞRAFİ KONUM

Aksaray İli, Orta Anadolu'nun ortasında, kuzey-güney, doğu-batı doğrultusunda bulunan karayollarının ortak noktasındadır. 33-35 derece doğu meridyenleri ile 38-39 derece kuzey paralelleri arasında yer alan Aksaray'ın, kuzeyinde Kırşehir ve Ankara, doğusunda Nevşehir, güneydoğusunda Niğde, güneyinde ve batısında Konya, kuzeybatısında Tuz Gölü bulunmaktadır.

Aksaray İli, yüzey şekilleri itibarı ile düz bir arazi yapısına sahiptir. Karadeniz Akdeniz'e, Doğu Anadolu Batıya Aksaray'dan ulaşır. İlin orta kesimleri, kuzeyi ve güneyi tamamen ovalıklarla kaplıdır. Aksaray İli, Tuz Gölü kapalı havzası içerisinde bulunmaktadır.

2.A. RUHSAT ALANI, KOORDİNATLARI, PAFTASI

Ruhsat Alanı Koordinatları:

NOKTA NO	Y	X
1	616988	4241558
2	616974	4247000
3	623000	4246999
4	623000	4245400
5	624600	4245400
6	625000	4243420
7	625000	4242000
8	625464	4241126
9	625691	4239999
10	623000	4239999

2.A.1.TOPOĞRAFYA

Aksaray Ovası'nın rakımı 900 ile 1100 arasında değişmektedir. Genel topoğrafik yapısı özellikle arızalı olan ovayı, doğudan Hasan Dağı, kuzey doğudan Tavşan ve Ekecik Dağları ile kuzeyde Tuz Gölü, batıda Boz Dağı ve Balık Dağı ile Güneyden Karaca Dağı silsilesi sınırlar. Bölgenin en yüksek rakımı 3253 metre, en düşük rakımı ise 905 metredir. Ovanın doğu ve kuzeydoğu kısımlarında arızalı arazi durumu mevcuttur. Sahanın merkezi kısmı ise düzlükler halindedir.

2.A.2.TOPRAK YAPISI

Aksaray İli'nde su erozyonundan etkilenmemiş veya hafif etkilenmiş topraklar % 45.4, orta su erozyonundan etkilenmiş topraklar % 35.5, şiddetli su erozyonundan etkilenmiş topraklar % 13.5, çok şiddetli su erozyonundan etkilenmiş topraklar % 5.6'dır.

Ayrıca İl topraklarının 65.625 hektarında çeşitli şiddette rüzgar erozyonu etkilidir. Toplam 134.870 hektar (% 23,6) arazide drenaj problemi vardır. Drenaj problemi görülen arazilerin % 91,9'u tuzlu veya tuzlu+sodiktir.

Çayır-mera arazilerindeki tuzluluk veya tuzluluk+sodiklik sorunu, toplam sorunlu arazilerin % 81'ini oluşturmaktadır. İl topraklarının % 11,5'i taşlıdır. Kayalık, İlde sorun değildir. Arazilerin % 15,4'ü dik, çok dik ve sarp meyilde olup, % 46.7'si sığ ve çok sığdır.

- Arazi sınıfları

Aksaray'da iki tip toprak hakimdir. Bunlar kahverengi ve alüvyal topraklardır. Kahverengi topraklar yaklaşık % 50'sini, Alüvyal topraklar % 20'sini ve diğer toprak grupları % 30'unu oluşturmaktadır. Aksaray'da toplam ekilebilir arazi 420.430 hektardır. İklimin kurak olması nedeniyle bunun yaklaşık 130.000 hektarı nadasa ayrılmaktadır.

İldeki tarım topraklarının arazi kullanma kabiliyeti sınıfları ise aşağıda belirtilmektedir.

Sınıf-1 : I.Sınıf arazilerin kapladığı alan 88.596 ha olup, il yüzölçümünün % 11.5'inin teşkil etmektedir. I.Sınıf arazilerin 49.347 hektar kuru tarım, 34.301 hektar sulu tarım yapılmaktadır.

Sınıf-2 : II. Sınıf arazilerin kapladığı alan 78.134 ha olup, İl yüzölçümünün % 10.1'ini teşkil etmektedir. II. Sınıf arazilerin 57.111 ha kuru tarım, 12.192 ha sulu tarım yapılmaktadır.

Sınıf-3 : III. Sınıf arazilerin kapladığı alan 183.988 ha olup, İl yüzölçümünün % 23.8'ini teşkil etmektedir. III. Sınıf arazilerin 119.060 ha kuru tarım, 16.902 ha ise sulu tarım yapılmaktadır.

Sınıf-4 : IV Sınıf araziler İlin 119.125 ha alanı ile % 15.4'ünü kaplamaktadır. IV. Sınıf araziler üzerinde de 77.311 ha kuru tarım, 2.693 ha sulu tarım yapılmaktadır.

İlde, toplam 420.430 ha tarım arazinin % 96.6'sı I-IV sınıf olup, % 3.4'ü ise V-VII sınıf arazidir. I-IV sınıf arazilerin dışında V-VII sınıf arazilerde, tarıma çok elverişli olmamasına rağmen bir kısmında tarım yapılmaktadır. İlin toplam arazisinin yaklaşık % 84.3'ünde su erozyonu sorunu vardır. Tarım arazilerini oluşturan III. Sınıf araziler üzerinde orta derecede su erozyonu görülmektedir. Ayrıca toplam tarım arazisinin % 5'i de kullanım dışıdır.

- Toplam Arazi Kullanım Durumu

ARAZİNİN CİNSİ	MİKTARI (HA)	MİKTARI %
Tarım Arazisi	420,430	60,60
Çayır Mera Arazisi	188,503	27,17
Orman Arazisi	22,767	3,28
Diğer	61,724	8,95
TOPLAM	693,724	100,00

- İşlenen Arazi Kullanım Durumu

ARAZİNİN CİNSİ	MİKTARI(HA)	TARIM ALANLARI İÇİNDEKİ ORANI %
Tarla Arazisi -Sulu tarım yapılan arazi -Kuru tarım yapılan arazi	407.441	96,9
Bağ Arazisi	2.675	0,64
Meyve Arazisi	6.832	1,63
Sebze Arazisi	3.483	0,83
TOPLAM	420.430	100

2.A.3.İKLİM

Aksaray İli iklimi, tipik karasal iklimdir. Yazları sıcak ve kurak, kışları soğuk ve yağışlıdır. Bitki örtüsü step ikliminin tipik bitki örtüsü olup, daha çok kökü derine inmeyen ot ve bodur bitkiler görülür.

Aksaray İli orta iklim kuşağında olup, soğuk, kara iklim tipine sahiptir. Yazları sıcak ve kurak, kışları soğuktur. Yağışlar genellikle ilkbahar ve kış aylarında görülmektedir. Yaz-kış ve gece-gündüz sıcaklık farkları çok fazladır.

Ormanların yoğunlukta bulunduğu alan Hasandağı ve Ekecik Dağı'dır. Hasandağı'nın denizden yüksekliği 3258 m.dir. Hasandağı ve çevresinde yağış miktarı 700 mm.ye yükselmekte ve sıcaklık değerleri ise düşmektedir. Hasandağı eteklerinde ormanlar 1400 m civarında yükseltiden başlayıp 1850-1900 m.ye kadar yükselmektedir.



2.A.4.BİTKİ ÖRTÜSÜ

Bitki örtüsü bakımından zengin değildir. Dağlık bölgelerde ormanlara rastlanır. Obruk ve Kızılırmak platosu bozkır bitkileri dışında çıplaktır.

Aksaray'ın iklimine bağlı olarak tabii bitki örtüsü, ilkbaharda yeşeren çayırlar, gelincik, papatya, keven ve diğer vs. otlarla, yaprakları dikensi bir görünüme sahip, yarı kurakçıl bitkilerdir. Yazları sıcak ve kurak iklim yapısı hâkim olduğundan ilkbaharda yeşeren otlar, sonbaharda kurur ve arazi bozkır yapısını alır.

Hasandağı ve Ekecik Dağları üzerinde meşe koruluklarına rastlanır. Ayrıca bölgede palamut, alıç, kızılıçık, kavak, söğüt, yabancı armut ve meyve ağaçları yanında keven ve deve dikenini çok sık rastlanan bitki türleridir.

Aksaray İli'nin orman varlığı baltalık ve orman dışı ağaçlandırmalardan ibarettir. Baltalık ormanlarımızın tamamında doğal olarak bulunan ağaç türü meşedir. Orman dışı ağaçlandırmalarda ise ibreli türlerden Sedir, Karaçam, Sarıçam, Kızılcım, Mavi Servidir. Yapraklı türlerden ise Dişbudak, Akçaağaç, Ailanthus, Akasya, Badem, Mahlep, İğde, Gleditschia vs. türler kullanılarak ağaçlandırma faaliyetleri yürütülmektedir. İlimizde ağaçlandırma potansiyel sahası yaklaşık 50.000 hektar olduğu tahmin edilmekte olup, bu sahaların hemen hepsi mera vasfındadır.

2.B.1. METEOROLOJİK BİLGİLER VE VERİLER

Aksaray İli, karasal iklim özelliği göstermekte olup genel olarak kurak bir yapıya sahiptir. Bölge hemen hemen Türkiye'nin en kurak havzası içerisinde yer almaktadır. Özellikle Temmuz-Ağustos ayları en kurak geçen aylardır. Yıllık sıcaklık dalgalanmaları, havzanın karasal iklimini karakterize eder.

İç Anadolu'nun en az yağış alan bir bölümünü oluşturan Tuz Gölü havzasının uzun yıllara göre ortalama yağış yüksekliği 300 mm ile karakterize edilir. Aksaray civarı ise, 40 yıllık rasat ortalamalarına göre 327.6 mm toplam yağış miktarına sahiptir.

İç Anadolu Bölgesi'nin etrafı yüksek dağlarla çevrili olduğundan denizlerden gelen nemli hava bölge içlerine kadar ilerleyememekte ve bu nedenle iç bölgeler ve Aksaray oldukça kurak kalmaktadır.

Sıcaklık Ortalama Değerleri

AKSARAY	Ocak	Şubat	Mart	Nisan	Mayıs	Haziran	Temmuz	Ağustos	Eylül	Ekim	Kasım	Aralık
	Uzun Yıllar İçinde Gerçekleşen Ortalama Değerler (1929 - 2021)											
Ortalama Sıcaklık (°C)	0.5	2.1	6.4	11.5	16.2	20.2	23.5	23.2	18.7	13.3	7.2	2.6
Ortalama En Yüksek Sıcaklık (°C)	5.5	7.5	12.6	18.0	23.1	27.1	30.7	30.7	26.7	21.0	13.8	7.7
Ortalama En Düşük Sıcaklık (°C)	-3.6	-2.2	1.3	5.5	9.7	13.1	16.2	15.9	11.4	6.8	2.0	-1.4
Ortalama Güneşlenme Süresi (saat)	3.1	4.5	5.7	7.0	9.1	11.1	12.1	11.4	9.7	7.1	5.0	3.2
Ortalama Yağışlı Gün Sayısı	7.31	7.15	9.46	7.62	9.85	7.31	1.38	2.23	2.77	4.62	4.85	8.69
Aylık Toplam Yağış Miktarı Ortalaması (kg/m ²)	40.1	35.2	41.0	45.7	43.8	29.3	7.1	5.4	11.9	23.7	31.8	46.7
	Uzun Yıllar İçinde Gerçekleşen En Yüksek ve En Düşük Değerler (1929- 2021) *											
En Yüksek Sıcaklık (°C)	20.4	21.8	29.0	31.8	34.4	36.9	40.0	38.8	38.7	34.5	29.5	22.0
En Düşük Sıcaklık (°C)	-26.4	-29.0	-19.0	-7.5	-0.2	2.9	6.8	5.9	1.0	-6.0	-14.0	-21.9



2.B.2.FLORA-FAUNA

Aksaray İl sınırları içerisinde, birçok bitki ve hayvan türü yaşamaktadır. Sadece Ihlara Vadisi'nde 43 adet endemik bitki bulunmaktadır. Bunun yanında özel çevre koruma bölgesi olan Tuz gölü' n de de önemli miktarda endemik bulunmaktadır.

Bölgede tuzcul stepler ve endemik türlerden oluşan ekolojik açıdan hassas bitki toplulukları bulunmaktadır. Tuz Gölü, ülkemizde bozulmadan bugüne kadar gelmiş ova bozkırlarının en güzel örneklerini barındırır.

Kanal ve çayların göle giriş yaptığı yerlerde hafif tuzlu bataklıklar oluşmuştur. Konya tahliye kanalı boyunca ve göle ulaştığı noktada gür sazlık alanlar bulunur. Gölün kuzey, batı ve doğusunda sadece bir bölümü sulanan hububat tarlaları bulunurken, özellikle güneybatıda, yağışlı dönemlerde sular altında kalan geniş tuzcul stepler uzanır.

Tuzun ve kuraklığın hâkim olduğu zor şartlara uyum sağlamış doğal bozkır bitkileri, Tuz Gölü'ndeki nadir türlerin başında gelmektedir. Alan, bozkır bitkileri için Türkiye'deki en önemli alandır.

FAUNA

Kışın Tuz Gölü'nün kapladığı çok geniş alan su kuşları için ideal bir yaşama ortamı sunar. Gölün güneyindeki çamur adacıkları flamingoların dünyadaki en büyük doğal üreme kolonilerinden birini barındırır. 1992'de havadan yapılan bir sayımda, koloninin 14.000 çift flamingo barındırdığı belirlenmiştir. Gölün orta kesimlerinde her biri 5 – 6 bin yuvadan oluşan dev kuluçka kolonileri bulunmaktadır. Doğa Derneği, 2003'ten beri flamingo popülasyonunun izlenmesi için havadan sayım yapmaktadır.

Kuzeydeki kayalık adalarda Van Gölü martısı, ince gagalı martı ve yırtıcı kuşlar üremektedir. Küçük kerkenez göl çevresindeki köylerde yaygın olarak üreyen bir türdür. Kılıçgaga ve büyük cılıbit da kuluçkaya yatar. Sakarca kazının da ikinci büyük üreme merkezidir.

Sonbahar aylarında binlerce turna, kış aylarında ise çok sayıda kaz alanda geceler. Tuz Gölü, nesli dünya çapında tehlikede olan toyun Orta Anadolu'daki en önemli yaşam alanıdır. Su çulluğunun Türkiye'deki tek üreme popülasyonunu barındırır.

Göl çevresinin nispeten ıssız oluşu nedeniyle kuşlar, etraftaki su birikintilerinde, meralarda ve ekili alanlarda rahatça beslenmekte, kışın en soğuk günlerinde dahi donmayan göl sularında yüzebilmektedirler. İlkbaharda Göl içinde oluşan adalar ve bataklıklar Bataklık Kırlangıcı (Glareola pratincola), Suna (Tadorna tadorna), Angıt (Tadorna ferruginea), Çamurcun (Anas crecca), Kılıçgaga (Recurvirostra avocetta), Kocagöz (Burhinus oedicnemus) ve martı türlerinin (Larus sp.) kuluçka yapmalarına imkân sağlar.

Bölgede görülen önemli kuş türleri arasında; Kızılboyunlu batağan, leylek, sakarca, macar ördeği, dikkuyruk, bozkır delicesi, çayır delicesi, küçük kerkenez, turna, bataklık kırlangıcı, gülen sumru, su kuşu, mahmuzlu kızkuşu sıralanabilir.



2.B.3.MEVcut TARIMSAL FAALİYETLER

Aksaray İline 7 ilçe, 15 belde ve 152 köy bağlıdır. Aksaray'ın sosyo-ekonomik yapısı tarım ve hayvancılığa dayanmaktadır. Faal nüfusun % 70'i tarım ve hayvancılıktan geçimini sağlamaktadır. İlimizde, toprakların % 54,4'ü tarıma elverişli olup, geri kalan % 45,6'sı ise çayır, mera, bozuk ormanlık ve tarıma elverişsiz ormanlardır. 420.430 hektar olan İlimiz tarım alanlarında; hububat, baklagiller, endüstriyel bitkiler, yumrulu bitkiler, meyve ve sebze yetiştirilmektedir. Tarıma elverişli arazilerin % 86'sında kuru, %14'ünde sulu tarım yapılmaktadır. Tarımda çalışan nüfusun yüzdesini aşağıya çekmek için, sanayi ve hizmet sektörünü geliştirmek, tarımda üretimi ve verimliliği artırmak için ürün deseninde değişiklik yapmak, toprak işlemedeki yanlışlıkları gidermek, kaliteli ve uygun girdi kullanımına ağırlık vermek, makineleşmeyi teşvik ederek kullanımını yaygınlaştırmak suretiyle birim alandan daha çok ürün alınması ve çiftçilerin eğitilmesine çalışılmaktadır.

2.B.4.JEOLOJİK DURUM

Aksaray İli birçok özelliği bakımından Türkiye'nin diğer bölgelerinden farklılıklar gösterir. Bölge yüksekliği ortalama 950-1100 m olan bir yüksek platodur. Basamaklarla ya da fay kırıkları ile birbirinden ayrılan düz ovalar ve bu ovaları çevreleyen tepeler ve dağlar bölgenin jeomorfolojik karakteridir.

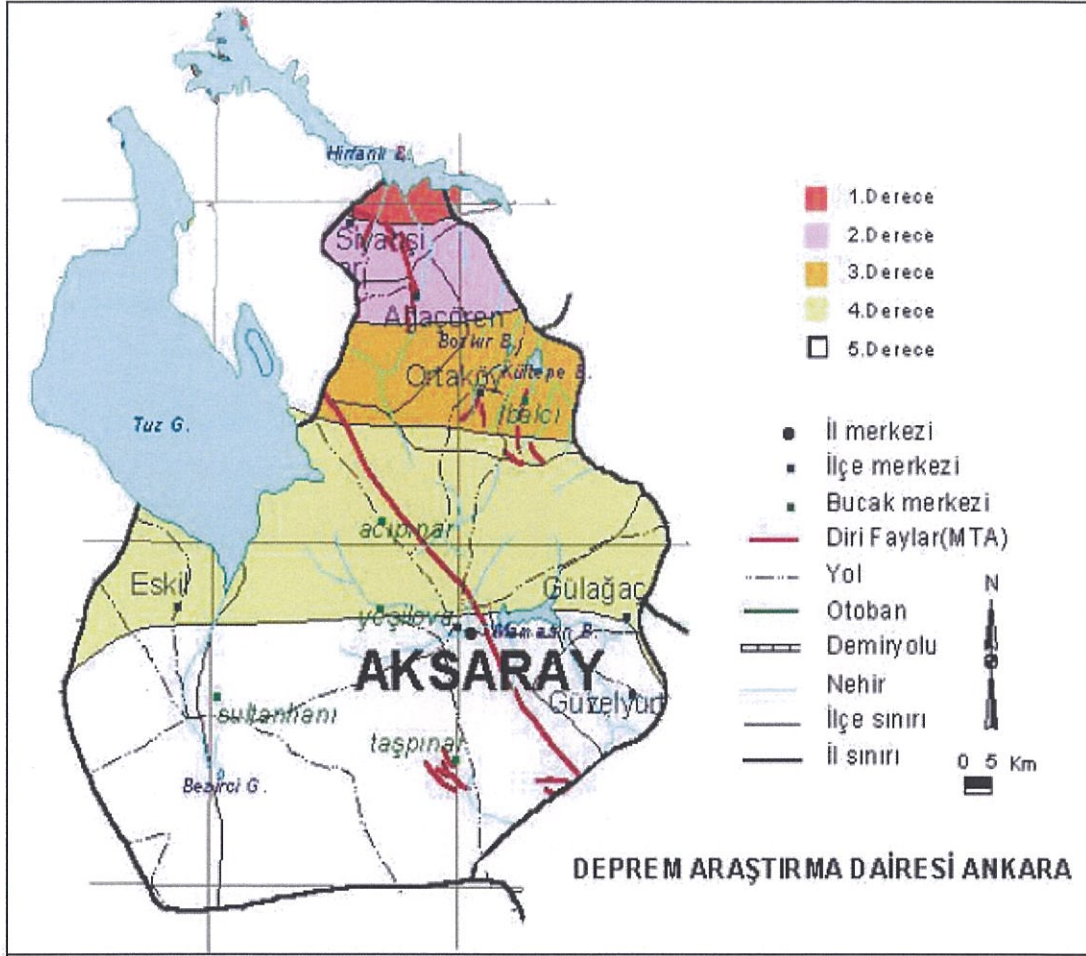
Aksaray İli sınırları içerisinde mağmatik, metomorfik sedimenter ve karasal kökenli kayalar mevcut olup bunlar metomorfik kayalar, plütonik kayalar, sedimenter kayalar, volkanik kayalar, gısel ve volkanosedimenter kayalar, güncel oluşuklar, allokton ofiyolit karmaşığdır.

Stratigrafik olarak en altta metomorfik kayalar üzerine volkanosedimenter kayalar ve volkanik kayalar, tüm bu kayaların üzerinde ise Holosen yaşlı alüvyon çökeller gelmektedir.

Aksaray İli İç Anadolu bölgesinde göller hariç 7.626 km² alana sahiptir. İlde karasal iklim hüküm sürdüğünden Türkiye ortalamasının altında yağış almaktadır. Melendiz Çayı ve Karasu haricinde akarsu ve nehir yoktur. Doğal bitki örtüsü az olduğundan insan eliyle yetiştirilen bahçeler önem kazanmıştır.



2.B.5.BÖLGENİN DEPREM HARİTASI



HARİTA P.1. Aksaray İli Deprem Haritası

Aksaray ve yakın çevresinde gözlenen bir diğer yapısal unsur kıvrımlı yapılardır. Tuz Gölü fay zonu içerisinde fay zonunun gidişine uymayan yaklaşık KD-GB gidişli kıvrım eksenleri antiklinal ve senklinal çiftlerinden oluşmaktadır. Antiklinal ve senklinal eksenleri Tuz Gölü fayına yaklaşık 35-40 derecelik açılar oluşturmakta ve birbirine paralellik sunmaktadır.

Tuz Gölü fayının sismik etkinliği günümüzde de devam etmektedir. Deprem kayıtlarına göre tarihsel dönemlerde oldukça yoğun bir sismik etkinlik gösteren bölgede, aletsel dönemde (1900 ve sonrası) yıkıcı bir deprem görülmemiştir.

Aksaray ve çevresi, kırılma mekaniği prensiplerine göre potansiyel sismik risk alanları içerisinde kalmaktadır. Türkiye Deprem Bölgeleri Haritası 'na göre Aksaray İli Merkez İlçe ve Güzelyurt İlçesi'nin 5. Derece deprem bölgesinde, Ortaköy, Sarıyahşi ve Ağaçören İlçelerinin 2. Derece deprem bölgesinde, Eskişehir ve Gülağaç ilçelerinin 4. Derece deprem bölgesinde olduğu bilinmektedir.

2.B.6.EROZYON DURUMU

Aksaray İli su erozyonundan etkilenmemiş veya hafif etkilenmiş topraklar % 45,4 orta su erozyonundan etkilenmiş topraklar % 35,5, şiddetli su erozyonundan etkilenmiş topraklar % 13,5, çok şiddetli su erozyonundan etkilenmiş topraklar % 5,6'dır. Ayrıca il topraklarının 65.625 hektarında çeşitli şiddette rüzgâr erozyonu etkilidir. Toplam 134,870 hektar (% 23,6) arazide drenaj problemi vardır. Drenaj problemi görülen arazilerin % 91,9'u tuzlu veya tuzlu + sodiktir. Çayır-mera arazilerindeki tuzluluk veya tuzluluk + sodiklik sorunu, toplam sorunlu arazilerin % 81'ini oluşturmaktadır. İl topraklarının % 11,5'i taşlıdır. Kayalık ilde sorun değildir. Arazilerin % 15,4'ü dik, çok dik ve sarp meyilde olup, % 46,7'si sığ ve çok sığdır. (KHGM, 1993)

Aksaray'da bugüne kadar erozyon kontrolü ve ağaçlandırma çalışması olmak üzere 16 proje gerçekleştirilmiştir. Toplam 8.638 Ha sahada ağaçlandırma faaliyetleri gerçekleştirilmiştir.

3.PROJE ALANI İÇİN FAALİYET ESNASINDA VE SONRASINDA YAPILACAK İŞLEMLER

Etüt sahası kahverengi toprak grubundan olup tuf kayaları üzerinde yer almaktadır. Toprak derinliği tepe yamaç boyunca değişmekte sığ (40-50cm), kumlu tın (SL) bünyeli, kireçli granüler yapılı, orta (% 7-8) eğimli, kuruda açık grisi kahve K(10YR-5/3) renkli, erozyona açık, sahada drenaj ve tuzluluk problemi yoktur.

Bitkisel toprak miktarı toprak etüt raporlarında ortalama 40-50 cm olarak belirtilmiştir. Sondaj işlemi sırasında sahadan herhangi bir toprak ve malzeme alınmayacaktır. Sondaj faaliyeti esnasında etrafında bulunan arazilere zarar vermemesi için gerekli tedbirler alınarak, etrafındaki arazilere atık atılmayacaktır.



3.A. MERA GERİ DÖNÜŞÜMÜ ÖNCESİ YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

Sondaj sahasında meydana gelen çukurlar ve şevler emniyet sahası içerisine alınmalı ve sondaj sahasına giriş çıkışların kontrol altına alınması adına sondaj sahası etrafına uyarıcı tabelalar konulmalıdır.

Çalışma başlamadan önce sondaj lokasyon alını olarak belirlenen sahadaki bitkisel toprak sıyrılarak, iş bitiminde tekrar serilmek üzere stoklanmalıdır.

3.B. MERA ARAZİ HAZIRLANMASI SONRASI YAPILACAK İŞLEMLER VE ALINACAK ÖNLEMLER

Proje Alanı Arazi, Toprak Yapısı ve Bitki Vejetasyonu

Etüt sahası kahverengi toprak grubundan olup tuf kayaları üzerinde yer almaktadır. Toprak derinliği tepe yamaç boyunca değişmekte sığ (40-50cm), kumlu tın (SL) bünyeli, kireçli granüler yapılı, orta (% 7-8) eğimli, kuruda açık grisi kahve K(10YR-5/3) renkli, erozyona açık, sahada drenaj ve tuzluluk problemi yoktur.

Etüt sahası; dördüncü sınıf (IVse) mera arazisidir.

Etüdü yapılan arazi, Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü, sınırları içerisinde bulunan 1328, 879, 616, 3809 nolu mera parselleri üzerindedir. Etüt sahası; 4,47 hektar büyüklüğündedir. Etüdü yapılan sahada mera bozulmuş, toprak sürülmüştür.

Jeotermal kaynak arama süresi bittikten sonra arazinin ekime hazırlanması amacıyla, sondaj yapılması esnasında oluşan çukur, çamur havuzu ve stok alanları düzeltilip topografyaya uygun hale getirilir. Bölgenin mera vejetasyonuna uygun olan mera bitkileri belirlenir, mera bitkilerinin ilk ekim dönemlerinde zayıf gelişmeleri nedeniyle ilk yıl ön ekim yapılması gerekmektedir.



4.MERANIN ESKİ HALİNE GETİRİLMESİ İÇİN YAPILACAK GERİ DÖNÜŞÜM ÇALIŞMALARI

12.04.2005 tarih ve 25784 sayılı Resmî Gazetede yayımlanan Mera Yönetmeliğinin 8. maddesine istinaden işletme izin süresi bittikten sonra, işletme sahibi şirket tarafından mera arazisinin tekrar eski haline getirilmesi için, yapılması gereken işlemler ve mera geri dönüşüm çalışmaları ve maliyetleri şöyledir:

4.A. ÇALIŞMA ALANININ DÜZELTİLMESİ VE BİTKİSEL TOPRAĞIN SERİLMESİ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü, sınırları içerisinde yer alan, Güzelyurt Jeotermal Enerji A.Ş tarafından işletilecek olan ve Jeotermal kaynak arama izni verilen 1328, 879, 616, 3809 parsel numaralı mera vasıflı taşınmazların 44.751,81m² lik kısmında yapılacak Jeotermal kaynak aramama işlemi ve Sondaj işlemi sonrası söz konusu mera arazisinin geri dönüşümü planlanmaktadır.

Bitkisel toprak yoğunluğu 1,6 g/cm³ alınmıştır. Sahada mevcut bitkisel toprak miktarı 40 cm olarak alınacak hesaplamalar buna göre yapılacaktır.

Faaliyet alanından çalışma sırasında oluşan çukur ve derinlikler taş, moloz gibi kaba malzemeler en alta, daha küçük malzemelerde en üste gelecek şekilde yerleştirilecektir.

4.B. TOPRAK VE TOHUM YATAĞININ HAZIRLANMASI

Tohum yatağının hazırlanması için toprak, kum, taş ve diğer iri cisimlerden arındırılmalıdır, derin sürme yapılarak toprağın havalandırılması sağlanmalıdır. Tohum yatağı ne kadar iyi hazırlanırsa o kadar iyi bir ekim alanı elde edilir. Zeminin hafifçe meyilli olması problem değildir, fakat tümsek ve çukurlar tamamen düzeltilmelidir

Tohum yatağı için ideal toprak elde edildikten sonra çok iyi bir tesviye yapılmalıdır. İyi bir tesviye ekim esnasında kolaylık sağlayacaktır. Tırmıkla iyice düzeltilen toprağa çimlenmede fayda sağlayacak taban gübresi tatbik edilmelidir.

4.C. MERA BİTKİLERİN EKİLMESİ

Ekim için hazır hale gelen toprağın, çimlenmeyi sağlayacak nemi barındırması için ekimin sonbahar yağmurları sonrası yapılması uygun olacaktır.

Tohum miktarının eşit düşmesi için ekimin mibzerle yapılması tavsiye edilir, fakat topografik koşulların elverişsiz olduğu durumlarda elle serpme yöntemiyle ekim yapılabilir. Sahada elle serpme metodu uygun olacaktır.

Karasal iklimin hâkim olduğu sahada buğdaygil bitkileri tercih edilmesi uygun olacaktır, kırıaç araziye ekimi yapılacak tohum karışımı hazırlanırken % 60 buğdaygil % 40 baklagil olması uygun olacaktır.



Karışımında 4 adet bitki tercih edilmiştir, buğdaygillerden kıraç arazi ve karasal iklim şartlarına uygunluk sağlaması bakımından kılçıksız brom, mavi ayrık ve çok yıllık çim tercih edilirken, baklagillerden ise ak üçgül tercih edilmiştir.

Karışımında yer alan bitki tohumlarının dekara atılacak miktarları ve karışım oranları aşağıda tabloda belirtilmiştir. Ocağın sahası çalışmalar sırasında, vejetasyon ağırlıklı olarak tahrip olacağından yalın ekim miktarlarının 2 katı olarak ekilmesi uygundur.

Bitki Türü	Ekim Yeri	Yalın Ekim Tohum Miktarı (kg/da)		Ekim Derinliği (cm)	Karışım Oranı (%)	Karışımındaki Tohum Miktarı (kg/da)
Kılçıksız Brom (Bromus inermis)	Kıraç	2,5	(*) 5	1,5-2	20	1
Mavi Ayrık (Agropyron Intermedium)	Kıraç	2,5	5	3-4	20	1
Çok Yıllık Çim (Lolium perenne)	Kıraç	2	4	1,5-2	20	0,80
Ak Üçgül (Trifolium Repens)	Kıraç	1,5	3	0,5-1	40	1,20
TOPLAM					100	4

4.D. GÜBRELEME

Yem bitkilerinde ihtiyaç duyduğu bitki besin elementini uygun zaman ve uygun özellikte gübre ile sağlamak hem verim artışını hem yemin kalitesini artırır. Buğdaygil bitkileri için N (azot), baklagil bitkileri için K (potasyum) içeren gübreler kullanmak uygun olacaktır. Sahada bu ayırım yapılamayacağından kompoze gübre kullanılacaktır. Tabloda belirtilmiştir.

1 dekar arazi için kullanılacak kompoze gübre miktarı: $100 \times 5 / 15 = 33,33$ kg/da

ALAN (da)	AZOT (N)	FOSFOR (P)	POTASYUM (K)	GÜBRE ÇEŞİDİ	KULLANILACAK MİKTAR(kg)
44,75	5	5	5	Kompoze (15+15+15)	1.491,51

5.PROJE MALİYETİ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan toplam 44.751,81 m² büyüklüğündeki 1328, 879, 616, 38209 nolu mera vasıflı parsellerde Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi planlanmaktadır.

12.04.2005 tarihli ve 25784 sayılı Resmî Gazetede yayımlanan Mera Yönetmeliğinin 8 inci maddesinin (b) bendinde “Yatırımı yapan kişi ve kuruluşlar yirmi yıllık ot geliri ile öngörülen teminatları yatırmadan ve hazırlanan sözleşmeyi imzalamadan çalışmalara başlayamaz, başladığı takdirde verilen izinler veya tahsis amacı değişikliği iptal edilerek verdiği zararlar tazmin edilir.” denilmektedir.

Jeotermal kaynak arama izni talep edilen parsellerin toplam büyüklüğü 44.751,81 m² dir. Sondaj işleminin bu parsellerin sadece 30m x 50m=1.500 m² lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır.616 parsel (1.110,52 m²) yol olarak kullanılacaktır. Sondaj alanında sondaj makinesinin yerleşmesi için 185 m² 'lik kısma 40 cm kalınlığında dolgu ve beton yapılacaktır. Lokasyon alanının geri kalan kısmı ise 5 cm kalınlığında mıcır dökülerek sıkıştırılacaktır.Sondaj işlemi tamamlandıktan sonra tabla betonu ve mıcır, saha üzerinden kaldırılarak ekime uygun hale getirilecektir.

Sondaj lokasyon alanı krokisi ve görselleri proje ekinde sunulmaktadır.

Sahada gerekli düzenlemeler yapıldıktan sonra 50 cm bitkisel toprak serilecek olup, sahada 40 cm bitkisel toprak olduğu kabul edilerek, 10 cm derinliğine tekabül eden bitkisel toprak dışarıdan temin edilecektir.

5.1 İNŞAAT İŞLERİ MALİYETİ

Jeotermal kaynak arama izni alınan parsellerde sadece 30m x 50m=1.500 m² 'lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır. Yapılacak hesaplamalar her parsel (3 parsel) için 1.500 m² 'lik saha üzerinden yapılacaktır.Diğer kısımlarda mera bozulmayacağı için ekim maliyet hesabı yapılacaktır.

Jeotermal kaynak arama sondajı tamamlandıktan sonra meranın geri dönüşüm işleminin yapılması için sondaj lokasyon alanlarındaki lokasyon beton alını kırılarak, mıcır toplanarak sahadan taşınacaktır. Kullanılan konteynır ve çamur tankları kaldırılacak olup açılan çamur havuzu kapatılacaktır.

Yapılan işlemler her parsel (3 parsel) için ayrı hesaplanacaktır. (Tablo-8)

Söküm-yıkım işlemi yapılacak lokasyon beton alanı: 185 m² x 3 (parsel) =**555 m²**

Taşınacak olan lokasyon beton alanı molozu: 555 m² x 0,40 m = **222 m³**

Sondaj lokasyon alanına serilen ve taşınacak mıcır miktarı: (1.315 m² x 0,05 m) x (parsel) =**197,25 m³**



Tablo-8:İnşaat İşleri Birim Fiyat Tablosu

Poz No	Yapılacak İşin Beyanı	Birimi	Miktarı	Birim Fiyatı (m ³ -ton /TL)	Tutarı (TL)
KGM/18.189	Parke, beton plak, adi kaldırım ve blokaj sökülmesi	m ²	555,00	57,44	31.879,20
15.100.1002	kum, çakıl, tuvenan, stabilize ,kırmataş taşıtlara yükleme,boşaltma	m ³	197,25	16,94	3.341,42
07.006/K (Tml-Mlz)	Temel malzemesi nakli(20 km)	m ³	222,00	41,45	9.201,90
07.006/K(km)	Kum nakli (20 Km)	m ³	197,25	36,85	7.268,66
TOPLAM (TL)					51.691,18

Jeotermal kaynak arama izni talep edilen parsellerin toplam büyüklüğü 44.751,81 m² dir. Sondaj işlemin bu parsellerin sadece 30m x 50m=1.500 m² lik kısım sondaj ve lokasyon alanı olarak kullanılacak olup diğer kısımlarda mera bozulmayacaktır.616 parsel (1.110,52 m²) yol olarak kullanılacaktır. Sondaj alanında sondaj makinesinin yerleşmesi için 185 m² 'lik kısmına 40 cm kalınlığında dolgu ve beton yapılacaktır. Lokasyon alanın geri kalan kısmı ise 5 cm kalınlığında mıcır dökülerek sıkıştırılacaktır.Sondaj işlemi tamamlandıktan sonra tabla betonu ve mıcır, saha üzerinden kaldırılarak ekime uygun hale getirilecektir.

Sahada gerekli düzenlemeler yapıldıktan sonra 50 cm bitkisel toprak serilecek olup, sahada 40 cm bitkisel toprak olduğu kabul edilerek, 10 cm derinliğine tekabül eden bitkisel toprak dışarıdan temin edilecektir

Bu durumda 1 m² alana 100 cm x 100 cm x 10 cm = 100.000 cm³ = 0,10 m³ toprak serilir. 1 da alana ise 1000 m² x 0,10 m³= 100 m³ toprak kullanılacaktır. Sondaj lokasyon alanları için ise; 100 m³ x 1,50 da x 3 parsel = 450,00 m³ toprağa ihtiyaç vardır. İnşaat işleri birim fiyat tarifeleri esas alındığında 1 m³ yumuşak toprak 1,6 ton, 1 m³ sert toprak ise 1,8 ton olarak alınmış olup, maliyet hesabımızda 1 m³ toprak 1,70 ton olarak alınmıştır. Bu durumda bir dekar alana 100 m³ x 1,70 ton= 170 ton/da toprak kullanılacaktır. Jeotermal kaynak arama izni talep edilen sondaj lokasyon alanları toplamı 4,50 da alan için ise; 170 ton x 4,50 da= 765,00 ton toprağa ihtiyaç olacaktır.

Tablo-9: İnşaat İşleri Birim Fiyat Tablosu

Poz No	Yapılacak İşin Beyanı	Birimi	Miktarı	Birim Fiyatı (m ³ -ton /TL)	Tutarı (TL)
15.120.1001	Makine ile her derinlikte geniş derin yumuşak ve sert toprağın kazılması	m3	450,00	27,85	12.532,50
15.100.1002	Toprak Yükleme ve Boşaltılması	ton	765,00	16,94	12.959,10
07.005/K-1	Toprak Nakli (5000 m ye kadar)	ton	765,00	29,44	22.521,60
KGM15.040/K	Makine ile Dolgu (Serme ve Düzeltme Dahil)	m3	450,00	8,88	3.996,00
TOPLAM (TL)					52.009,20

*: Hesaplamalarda 2023 yılı birim fiyatları baz alınmıştır.



2023 Yılı 1 Dekar Yapay Mera Hazırlanması İçin Yapılan Masraflar

Yapılacak İşler	Birimi	Miktarı	Birim Fiyat (TL)	Toplam Tutar (TL/da)
Toprak Hazırlığı (OGM 3107.1)	Da	1	122,80	122,80
Tohum Bedeli	Kg/da	4	126,00	504,00
Gübreleme (15-15-15 Kompoze)	Kg/da	33,33	14,00	466,62
Ekim İşçiliği (Gübreleme Dahil) (OGM)	Da	1	212,96	212,96
Üst Gübreleme A.Sülfat(%21)	Kg/da	30	9,00	270,00
Üst Gübreleme Atım İşçiliği (OGM)	Da	1	45,22	45,22
Bakım (OGM)	Da	1	368,68	368,68
Toplam Maliyet (TL/da)				1.990,28

Jeotermal kaynak arama sondajı yapılan toplam 44.75 dekar alanın ekim maliyeti:

44,75 da x 1990,28 TL = **89.065,03 TL (Seksendokuzbin Altmışbeş TL Üç Krş)**

TOPLAM MALİYET

İşletme faaliyeti sonrası tahsis amacı değişikliği yapılan meranın eski haline getirilmesi için yapılması öngörülen toplam maliyet;

İnşaat İşleri Maliyeti(tablo-8):	51.691,18 TL
İnşaat İşleri Maliyeti(tablo-9):	52.009,20 TL
Ekim Maliyeti:	89.065,03 TL
TOPLAM MALİYET:	192.765,41 TL

Jeotermal Kaynak Arama izni verilen 44,75 dekar alanın için:

192.765,41 TL (Yüzdoksan ikibin Yediyüzaltmışbeş TL Kırkbir Krş)

olarak hesaplanmıştır.

Bu konuda yapılan gerek arazi ve gerekse büro çalışmaları sonucu bahse konu izne esas toplam 44,75 dekar mera arazisinin yeniden geri dönüşümü için gerekli proje tanzim edilmiştir. Projenin çevreye ve kalan mera alanlarına olumsuz etkisi olmayacağı, meraya gidiş gelişi engellemeyeceği öngörülmektedir. Yapılan proje sonucu, proje sahasında yer alan 44,75 dekar mera arazisinin "Geri Dönüşüm Maliyeti" **192.765,41 TL (Yüzdoksan ikibin Yediyüzaltmışbeş TL Kırkbir Krş)** olarak hesaplanmıştır.



6.SONUÇ

Aksaray İli, Güzelyurt İlçesi, Akyamaç Köyü sınırları içerisinde bulunan 9.950,00 m² büyüklüğündeki 1328 parselin tamamı, 14.400,00 m² büyüklüğündeki 879 parselin tamamı, 10.400,00 m² büyüklüğündeki 616 parselin 1.110,52 m²'lik kısmında, 101.600,00 m² büyüklüğündeki 3809 parselin 19.291,29 m² lik kısmında Güzelyurt Jeotermal Enerji A.Ş.'ye ait Sicil: 2023/15 (ER:3382865) sayılı Jeotermal Kaynak arama ruhsat sahasında yapılacak Sondaj faaliyeti sonrasında arama izni verilen söz konusu mera vasıflı arazilerin yeniden eski vasıf ve kapasitesine getirilmesi için "Mera Geri Dönüşüm Projesi"nin hazırlanması ve uygulanması Aksaray İl Mera Komisyon Başkanlığınca istenmiştir.

Yapılacak maden üretimi işlemi ve vasıf değişikliği sonrası söz konusu mera vasıflı arazinin yeniden dönüşümü yapılacak, bozulan mera arazisinin tekrar düzenlenerek rehabilite edilmesi, ekolojik dengenin sağlanması ve ülke ekonomisine katkı sağlaması açısından önem arz etmektedir.

Mera Yönetmeliği ve Tarım ve Orman Bakanlığı 2014/2 ve 2014/4 nolu talimatları gereği hazırlanan mera dönüşüm projesiyle; gerekli güvenlik önlemleri alınarak, çevre arazilere ve kalan mera alanlarına zarar verilmeyecek, merada maden işletme faaliyeti ve diğer faaliyetler esnasında daha fazla alan çığnınmeyip mera bozulmayacaktır. Projeye göre geri dönüşümün uygulanması ve tanıtım dosyasında verilen taahhütlerin yerine getirilmesine önem verilecektir.

Bu projenin uygulaması ile ülkemiz hayvancılığı için çok kıymetli olan mera arazilerimiz tekrar otlatılmaya açılacaktır.

İl Mera Komisyon Başkanlığınıza Arz Ederim.



EKLER

EK-1 PROJE ALANI VE ÇEVRESİNİ GÖSTEREN FOTOĞRAFLAR

EK-2 İŞLETME RUHSATI

EK-3 VAZİYET PLANI

EK-4 SONDAJ LOKASYON ALANI

EK-5 PROJEYİ HAZIRLAYAN TANITIMI





3



3

T.C.
AKSARAY İL ÖZEL İDARESİ

JEOTERMAL KAYNAK İŞLETME RUHSATI

İli : AKSARAY
İlçesi : MERKEZ
Belde : ...
Köyü : ...
Kaynağın Cinsi : JEOTERMAL KAYNAK
Ruhsat Numarası : 2023/17
Ruhsatın Yürürlüğe Giriş Tarihi : 15.08.2023
Ruhsat Süresi Bitim Tarihi : 15.08.2053
Ruhsat Alanı (hektar) : 4674.89 Hektar
Ruhsat Sahibi : GMK YENİLENEBİLİR ENERJİ MÜH. İMALAT
SANAYİ VE TİCARET A.Ş.
T.C. Kimlik No :
Vergi Daire No : KARŞIYAKA V.D. 396 073 7289
Ruhsatın Ait Olduğu paftalar : L32d2 , L32a3
Erişim No : 3385498
Ruhsat Koordinatları:

Poligon 1	1. Nokta	2. Nokta	3. Nokta	4. Nokta	5. Nokta	6. Nokta	7. Nokta
Sağa (Y)	609177	602619	601725	601369	600283	600184	601053
Yukarı (X)	4229999	4230012	4230435	4231363	4233538	4234523	4235198

	8. Nokta	9. Nokta	10. Nokta
Sağa (Y)	607648	608036	607709
Yukarı (X)	4237500	4235656	4234637

Ruhsat Sahibinin Adresi :
Adalet Mah. Manas Blv. Folkart Towers A-Kule 47/B Daire:2601 Bayraklı /İZMİR

Mehmet Emre CANPOLAT
Vali a.
Vali Yardımcısı
Genel Sekreter v.

Valilik Makamının 15.08.2023 tarih ve 29599 sayılı Oluru ile İşletme Ruhsatına geçişi yapılmıştır.

GAZİEMİR-9

NoktaNo		Y	X
B1	kuyu alanı	620082.46	4244425.97
B2	kuyu alanı	620079.32	4244455.81
B3	kuyu alanı	620129.05	4244461.04
B4	kuyu alanı	620132.19	4244431.21
K1	kuyu noktası	620095.82	4244442.47

GAZİEMİR-5

NoktaNo		Y	X
B1	kuyu alanı	620101.13	4244362.29
B2	kuyu alanı	620097.99	4244392.12
B3	kuyu alanı	620147.71	4244397.36
B4	kuyu alanı	620150.85	4244367.52
K1	kuyu noktası	620114.48	4244378.78

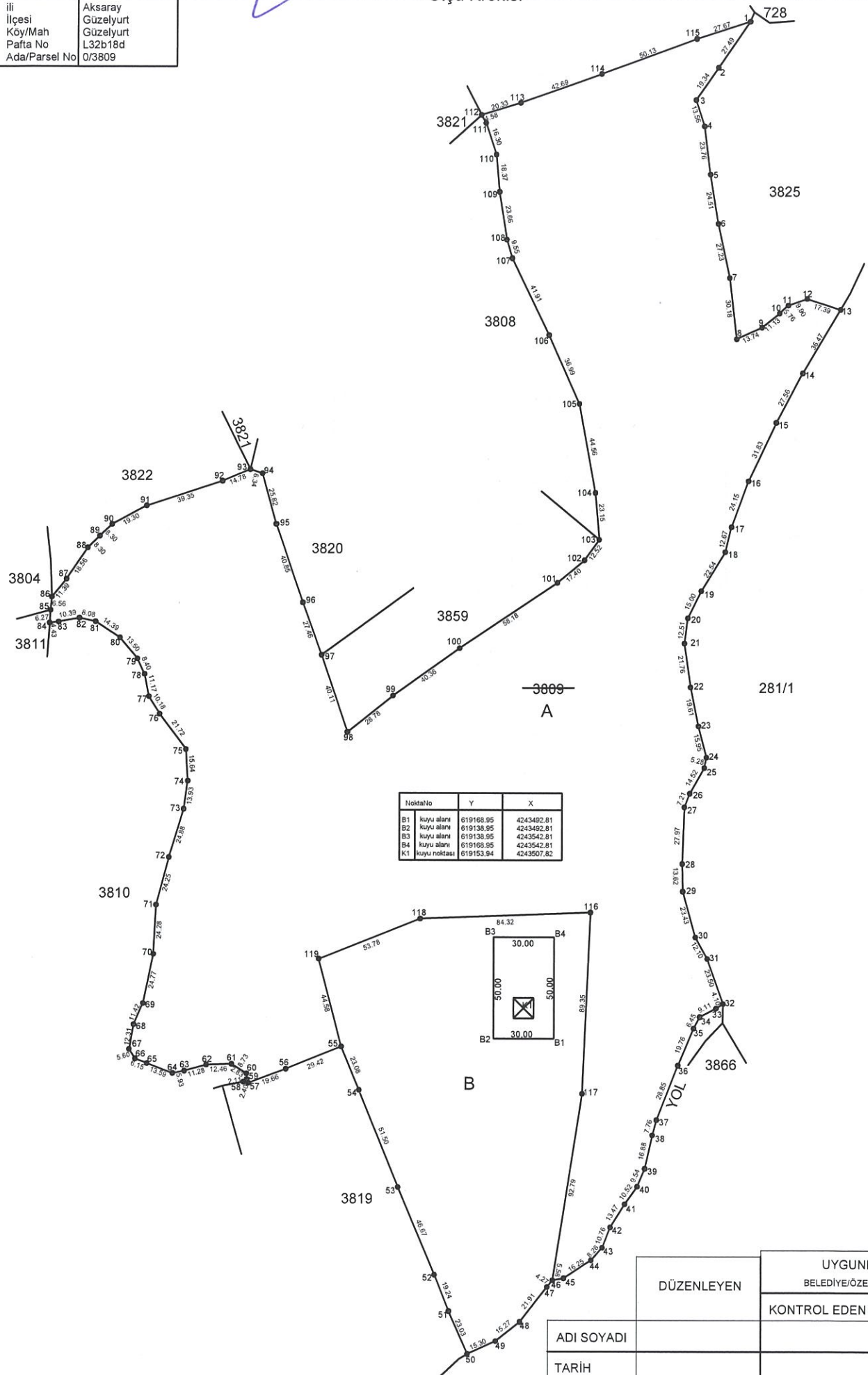
AG4

NoktaNo		Y	X
B1	kuyu alanı	619168.95	4243492.81
B2	kuyu alanı	619138.95	4243492.81
B3	kuyu alanı	619138.95	4243542.81
B4	kuyu alanı	619168.95	4243542.81
K1	kuyu noktası	619153.94	4243507.82

3

Ölçü Krokisi

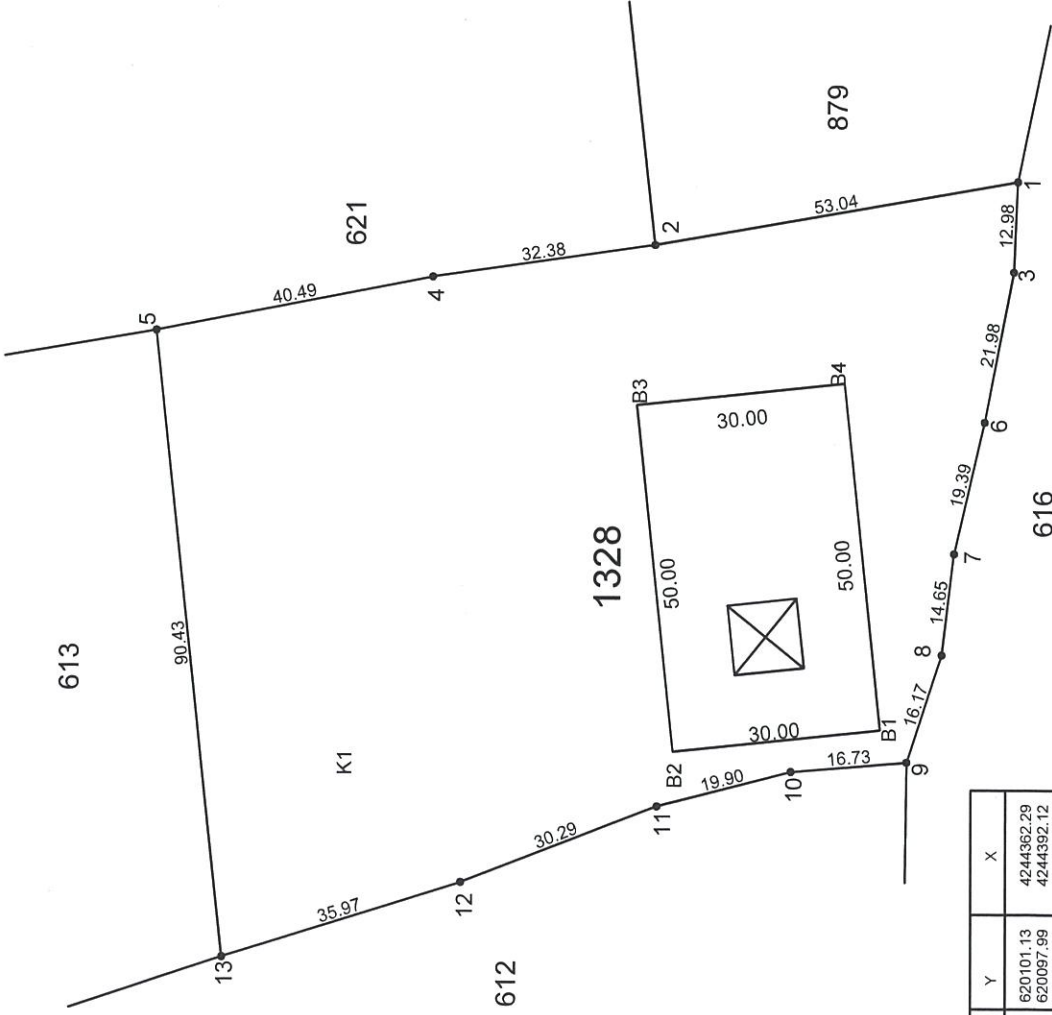
ili Aksaray
İlçesi Güzelyurt
Köy/Mah Güzelyurt
Pafta No L32b18d
Ada/Parsel No 0/3809



DÜZENLEYEN	UYGUNDUR BELEDİYE/ÖZEL İDARE	
	KONTROL EDEN	ONAYLAYAN
ADI SOYADI		
TARİH		
İMZA		

RÖLEVE ÖLÇÜ KROKİSİ

İli : AKSARAY
 İlçesi : MERKEZ
 Mahallesi : AKYAMAÇ
 Pafta No : 18C
 Ada / Parsel : 0/1328



ED50(3 DERECE) KOORDİNATLAR

NoktaNo	Y	X	NoktaNo	Y	X
1	620179.88	4244342.59	2	620170.71	4244394.83
3	620166.92	4244343.14	4	620166.08	4244426.87
5	620158.30	4244466.61	6	620145.33	4244347.31
7	620126.44	4244351.67	8	620111.90	4244353.42
9	620096.52	4244358.43	10	620095.13	4244375.10
11	620090.13	4244394.36	12	620079.20	4244422.61
13	620068.39	4244456.92			

ALAN ÖZETİ

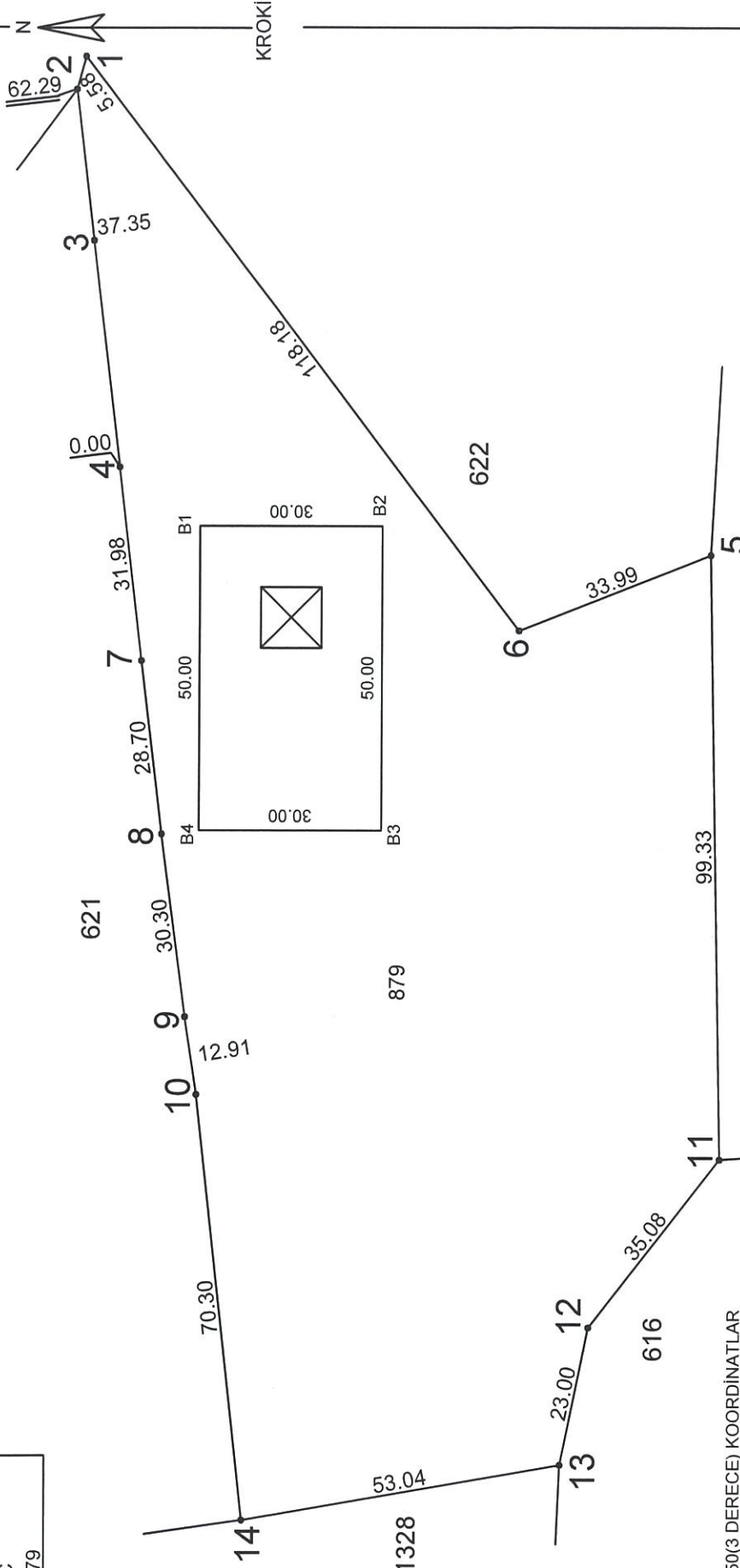
Ada/Parsel	Noktalar	HesapAlan	Düzeltilme	Deng.Alan
1328	2,4,5,13,12,11,10,9,8,7,6,3,1	9524.96	+0.00	9524.96
		TOPLAM	+0.00	9524.96
TAPULANLI HESAPLANAN FARK TECVİZ		9524.96 9524.96 0.00 42.88		

NoktaNo	Y	X
B1	620101.13	4244362.29
B2	620097.99	4244392.12
B3	620147.71	4244397.36
B4	620150.85	4244367.52
K1	620114.48	4244378.78

UYGUNDUR BELEDİYE/ÖZEL İDARE	
DÜZENLEYEN	KONTROL EDEN
ADI SOYADI	
TARİH	
İMZA	

RÖLEVE ÖLÇÜ KROKİSİ

İli : AKSARAY
 İlçesi : MERKEZ
 Mahallesi : AKYAMAÇ
 Pafta No : 18C
 Ada / Parsel : 0/879



ED50(3 DERECE) KOORDİNATLAR

NoktaNo	Y	X	NoktaNo	Y	X
1	620410.89	424421.42	2	620405.51	424422.91
3	620380.74	424419.95	4	620343.66	424415.53
5	620329.39	4244318.06	6	620316.96	4244349.69
7	620311.89	4244411.85	8	620283.40	4244408.41
9	620253.36	4244404.48	10	620240.59	4244402.56
11	620230.07	4244316.38	12	620202.41	4244337.96
13	620179.88	4244342.59	14	620170.71	4244394.83

ALAN ÖZETİ

Ada/Parsel	Noktalar	HesapAlan	Düzeltilme	Deng.Alan
879	5,11,12,13,14,10,9,8,7,4,3,2,1,6	14582.49	+0.00	14582.49
	TOPLAM	14582.49	+0.00	14582.49
TAPU ALANI		14582.49		
HESAPLANAN FARK		0.00		
TECVİZ		54.02		

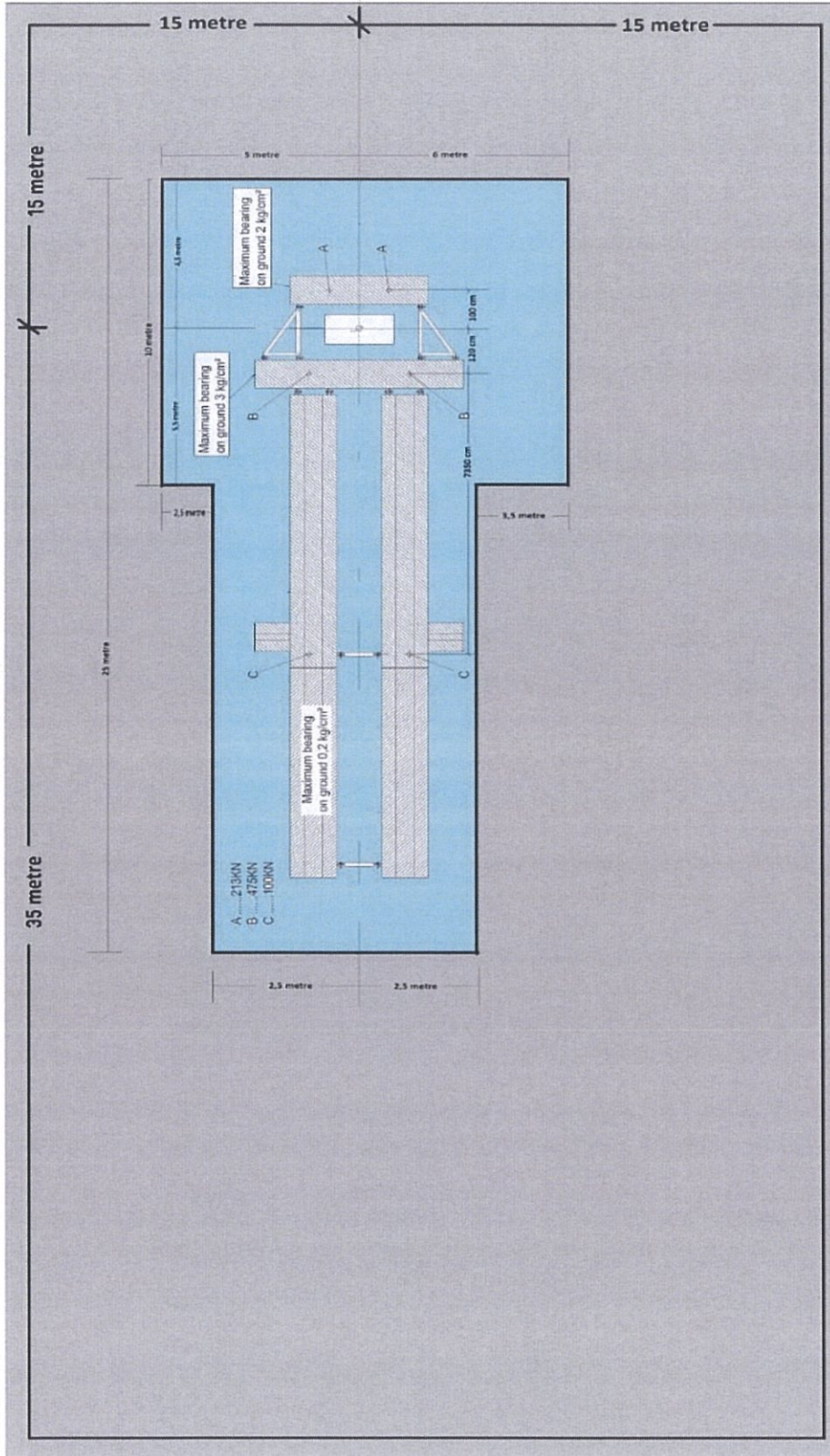
NoktaNo	Y	X
B1	620334.02	4244402.31
B2	620334.02	4244372.31
B3	620284.02	4244372.31
B4	620284.02	4244402.31
K1	620319.01	4244387.30

UYGUNDUR BELEDİYE/ÖZEL İDARE	
DÜZENLEYEN	KONTROL EDEN
ADI SOYADI	TARİH
	İMZA

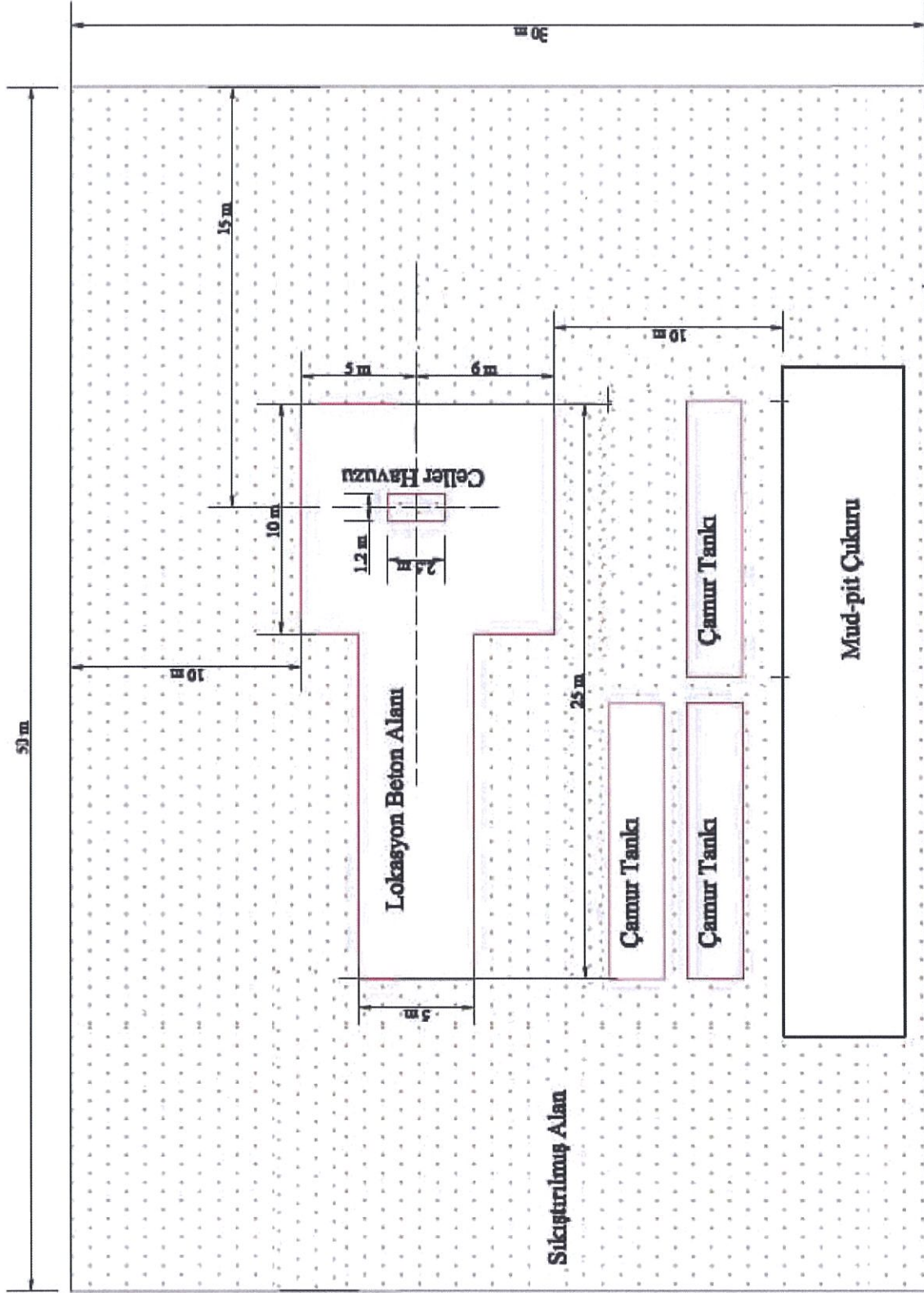


3

SONDAJ LOKASYON ALANI



3



3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
ZİRAAT MÜHENDİSLİĞİ
SERBEST MÜŞAVİRLİK MÜHENDİSLİK BELGESİ

BELGE SAHİBİNİN:

Adı ve Soyadı : MUSTAFA PIŞKIN
T.C. Kimlik No : 20372789884
Ünvanı : ZİRAAT MÜHENDİSİ
ZMO Sicil No'su : 33162
Ana Çalışma Konuları : GIDA, TARIM, DANIŞMANLIK, PEST KONT. MERA
ISLAHI, AMENAJMAN VE GERİ
DÖNŞ. PRJ. HAZ. MARKET, HAŞERE İLAÇLAMA
Büro ile Bağlantı Şekli : KENDİSİ
SMM Belgesi No'su ve Tarihi : 1746 / 18.11.2022
Geçerlilik Tarihi : 18.11.2023



TESCİL EDİLEN BÜRONUN(Var isel):

Ünvanı : EMİN HAŞERE İLAÇLAMA HİZMETLERİ
Adresi : K. BÖLCEK MAH. 2601. SOK. ÖZMENLER APT. NO:
12/D AKSARAY
Tescil Belgesi No'su ve Tarihi : 0720/18.11.2022

Yukarıda bilgileri verilen üyemiz MUSTAFA PIŞKIN'ın, ODA'ya kayıtlı olarak bu belge ile tescil olduğu bürosun, yukarıda belirtilen faaliyet alanlarında yürüteceği Ziraat Mühendisliği hizmetlerini yaptığını beyan ederiz. Bu onaylanmıştır.



3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
ZİRAAT MÜHENDİSLİĞİ
BÜRO TESCİL BELGESİ

BÜRONUN ÜNVANI : EMİN HAŞERE İLAÇLAMA HİZMETLERİ
BÜRONUN ADRESİ : K. BÖLCEK MAH. 2601. SOK. ÖZMENLER APT.
NO: 12/D AKSARAY
ÇALIŞMA ALANLARI : GIDA, TARIM, DANIŞMANLIK, PEST KONT. MERA
İSLAHİ, AMENA/MAN VE GERİ DÖNS. PRJ. HAZ.
MARKET, HAŞERE İLAÇLAMA
VERGİ DAİRESİ VE NO : AKSARAY 7300223974
BÜRO TESCİL NO ve TARİHİ : 0720 / 18.11.2022
GEÇERLİLİK TARİHİ : 18.11.2023

ADI SOYADI : MUSTAFA AŞKIN
TC KİMLİK NO : 20372789584
ÜNVANI : ZİRAAT MÜHENDİSİ
ZMO SİYİL NO : 33162
SMM BELGE NO / TARİHİ : 1748 / 18.11.2022
BÜRO İLE BAĞLANTI ŞEKLİ : KENDİSİ



Yukarıda bilgileri verilen üyenizin ODA'mıza kayıtlı olarak bu belge ile tescil olduğu görülmüştür.
Yukarıda belirtilen çalışmaya alanlarında yürüteceği Ziraat Mühendisliği hizmetlerini yapmaya
yetkili olduğu anlaşılmıştır.

3



TMMOB ZİRAAT MÜHENDİSLERİ ODASI
Meslek İçi Eğitim Merkezi

BELGE NO : 88

TARİH : 30.11.2014

KATILIM BELGESİ

Mustafa Pişkin (33162)

ZİRAAT MÜHENDİSLERİ ODASI MESLEK İÇİ EĞİTİM MERKEZİ TARAFINDAN
28-30 KASIM 2014 TARİHLERİNDE KONYA ŞUBEMİZDE DÜZENLENEN 3 GÜN SÜRELİ

“MERA ISLAH, AMENAJMAN ve GERİ DÖNÜŞÜM PROJESİ”
EĞİTİMİNE KATILARAK BU KATILIM BELGESİNİ ALMAYA HAK KAZANMIŞTIR.

Özden GÜNGÖR
ZMO Genel Başkanı



T.C.
SELÇUK ÜNİVERSİTESİ
ZİRAAT FAKÜLTESİ

LİSANS DİPLOMASI

Selçuk Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümünün dört yıllık
eğitim-öğretimini başarıyla tamamlayan
Emin oğlu 22.02.1978 Ermenek doğumlu

MUSTAFA PIŞKİN

Kanunların verdiği hak ve yetkilerden faydalanmak üzere Ziraat Mühendisi ünvanı ile bu diplomayı
almaya hak kazanmıştır.

Mehmet Kara

Prof.Dr..Mehmet KARA
DEKAN

Abdullah Kutlu

Prof.Dr.Abdullah KUTLU
REKTÖR

Diploma No : 0215030037
Mezuniyet Tarihi : 28.06.2002



Fen Bilimleri Enstitüsü

Yüksek Lisans Diploması

Diploma No : 1806
TC Kimlik No : 20372789884
Öğrenci No : 04824502010
Mezuniyet Tarihi : 27.06.2007

Tarla Bitkileri Anabilim Dalı Yüksek Lisans programında öngörülen çalışmalarını başarı ile tamamlayan Emin oğlu 22.02.1978 Ermenek doğumlu Mustafa PİŞKİN kanunların verdiği hak ve yetkilerden faydalanmak üzere bu diplomayı almaya hak kazanmıştır.


Prof. Dr. İbrahim KARATAŞ
Müdür




Prof. Dr. Süleyman OKUDAN
Rektör



T.C.
TARIM VE ORMAN BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü
4. Bölge Müdürlüğü



Sayı : E-93919684-611.02-2569369

12.08.2022

Konu : Aksaray Güzelyurt İlçesi Güzelyurt Köyü
ve Bozcayurt Köyü Jeotermal Kaynak
Arama (GMK A.Ş.) Hk.

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE

İlgi : Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğünün 19.07.2022 tarihli ve
E-13955465-220.02-4123531 sayılı yazısı.

İlgi yazınızda, Aksaray İli Güzelyurt İlçesi, Güzelyurt ve Bozcayurt Köylerinde **GMK Yenilenebilir Enerji Mühendislik İmalat ve Sanayi Ticaret A.Ş.** tarafından "**Jotermal Enerji Arama Sondajları Projesi**" projesi ile ilgili olarak hazırlanan Proje Tanıtım Dosyasının incelenmesi ve Bölge Müdürlüğümüz görüşünün bildirilmesi istenmektedir.

Konu ile ilgili gerekli inceleme yapılmıştır. İlgi yazınız ekinde sunulan Proje Tanıtım Dosyasında koordinatları verilen ÇED sahasının Kurumumuz sorumluluğunda yer alan ve işletme aşamasında bulunan **Mamasın Barajı Uzun Mesafeli Koruma Alanında** kaldığı anlaşılmış olup, Kurumumuz mer'î mevzuatlarına ve aşağıda belirtilen hususlara uyulması kaydıyla bahse konu faaliyetin yapılmasında Kurumumuz açısından sakınca bulunmamaktadır. Şöyle ki;

1. Söz konusu ÇED sahasının "**Mamasın Barajı**" projesine ait Uzun Mesafeli Koruma alanında kalması sebebiyle "**İçme-Kullanma Suyu Havzalarının Korunmasına Dair Yönetmelik**" içerisinde yer alan tüm hükümlere riayet edileceğinin ilgili firma tarafından taahhüt edilmesi gerekmektedir.

2. Bahse konu alanlardan, Proje Tanıtım Dosyasında ÇED alanı, Aksaray İlinin içme ve sulama su ihtiyacının bir kısmının karşıladığı Mamasın Barajı Uzun Mesafeli Koruma Alanında kaldığından konu ile ilgili olarak ayrıca Su Yönetimi Genel Müdürlüğü'nün görüşü alınmalıdır.

3. Faaliyet süresince sondaj ve test suları da dahil olmak üzere jeotermal akışkanın hiçbir şekilde yüzey ve/veya yeraltılarına deşarjı yapılmamalı, tüm jeotermal akışkan kullanıldıktan sonra mutlaka alındığı jeotermal akifere re-enjekte edilmelidir.

4. Faaliyet kapsamındaki tüm yapı tabanlarının sızdırmazlığı sağlanmalı ve çevresinde kuşaklama kanalı yer almalı, tüm sistem tamamen kapalı devre çalışacak şekilde inşa edilmeli, bu kapsamda üretim ve re-enjeksiyon kuyuları soğuk su akiferlerine zarar vermeyecek şekilde özel kuyu teşhizi ile sahanın jeolojik, hidrojeolojik özellikleri göz önüne alınarak tecrit edilmeli, faaliyet sonrasında tüm kuyular jeotermal akifere kadar kimyasala dayanıklı çimento ile tıkaçlanarak kapatılmalıdır.

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 32624072-7E4E-4A59-83B8-F342E4AA1B84

Doğrulama Adresi: <https://www.turkiye.gov.tr/devlet-su-isleri-ebys>

Adres: DSİ 4. Bölge Müdürlüğü Anıt Alanı Meram / KONYA

Bilgi için: Kevser KOÇAK

KEP Adresi: dsi.gnlmud@hs01.kep.tr

Mühendis

Telefon No: (332) 322 01 91-

1539



5.Sondaj kuyusu açılırken yeraltısuyu ile karşılaşılması durumunda;oluşacak akifer tamamen tecrit edilmelidir. Sondaj kuyusunda jeotermal su bulunmadığı durumda sondaj kuyusunun tamamen kapatılarak yeraltısuyundan çekim yapılmaması gerekmektedir.

6. Kurulacak tesisten çıkacak atıklar konusunda "**2872 sayılı Çevre Kanunu**" esaslarına uyulması sağlanmalıdır

Bilgilerinize ve gereğini arz ederim.

Mustafa BALTA
Bölge Müdür a.
Bölge Müdür Yardımcısı

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 32624072-7E4E-4A59-83B8-F342E4AA1B84

Doğrulama Adresi: <https://www.turkiye.gov.tr/devlet-su-isleri-ebys>

Adres: DS 4. Bölge Müdürlüğü Anıt Alanı Meram / KONYA
KEP Adresi : dsi.gnlmud@hs01.kep.tr

Bilgi için:Kevser KOÇAK
Mühendis
Telefon No:(332) 322 01 91-
1539



T.C.
AKSARAY VALİLİĞİ
İl Afet ve Acil Durum Müdürlüğü

Sayı : E-73066859-611.02-344048

22.07.2022

Konu : Kurum Görüşü

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE

İlgi : 19.07.2022 tarihli ve E-13955465-220.02-4123531 sayılı yazımız.

İlgi yazı ile GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş. tarafından yapılması planlanan, İlimiz Güzelyurt ilçesi, Gaziemir Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyası ile ilgili kurum görüşümüzün üst yazı ile Kurumunuza ve E-ÇED sistemine kaydedilmek suretiyle bildirilmesi talep edilmektedir.

Söz konusu proje tanıtım dosyası incelenmiş olup hazırlanan değerlendirme raporu yazımız ekinde gönderilmiştir.

Cezmi TÜRKMEN
İl Afet ve Acil Durum Müdürü

Ek: Rapor (1 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 60AF529B-DF88-49FA-82AC-9B1B2ACAB0F4

Doğrulama Adresi: <https://www.turkiye.gov.tr/afad-ebys>

Yeni Sanayi Mah.E-90 Cad. Valilik Ek-3 Hizmet Binası 68200/AKSARAY

Telefon No: (382) 213 51 51 Belge Geçer No: (382) 212 06 37

e-Posta: aksaraymdr@afad.gov.tr İnternet Adresi: <https://aksaray.afad.gov.tr>

Ken Adresi: aksarayafad@hs01.keo.tr

Bilgi için:Erkan YILDIRIM

Şube Müdürü V.

Telefon No:(382) 213 51 51



PROJE TANITIM DOSYASI DEĞERLENDİRME RAPORU

Projenin Adı : Aksaray İli Gaziemir Köyü ve Bozcayurt Köyü Jeotermal enerji arama Sondajları Projesi

Toplantı Tarihi :

Çevre, Şehircilik ve İklim Değişikliği Müdürlüğünün 19.07.2022 tarih ve 4123531 sayılı yazıları ekinde Müdürlüğümüze gönderilen Aksaray İli Gaziemir Köyü ve Bozcayurt Köyü Jeotermal enerji arama Sondajları Projesi tanıtım dosyası incelenmiş olup;

1- 7269 sayılı Kanun kapsamında ilan edilmiş herhangi bir afete maruz bölge sınırları içerisinde kalmamaktadır.

2- 7269 sayılı Kanun ile afetlere ilişkin hükümler öngören diğer kanunlar uyarınca edinilen veya bahsi geçen kanun amaçlarında kullanılmak üzere kurumumuz emrine verilen ya da tahsis edilen yerler kapsamında kalmamaktadır.

3-Söz konusu arazi üzerinde Başkanlığımız veya Müdürlüğümüzce yürütülmekte olan herhangi bir proje veya planlama çalışması bulunmamaktadır.

Anılan projenin gerçekleştirilmesinde Müdürlüğümüz açısından sakınca bulunmamaktadır. 22.07.2022

Erkan YILDIRIM
Jeoloji Mühendisi

Aksaray İl Afet ve Acil Durum Müdürlüğü



T.C.
AKSARAY VALİLİĞİ
İl Kültür ve Turizm Müdürlüğü
Aksaray Müze Müdürlüğü



Sayı : E-48558920-169.99-3168375

21.11.2022

Konu : Kurum Görüşü Hk.

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE

- İlgi : a) Çed Hizmetleri ve Çevre İzinleri Şube Müdürlüğünün 21.10.2022 tarihli ve E-13955465-220.02-4835572 sayılı yazısı.
b) Konya Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğünün 14.11.2022 tarihli ve E-25225848-169.99-3140562 sayılı yazısı.

İlgi (a) yazı ile; Güzelyurt ilçesi Akyamaç Mahallesi ve Bozcayurt köyünde GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan " Jeotermal Enerji Arama Sondajları Projesi" faaliyetine ilişkin Proje Tanıtım Dosyasına dair 2863 Sayılı Kanun kapsamında kurum görüşünün bildirilmesi talep edilmektedir.

İlgi (b) yazı ile; Aksaray İli, Güzelyurt İlçesi sınırları dahilinde 201968002 numaralı jeotermal kaynak arama ruhsatları projesi kapsamında revize edilen proje alanları üzerinde yerinde yapılan incelemelerde Güzelyurt İlçesi sınırlarında koordinat bilgileri verilen ekli harita üzerinde işaretlenen 5 (beş) " Jeotermal Enerji Arama Proje Alanı üzerinde 2863 sayılı yasa kapsamında taşınır ya da taşınmaz korunması gerekli kültür varlığına rastlanılmadığı uzman raporunda belirtilmekte olup, 2863 sayılı yasanın 4. Maddesi gereği; koordinat bilgileri verilen ekli harita üzerinde işaretlenen üzerinde inşai ve fiziki uygulamalar sırasında taşınır ya da taşınmaz herhangi bir kültür varlığına rastlanması halinde en geç üç gün içerisinde ilgili Mülki Amirliğe veya Müze Müdürlüğüne haber verilmesi yasal zorunluluktur. denilmektedir.

İlgi (b) yazı doğrultusunda iş ve işlemlerin yürütülmesi hususunda;
Bilgilerinizi ve gereğini arz ederim.

Mustafa DOĞAN
İl Kültür ve Turizm Müdürü

Ek: ilgi (b) yazı. (2 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 2F79A683-253D-41B7-B67F-3F43ABB38914

Doğrulama Adresi: <https://www.turkiye.gov.tr/ktb-ebys>

Adres: Hacılar Harmanı Mah. 5719 Sok. No:16 68100 AKSARAY

Telefon: (0 382) 215 56 36 Faks: (0 382) 215 05 30

e-posta: aksaraymuzesi@ktb.gov.tr

KEP Adresi : aksaraykulturturizm@hs01.kep.tr

Bilgi için: ÜKRAN TOSUN

ÇOLAK

Harita Teknikeri





T.C.
AKSARAY İL ÖZEL İDARESİ
Ruhsat ve Denetim Müdürlüğü



Sayı : E-84035498-000-17564
Konu : ÇED Ek-2 Proje Tanıtım Dosyası Kurum
Görüşü

03.08.2022

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE

İlgi : 18.07.2022 tarihli ve E-13955465-220.02-4123531 sayılı yazınız.

İlgi başvuru ile "GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş. tarafından yapılması planlanan, İlimiz, Güzelyurt ilçesi, Güzelyurt Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyası, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden İl Müdürlüğümüze sunulmuştur. Bu kapsamda proje ile ilgili olarak görevlendirilen yetkili temsilciniz tarafından Çevrimiçi ÇED Süreci Yönetim Sisteminde yer alan Proje Tanıtım Dosyası ile ilgili kurum görüşünüzün üst yazı ile Kurumumuza ve E-ÇED sistemine kaydedilmek suretiyle bildirilmesi gerekmektedir.

Diğer taraftan, 26 Mayıs 2017 tarihli ve 30077 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelikle değiştirilen 12. Madde gereğince proje hakkındaki görüşünüzün otuz (30) takvim günü içerisinde Müdürlüğümüze iletilmesi, bu süre içinde görüş bildirmeyen kurumun görüşünün olumlu kabul edileceği hususunda; Bilgilerinizi ve gereğini arz/rica ederim.;" denilmiştir.

Bahse konu olan Çed dosyası incelenmiş olup kurum görüşümüz Olumludur.

Bilgi ve gereğini rica ederim.

Yüksel ÇELİK
Vali a.
Genel Sekreter

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: AVtJoZ-qSjmrh-22fLQy-MP6S0v-/3x/dHUd Doğrulama Linki: <https://www.turkiye.gov.tr/icisleri-ebys>





T.C.
AKSARAY İL ÖZEL İDARESİ
Ruhsat ve Denetim Müdürlüğü



Sayı : E-84035498-000-17564
Konu : ÇED Ek-2 Proje Tanıtım Dosyası Kurum
Görüşü

03.08.2022

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE

İlgi : 18.07.2022 tarihli ve E-13955465-220.02-4123531 sayılı yazınız.

İlgi başvuru ile "GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş. tarafından yapılması planlanan, İlimiz, Güzelyurt ilçesi, Güzelyurt Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyası, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden İl Müdürlüğümüze sunulmuştur. Bu kapsamda proje ile ilgili olarak görevlendirilen yetkili temsilciniz tarafından Çevrimiçi ÇED Süreci Yönetim Sisteminde yer alan Proje Tanıtım Dosyası ile ilgili kurum görüşünüzün üst yazı ile Kurumumuza ve E-ÇED sistemine kaydedilmek suretiyle bildirilmesi gerekmektedir.

Diğer taraftan, 26 Mayıs 2017 tarihli ve 30077 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelikle değiştirilen 12. Madde gereğince proje hakkındaki görüşünüzün otuz (30) takvim günü içerisinde Müdürlüğümüze iletilmesi, bu süre içinde görüş bildirmeyen kurumun görüşünün olumlu kabul edileceği hususunda; Bilgilerinizi ve gereğini arz/rica ederim.;" denilmiştir.

Bahse konu olan Çed dosyası incelenmiş olup kurum görüşümüz Olumludur.

Bilgi ve gereğini rica ederim.

Yüksel ÇELİK
Vali a.
Genel Sekreter

01.08.2022 ruhsat ve Denetim Müdür Vk.: Abdullah ÖZDEMİR

01.08.2022 Genel Sekreter Yardımcısı : Yılmaz ALTINSOY

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: AVtJoZ-qSjmrh-22fLQy-MP6S0v-/3x/dHUd Doğrulama Linki: <https://www.turkiye.gov.tr/icisleri-ebys>





T.C.
AKSARAY VALİLİĞİ
I Tarım ve Orman Müdürlüğü



Sayı : E-69350487-611.02[010.01]-6333295
Konu : ÇED

21.07.2022

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE
(Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü)

İlgi : 19.07.2022 tarihli ve E-13955465-220.02-4123531 sayılı yazınız.

İlgi başvuru ile GMK Yenilebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan İlimiz Güzelyurt ilçesi Güzelyurt Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları projesi ile ilgili olarak ÇED Yönetmeliği gereğince hazırlanan Proje Tanıtım ile Dosyası,Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden kurum görüşü istenilmektedir.

İlgili projede bahsi geçen arazi vasfı tescil harici alanlardan ise tescil edilip vasfının belirlenmesi ,arsa vasıflı araziler hariç olmak üzere ;diğer vasıflı araziler (tarla,mera,hamtoprak,dikili tarım arazisivb.) için 5403 Sayılı Toprak Koruma ve Arazi Kullanımı Kanunu ile 4342 Sayılı Mera Kanunu kapsamında kurumumuzdan izin alınması gerekmektedir.

Bilgi ve gereğini rica ederim.

Mustafa DURUK
Vali a.
Vali Yardımcısı V.

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: D1F287D5-DBB4-4962-8134-9AE91525EA76

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray
Tel: (0382) 213 15 85 Faks: (0382) 213 29 07
E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr
KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Meryem
MARA LIO LU
Mühendis





T.C.
ORMAN GENEL MÜDÜRLÜ ĞÜ
Konya Orman Bölge Müdürlü Ğü



Sayı : E-54418822-611.02-5758378

28.09.2022

Konu : Jeotermel Enerji Arama Sondajları
Projesi(611-02/2022/2336)

AKSARAY VALİLİĞİNE
(Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü)

Konya Orman Bölge Müdürlüğü, Aksaray Orman İşletme Müdürlüğü sınırları dahilinde, AKSARAY / AKSARAY OİŞ Güzelyurt-Bozcayurt GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SANAYİ VE TİCARET A.Ş. tarafından işletilmesi planlanan JEOTERMAL ENERJİ ARAMASONDAJLARI PROJESİ talebinin değerlendirilmeye alınmasında ÇED yönetmeliği ve 6831 Sayılı orman kanunu kapsamında yapılan inceleme ve değerlendirme sonucunda,"6831 sayılı Orman Kanunu gereği orman alanında kalan kısım için yasal izinlerin alınması alınması kaydıyla" söz konusu proje sahasının ormanlar ve ormancılık çalışmaları üzerinde olumsuz etkisi bulunmamaktadır.
Bilgilerini arz ederim.

Cafer BAL
Bölge Müdürü

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 978E327A-F565-4935-A33E-BC690366C76F

Doğrulama Adresi: <https://www.turkiye.gov.tr/ogm-ebys>

Aksine Mahallesi gazhane Sokak NO:31 42200
Telefon No : (332) 353 69 02 Belgegeçer No : (332) 352 32 84
e-posta: internet adresi:
KEP Adresi : ogm@ogm.hs01.kep.tr

Bilgi için:Hikmet
BA BOZKURT
Vasıflı ç



T.C. ÇEVRE, ŞEHİRCİLİK VE İKLİM
DEĞİŞİKLİĞİ BAKANLIĞI
AKSARAY ÇEVRE VE ŞEHİRCİLİK İL
MÜDÜRLÜĞÜ
Çed Hizmetleri ve Çevre İzinleri Şube
Müdürlüğü
İstiklal Mah. Alparslan Türkeş Blv.
No:126 Merkez/AKSARAY

MERAM Elektrik Dağıtım A.Ş.**KANUNİ MERKEZ**

Sancak Mahallesi Yeni İstanbul Caddesi No:92 Selçuklu / KONYA

Tel : +90 (850) 251 30 00

Faks : +90 (850) 251 31 00

: +90 (332) 255 00 82

ÇİM No : 444 8 186

Web : www.meramedas.com.tr

E-Mail : info@meramedas.com.tr

Kep : meram.dagitim@hs02.kep.tr

Mersis No : 0833 0030 8740 0017

Selçuk VD : 833 003 0874

LÜTFEN İLGİLİ YAZINIZDA AŞAĞIDAKİ REFERANS**NUMARASINI BELİRTİNİZ.**

□ Tarih : 04/08/2022

□ Referans No : OGMY_SPM_29038

ÖZÜ:ÇED Ek-2 Proje Tanıtım Dosyası Kurum Görüşü**İlgi:** 19.07.2022 tarih ve E-13955465-220.02-4123531 sayılı yazı

İlgi yazıda Aksaray İli, Güzelyurt İlçesi, Güzelyurt Köyü ve Bozcayurt Köylerinde, Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan proje tanıtım dosyasına istinaden Şirket görüşümüzün bildirilmesi istenmektedir.

Bahse konu bölgede henüz planlanmış yatırım çalışmamız bulunmamakta olup bölgedeki envanter bilgilerimiz CD ortamında yazımız ekinde gönderilmektedir. Elektrik Kuvvetli Akım Tesisleri Yönetmeliğinin 44. Maddesinde yer alan Çizelge-5 "**Hava hattı iletkenlerinin en büyük salınlı durumda yapılara olan en küçük yatay uzaklıkları**" ile 46.Maddesindeki Çizelge-8'de "**Hava hattı iletkenlerinin en büyük salgı durumunda üzerinden geçtikleri yerlere olan en küçük düşey uzaklıkları**"nı ihlal edici bir durum oluşturmayacak şekilde çalışmaların yürütülmesinde bir sakınca bulunmamakta olup tarafınıza iletilen envanterlere göre imar planının güncellenmesi ve ilgili envanterlerin korunması kaydı ile uygundur.

Bilgilerinize sunarız.

Saygılarımızla,

*e-imza***Hasan KURT**Şebeke Planlama Müdür
Yardımcısı*e-imza***Mert BAYER**

Şebeke Planlama Müdürü

Ek :

Envanter Bilgisi (CD)

Bu belge 5070 sayılı elektronik imza kanununa göre güvenli elektronik imza ile imzalanmıştır.

Detaylı Bilgi İçin : Lütfiye Andaç

Detaylı Bilgi İçin E-posta : Lutfiye.Andac@meramedas.com.tr

Evrak PIN Kodu : 79992

Evrak Doğrulama Linki:https://dys.meramedas.com.tr/enVision/Validate_Doc.aspx?eD=BSPA3VSSSEN linkinden yapılabilir.



T.C.
TARIM VE ORMAN BAKANLIĞI
8. Bölge Müdürlüğü



Sayı : E-88378095-045.01[611.02]-7048897

21.09.2022

Konu : ÇED Kurum Görüşü (Jeotermal Enerji
Arama Sondajları Projesi)

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE
(Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü)

E-ÇED sisteminde kayıtlı, Aksaray İli, Güzelyurt İlçesi, Güzelyurt ve Bozcayurt Köyleri sınırları içerisinde, GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Enerji Arama Sondajları" projesi için kurum görüşümüz talep edilmektedir.

Bahse konu proje tanıtım dosyası ve konum bilgileri e-ÇED sistemi üzerinden incelenmiş olup 2873 sayılı Milli Parklar Kanunu, 4915 sayılı Kara Avcılığı Kanunu, Sulak Alanların Korunması Yönetmeliği ile 2014/1 sayılı Genelge kapsamında, projenin gerçekleştirilmesinde Bölge Müdürlüğümüzce sakınca bulunmamaktadır.

Ancak faaliyet esnasında derelerin tahrip edilmemesi, moloz, çöp ve hafriyat atığı atılmaması, doğanın korunması hususunda gerekli önlemlerin alınması gerekmektedir.

Bilgilerinize arz ederim.

Hasan Hüseyin ÖLÇER
Bölge Müdürü V.

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Do rulama Kodu: 68B0B743-8C46-4DD8-8EE8-A46A028F18D1

Do rulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Havzan Mah. Meram Eski yol Cad. No:1 Meram/KONYA

Tel: (332) 322 68 72 Faks (332) 321 61 71

KEP: tarimveormanbakanligi@hs01.kep.tr

KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için: Fatih KÖYLÜO LU

Biyolog

Telefon No: (312) 207 55 76





T.C.
AKSARAY VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-81257636-220.02-4133442

20.07.2022

Konu : ÇED Ek-2 Proje Tanıtım Dosyası Kurum
Görüşü

AKSARAY ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ İL MÜDÜRLÜĞÜNE
(Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü)

İlgi : Müdürlüğümüzün (Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü) 19.07.2022 tarihli ve E.4123531 sayılı yazısı.

İlgide kayıtlı yazınız ile GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş. tarafından yapılması planlanan, İlimiz, Güzelyurt ilçesi, Güzelyurt Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyası, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden İl Müdürlüğümüze sunulmuştur denilerek Proje Tanıtım Dosyası ile ilgili kurum görüşümüzün bildirilmesi talep edilmektedir.

Konuyla ilgili yapılan değerlendirme sonucunda, Proje Tanıtım Dosyasında yer alan taşınmazların tamamı Aksaray İli Özel Çevre Koruma Bölgesi, Tabiat Varlığı ve Doğal Sit Alanı Sınırları dışında kalmakta olup; Kırşehir-Nevşehir-Niğde-Aksaray Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planında "Tarımsal Nitelikli Arazi" olarak tanımlı alan üzerine isabet ettiği,

Plan Hükümlerinde "6.1.2.15 İl Özel İdaresince, jeotermal kaynakların bulunduğu alanlarda rastgele kuyu açılması önleneyecek, master planı çerçevesinde uygulama yapılacaktır.

6.1.2.16 Jeotermal enerji kaynaklarının enerji, ısınma, seracılık, sağlık turizmi, CO² üretimi gibi alanlarda, çevreyle uyumlu ve sürdürülebilir entegre işletme yönetimi ilkesi çerçevesinde kullanılması amacıyla, jeotermal su potansiyeli, efektif kullanım alanları ve yerleri ile alternatif enerjiyle karşılaştırmalı maliyet-yarar hesapları ve su kaynaklarına etkilerini de içeren master planı hazırlanacaktır.

6.1.2.18 İllerin jeotermal bölgelerinde, sıcak suyun seralarda kullanımı için hazırlanan projeler öncelikli olarak uygulanacaktır." hükümlerinin yer aldığı hususları tespit edilmiştir.

İlgili kurumlardan görüş alınması ve Plan Hükümlerinde '8.3 Tarım Alanları' ile '6.1.2.15, 6.1.2.16, 6.1.2.18' hükümlerine uygun olarak işlem tesis edilmesi hususlarında;

Bilgilerinizi ve gereğini rica ederim.

Mustafa DURUK
Vali a.
Vali Yardımcısı

Ek: Teknik Rapor (1 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 6CDA4D42-42DD-40F2-8592-65CD92BB80D0

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: Stiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

Bilgi için: Mehmet

ALTUNTA

Mühendis

Telefon No: (382) 217 51 00-

3311



454357147 - 454357147 - 454357147 - 454357147 - 454357147

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 6CDA4D42-42DD-40F2-8592-65CD92BB80D0

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Adres: stiklal Mah. Alparslan Türkeş Blv. No:126 Merkez/AKSARAY

Tel: 0(382) 2175100 Faks: 0(382) 2175105

e-mail: Aksaray@csb.gov.tr web: <http://www.csb.gov.tr/iller/aksaray/>

Bilgi için: Mehmet

ALTUNTA

Mühendis

Telefon No:(382) 217 51 00-

3311



TEKNİK RAPOR

İlgi: Müdürlüğümüzün (Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü) 19.07.2022 tarihli ve E.4123531 sayılı yazısı.

İlgide kayıtlı yazı ile GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi Ve Ticaret A.Ş. tarafından yapılması planlanan, İlimiz, Güzelyurt ilçesi, Güzelyurt Köyü ve Bozcayurt Köylerinde Jeotermal Enerji Arama Sondajları Projesi ile ilgili olarak Çevresel Etki Değerlendirmesi (ÇED) Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyası, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden İl Müdürlüğümüze sunulmuştur denilerek Proje Tanıtım Dosyası ile ilgili kurum görüşümüzün bildirilmesi talep edilmektedir.

Konuyla ilgili yapılan değerlendirme sonucunda, Proje Tanıtım Dosyasında yer alan taşınmazların tamamı Aksaray İli Özel Çevre Koruma Bölgesi, Tabiat Varlığı ve Doğal Sit Alanı Sınırları dışında kalmakta olup; Kırşehir-Nevşehir-Niğde-Aksaray Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planında "Tarımsal Nitelikli Arazi" olarak tanımlı alan üzerine isabet ettiği tespit edilmiştir. 19.07.2022


Mehmet ALTUNTAŞ
Harita Mühendisi

1/100.000 Ölçekli Çevre Düzeni Planı Örneği:





T.C.
TARIM VE ORMAN BAKANLIĞI
Su Yönetimi Genel Müdürlüğü



Sayı : E-41593368-250-7679383
Konu : ÇED Ek-2 PTD (Jeotermal Enerji Arama
Sondajları) Kurum Görüşü

AKSARAY VALİLİĞİNE
(Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü)

İlgi : 21.10.2022 tarihli ve E-13955465-220.02-4835572 sayılı yazınız.

İlgi yazıda, Aksaray İli Güzelyurt İlçesi Akyamaç Mahallesi ve Bozcayurt Köyü'nde GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan 39554 Proje ID başvuru numaralı "Jeotermal Enerji Arama Sondajları" Proje Tanıtım Dosyası hakkında Genel Müdürlüğümüz görüşü talep edilmektedir.

Söz konusu Proje Tanıtım Dosyası Genel Müdürlüğümüz görev, yetki ve sorumlulukları çerçevesinde incelenmiş olup, görüşlerimiz ekte yer almaktadır.

Bilgilerinizi ve gereğini rica ederim.

Afire SEVER
Bakan a.
Genel Müdür

Ek: SYGM GÖRÜŞ (2 Sayfa)

28163

Çevre, Şehircilik ve İklim Değişikliği Müd

14 KASIM 2022

Vali a.

e-İçişleri üzerinden
havale onayı yapılmıştır.

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: 28F8274A-2BC6-499B-A7AF-F0096B55896F

Doğrulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Beştepe Mah. Alparslan Türkeş Cad. No:71 Yenimahalle/ANKARA
Telefon: (0312) 207 50 00
KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için: Nuray AYTEN
Tarım ve Orman Uzmanı





T.C.
TARIM VE ORMAN BAKANLIĞI
Su Yönetimi Genel Müdürlüğü



Su Yönetimi Genel Müdürlüğünün " Jeotermal Enerji Arama Sondajları Projesi (ÇED Ek-2 Proje Tanıtım Dosyası Kurum Görüşü)" konulu yazısının ekidir.

Proje: Jeotermal Enerji Arama Sondajları Projesi

Aksaray Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğünün 21.10.2022 tarihli ve 4835572 sayılı yazı ile iletilen bilgi ve belgeler incelenerek oluşturulan görüşler aşağıda yer almaktadır.

1. Proje alanı Aksaray iline içme-kullanma suyu temin edilen **Mamasın Baraj Gölü Havzası Özel Hükümleri Uzak Mesafeli Koruma Alanı** (*Mamasın Baraj Gölü Havzası rezervuar yakın mesafe koruma alanı sınırı olan 2000 metreden itibaren yatayda su toplama havzasının sınırına kadar olan alan*) içerisinde kaldığı tespit edilmiştir. Ayrıca, Bakanlığımızca hazırlanan ve Su Yönetimi Koordinasyon Kurulu tarafından 28.05.2019 tarihinde onaylanan (Genel Müdürlüğümüz internet sitesinde de yer alan) "**Konya Kapalı Havzası Nehir Havza Yönetim Planı**" kapsamında ise TR16YAS02005 numaralı Yeraltı Suyu Kütlesi üzerinde kalmaktadır.
2. Bu çerçevede yapılması planlanan sondaj faaliyetine ilişkin olarak;
 - Mamasın Baraj Gölü Özel Hükümlerinde jeotermal maksatlı sondaj faaliyetlerine ilişkin kısıtlayıcı bir hüküm bulunmamakla birlikte, jeotermal suların kontrolsüz bir şekilde yer altına ve yer üstüne deşarj edilmesi havzanın su kalitesini olumsuz etkileyebileceğinden gerekli çevresel altyapı tedbirlerinin alınması büyük önem arz etmektedir. Bu minvalde sondaj faaliyetleri sırasında gerekli çevresel altyapı ve kirlilik önleme tedbirlerinin alınması, kontrolsüz bir şekilde hafriyat artışı, moloz, inşaat malzemesi dökülmemesi, jeotermal sularla ilgili deşarj standartlarına uyulması,
 - Mamasın Baraj Gölü Havzası Özel Hükümlerine ve Konya Kapalı Havzası Nehir Havza Yönetim Planı Tedbirler Programında belirtilen tespit, öneri ve önlemler programına uyulacağına taahhüt edilmesi ve ÇED Raporunda bu hususa ilişkin alınacak önlemlerin detaylı olarak belirtilmesi,
 - Havzadaki yerüstü ve yeraltı sularının korunması ve kirlenmesinin önlenmesi maksadıyla çıkarılacak jeotermal suların kapalı sistemde izole borularla jeotermal suyun temin edildiği formasyona, re-enjeksiyon kuyularına ya da YAS tablasını etkilemeyecek şekilde daha alttaki formasyonlara yapılması, yer üstüne ve yer altına kesinlikle deşarj edilmemesine ilişkin alınacak tedbirlerin detaylı olarak belirtilmesi,
 - Çevresel açıdan olası etkilerin olup olmadığının gözlenmesi için jeotermal sondaj kuyu veya kuyularının etrafında gözlem kuyularının açılarak yeraltı sularının kalitesinin izlenmesinin işletme sahibi tarafından gerçekleştirileceğinin taahhüt edilmesi,
 - Proje alanı ve çevresinde bulunan yeraltı ve yer üstü su kaynaklarının, akar ve kuru derelerin haritada gösterilmesi, bu su kütlelerinin kullanım amaçlarının raporda belirtilmesi, faaliyetinin yeraltı ve yer üstü su kaynaklarına olabilecek tüm olumsuz etkilerin tespit edilebilmesi ve gerekli tedbirlerin önceden alınabilmesini teminen proje alanına ilişkin detaylı hidrolojik ve hidrojeolojik raporun hazırlanması ve 1/25000 Ölçekli Jeoloji, Hidroloji ve Hidrojeoloji haritasının eklenmesi,
 - Ayrıca, test sularının kuyuya reenjekte edilmesi mümkün olmaması durumunda uygun arıtma tesislerine iletilmek suretiyle bertarafa gönderilecektir ifadesinde jeotermal suyun arıtımının gerçekleştirilebilmesi için belirtilen atıksu arıtma tesisine ilişkin detaylı bilgilere yer verilmesi gerekmektedir.
3. Faaliyet esnasında 07.04.2012 tarih ve 28257 sayılı Resmî Gazete 'de yayımlanarak yürürlüğe giren "Yeraltı Sularının Kirlenmeye ve Bozulmaya Karşı Korunması Hakkında Yönetmelik" (Değişik 22.05.2015 tarih ve 29363 sayılı RG.)'de belirtilen hükümlere uyulması, yeraltı sularına sondaj kaynaklı bir zarar verilmemesi ve bu Yönetmeliğin ilgili maddelerine uygun alınacak tedbirlere raporda yer verilmesi gerekmektedir. Bunun yanı sıra, raporun tüm ilgili kısımlarında, 07.04.2012 tarih ve 28257 sayılı Resmî Gazete 'de yayımlanarak yürürlüğe giren "Yeraltı Sularının Kirlenmeye ve Bozulmaya Karşı Korunması Hakkında Yönetmelik" (Değişik



T.C.
TARIM VE ORMAN BAKANLIĐI
Su Yönetimi Genel Müdürlüğü



22.05.2015 tarih ve 29363 sayılı RG.)'de yer alan tüm hususlara uyulacağına dair taahhütlerin yapılması ve faaliyetin yeraltı sularına olası etkilerine ilişkin olarak Devlet Su İşleri Genel Müdürlüğü'nün ve/veya ilgili Bölge Müdürlüğü'nün görüşlerinin de alınması gerekli görülmektedir.

4. Bahse konu bölgede yapılacak çalışmalarda "Taşkın Yönetim Planlarının Hazırlanması, Uygulanması ve İzlenmesi Hakkında Yönetmelik" gereği taşkın riskinin göz önünde bulundurulması gerekmektedir.



T.C.
TARIM VE ORMAN BAKANLI ĞI
Devlet Su Ğleri Genel M¼d¼rl¼ Ğ¼
4. B¼lge M¼d¼rl¼ Ğ¼



Sayı : E-93919684-611.02-1881716

24.12.2021

Konu : ÇED (Aksaray G¼zelyurt Yenimahalle ve
Bozcayurt K¼y¼ - Jeotermal Kaynak Arama
Sondajları (AG-1-2-3-4) - Gmk
Yenilenebilir Enerji M¼hendislik İmalat
San. ve Tic. A.Ş.)

AKSARAY ÇEVRE, ŐEHİRCİLİK VE İKLİM DEĞİŐİKLİĐİ İL M¼D¼RL¼Đ¼NE

İlgi : a) Aksaray Çevre, Őehircilik ve İklim DeĐiŐikliĐi İl M¼d¼rl¼Đ¼'n¼n 20.10.2021 tarihli ve
E-13955465-220.02-2021390 sayılı yazısı.
b) 23.08.2021 tarihli ve E-93919684-611.02-1500484 sayılı yazımız.

İlgi yazınızda, Aksaray ili, G¼zelyurt ilçesi, Yeni Mahalle ve Bozcayurt K¼y¼nde Gmk Yenilenebilir Enerji M¼hendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "**Jeotermal Kaynak Arama Sondajları(AG-1-2-3-4)**" projesi ile ilgili olarak hazırlanan Proje Tanıtım Dosyasının incelenmesi ve B¼lge M¼d¼rl¼Đ¼m¼z g¼r¼Ő¼n¼n bildirilmesi istenmektedir.

Konu ile ilgili olarak gerekli inceleme yapılmıŐtır. Daha ¼nce ilgi (b) yazımız ile bahsi geçen Proje Tanıtım Dosyasında tespit edilen eksiklikler ve yapılması gereken d¼zenlemeler belirtilmiŐti. İlgi (b) yazımızda daha ¼nce tespit edilen eksiklikler ve yapılması gereken d¼zenlemeler dikkate alınarak yapılan incelemelerde, s¼z konusu Nihai Proje Tanıtım Dosyasında belirtilen hususların ve taahh¼tlerin yeterli olduĐu kanaatine varılmıŐ olup, s¼z konusu dosyada belirtilen hususlar ve taahh¼tlere riayet edilmesi Őartıyla; ilgili alanda bahsi geçen madencilik faaliyetinin yapılmasında B¼lge M¼d¼rl¼Đ¼m¼z açısından herhangi bir sakınca bulunmamaktadır.

Bilgilerinizi ve gereĐini arz ederim.

Mustafa BALTA
B¼lge M¼d¼r¼ a.
B¼lge M¼d¼r Yardımcısı





T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI
TABİAT VARLIKLARINI KORUMA GENEL MÜDÜRLÜĞÜ

İVEDİ

Sayı : E-37120320-220.02-1838927

28.09.2021

Konu : Ek-2 Proje Tanıtım Dosyası Kurum Görüşü

AKSARAY VALİLİĞİNE
(Çevre ve Şehircilik İl Müdürlüğü)

İlgi : a) Aksaray Çevre ve Şehircilik İl Müdürlüğü (Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü)'nün 24.09.2021 tarihli ve E-13955465-220.02-1811228 sayılı yazısı.
b) Bakanlığımızın (Tabiat Varlıklarını Koruma Genel Müdürlüğü) 28.06.2021 tarihli ve 1203958 sayılı yazısı.

İlgi (a) yazı ile, Aksaray İli, Güzelyurt İlçesi, Yeni Mahalle ve Bozcayurt Köyünde Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Kaynak Arama Sondajları (AG-1-2-3-4)" projesi ile ilgili olarak ÇED Yönetmeliği gereğince hazırlanan Proje Tanıtım Dosyasının, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden İl Müdürlüğüne sunulduğu belirtilerek, söz konusu talep ile ilgili Bakanlığımız (Tabiat Varlıklarını Koruma Genel Müdürlüğü) görüşünün tarafınıza iletilmesi istenmektedir.

İlgi (b) yazımız ile, İhlara Özel Çevre Koruma Bölgesi sınır revizesine ilişkin 25.06.2021 tarih ve 31522 sayılı Resmi Gazete'de yayımlanan 24.06.2021 tarih 4139 sayılı Cumhurbaşkanlığı Kararı gönderilmişti.

Söz konusu projede açılması planlanan sondaj kuyuları, 24.06.2021 tarih 4139 sayılı Cumhurbaşkanlığı Kararı ile sınırları revize edilen İhlara Özel Çevre Koruma Bölgesi içinde kalmamakta olup, Bakanlığımızca (Tabiat Varlıklarını Koruma Genel Müdürlüğü) eklenecek bir husus bulunmamaktadır.

Gereğini ve bilgilerinizi rica ederim.

Hikmet HASPOLATLI
Bakan a.
Genel Müdür Yardımcısı

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: B1617C8D-5ECC-4B73-9F67-AC970AD26916

Doğrulama Adresi: <https://www.turkiye.gov.tr>

Bilgi için: Tülay ÇALI KAN
Mühendis
Telefon No: (312) 586 43 50





T.C.
AKSARAY VALİLİĞİ
İl Tarım ve Orman Müdürlüğü

GIDA! KÖRÜ
SOFRANA SAHİP ÇIK

Sayı : E-69350487-230.99-2285240

10.08.2021

Konu : ÇED Kurum Görüşü

AKSARAY ÇEVRE VE ŞEHİRCİLİK İL MÜDÜRLÜĞÜNE
(Çed ve Çevre İzinlerinden Sorumlu Şube Müdürlüğü)

İlgi : 04.08.2021 tarihli ve E-13955465-220.02-1443486 sayılı yazınız.

İlgi başvuru ile İlimiz Güzelyurt İlçesi, Yeni Mahalle ve Bozcayurt Köyünde Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan "Jeotermal Kaynak Arama Sondajları (AG-1-2-3-4)" projesi ile ilgili olarak ÇED Yönetmeliği gereğince hazırlanan Proje Tanıtım ile Dosyası, Çevrimiçi ÇED Süreci Yönetim Sistemi üzerinden kurum görüşü istenilmektedir.

İlgili projede bahsi geçen arazi vasfı tescil harici alanlardan ise tescil edilip vasfının belirlenmesi, arsa vasıflı araziler hariç olmak üzere; diğer vasıflı araziler (tarla, mera, hamtoprak, dikili tarım arazisi vb.) için 5403 Sayılı Toprak Koruma ve Arazi Kullanımı Kanunu ile 4342 Sayılı Mera Kanunu kapsamında kurumumuzdan izin alınması gerekmektedir.

Bilgi ve gereğini arz ederim.

Bülent SAKLAV
İl Müdürü

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: C9AE45DD-B031-40C0-9147-5A7B07F48BB9

Doğrulama Adresi: <https://www.turkiye.gov.tr/tarim-ebys>

Kurtulu Mah. 3846 Sk. No:1 68100 Aksaray
Tel: (0382) 213 15 85 Faks: (0382) 213 29 07

E-Posta: aksaray@tarim.gov.tr Kep: tarimveormanbakanligi@hs01.kep.tr





T.C.
ORMAN GENEL MÜDÜRLÜĞÜ
Konya Orman Bölge Müdürlüğü

Sayı : E-54418822-611.02-2067707

06.09.2021

Konu : ÇED Kurum Görüşü (GMK Enr Müh.)

AKSARAY VALİLİĞİNE
(Çevre ve Şehircilik İl Müdürlüğü)

Aksaray İli, Güzelyurt İlçesi, Yeni Mahalle ve Bozcayurt Köyü sınırları dahilinde GMK Yenilebilir Enerji Müh. İmalat San. ve Tic. A.Ş. tarafından yapılması planlanan " Jeotermal Kaynak Arama Sondajları " projesi ile ilgili Bölge Müdürlüğümüzce düzenlenen ve kurumumuz görüşünün de belirtildiği ıslak imzalı bir takım ÇED İnceleme Değerlendirme Formu ve ekleri yazımız ekinde gönderilmiştir.

Yazımız ekinde gönderilen ÇED İnceleme ve Değerlendirme Formundan da anlaşılacağı üzere, söz konusu projenin uygulanmasında 6831 sayılı Orman Kanunu kapsamında yapılan inceleme ve Değerlendirme sonucu projenin uygulanmasında Ormanlar ve Ormancılık çalışmaları üzerinde olumsuz etkileri bulunmamaktadır.

Bilgilerinize arz ederim.

Cafer BAL
Bölge Müdürü

Ek:

- 1 - 1 Takım Çed İnc. Değr. Formu
- 2 - 1 Tkm Çed İnc. Değr. Formu (7 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Doğrulama Kodu: B4D2DC2C-E3CE-45DC-B2D8-4A06958E814D

Doğrulama Adresi: <https://www.turkiye.gov.tr/ogm-ebys>

Aksinne Mahallesi gazhane Sokak NO:31 42200
Telefon No : (332) 353 69 02 Belgegeçer No : (332) 352 32 84
e-posta: internet adresi:

Bilgi için:Hikmet
BAŞBOZKURT
Vasıflı İşçi



ÇED İNCELEME VE DEĞERLENDİRME FORMU

Rapor Tarihi 20.08.2021

İL Aksaray

İLÇESİ Güzelyurt

KÖYÜ Yeni Mahalle ve Bozcayurt Köyü

ORMAN BÖLGE MÜDÜRLÜĞÜ : Konya

ORMAN İŞLETME MÜDÜRLÜĞÜ : Aksaray

ORMAN İŞLETME ŞEFLİĞİ : Aksaray

Ait Olduğu Pafta :

- 1- Müracaat Sahibinin ;
a) Adı Soyadı / Kurum Adı Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş.
b) Adresi Adalet Mah.Manas Blv.Folkart Towers A-Kule 47/B Daire:2601 Bayraklı/İZMİR
c) Vergi No/TC Kimlik No
d) Tesisin Adı ve Niteliği Jeotermal Kaynak Arama Sondajları
- 2- Bölme Numaraları 326, 341, 342, 474

- 3- Meşçerenin;
a) İşletme Şekli
b) Orman Fonksiyonu
c) Meşçere Tipleri ve ağaç cinsleri: Bm, Z, Z-1

- 4- 1/25.000 Ölçekli Meşçere Haritası Üzerinde ÇED Raporuna Konu Sahanın Sınırları (Koordinatlar);

AG-1 ÇED ALANI			AG-2 ÇED ALANI		
Nokta	Y	X	Nokta	Y	X
1	618991.810	4240110.746	1	618198.920	4239595.876
2	619061.810	4240110.746	2	618268.920	4239595.876
3	619061.810	4240182.174	3	618268.920	4239667.304
4	618991.810	4240182.174	4	618198.920	4239667.304

AG-3 ÇED ALANI			AG-4 ÇED ALANI		
Nokta	Y	X	Nokta	Y	X
1	617368.270	4240230.876	1	619100.050	4241957.176
2	617438.270	4240230.876	2	619170.050	4241957.176
3	617438.270	4240302.304	3	619170.050	4242028.604
4	617368.270	4240302.304	4	619100.050	4242028.604

Alan 20,000.00 m²

- 5- Orman Kadastro Haritasında ÇED Raporuna konu sahanın sınırları Orman Kadastro Durumu Yapılmıştır
- 6- Talep Edilen Sahanın ;
a) Orman Sayılan Alan (Ha/m²) 5,000.00 m²
c) Orman Sayılmayan Alanı (m²) 15,000.00 m²
e) Toplan Alanı (m²) 20,000.00 m²
Projenin ormanlık alana isabet eden kısmındaki faaliyetin ne şekilde yapılacağına açıklama getirilmesi (Maden cinsi, açık işletme, kapalı işletme şantiye yeri, tesis vb. hususların belirtilmesi), izne konu edilebilecek alan miktarı (Ha/m²) Sondaj Alanı: 0.5 Ha.
- 7- Yapılacak bütün tesislerin (pasa sahası, şantiye, türbin alanları, şalt sahası vb) kapalılık olmayan, boşluklu, açık alanlarda planlanıp planlanmadığı, orman alanı dışında alternatif sahalarda bulunup bulunmadığı Bulunmamaktadır.
- 8- Proje ile ilgili mevcut ağaçlandırma tesis yolları, yangın emniyet yolu ve şeritleri ile kodlu orman yollarının kullanılıp kullanılmayacağı Kullanılmayacaktır.
- 9- ÇED projesine konu edilecek alan üzerine kurulacak yapı inşaat alanı miktarı (m²), (ÇED raporuna konu proje için yol, Enerji, Su temini gibi altyapı çalışmalarının planlanıp planlanmadığı) Planlanmıştır.
- 10- Talep sahasına başka müracaatın veya izin verilen alanın bulunup bulunmadığı Bulunmamaktadır.
- 11- Talep edilen sahanın sahipli ormanlar ile idaremize tahsisli alanlar içinde kalıp kalmadığı Kalmamaktadır.
- 12- Talep sahasının 6831 sayılı Orman Kanun'unun 18 inci maddesine göre yangın görmüş orman alanı, Gençleştirilmeye ayrılmış veya ağaçlandırılan sahalarda kalıp kalmadığı Kalmamaktadır.
- 13- Talep Sahasının; Muhafaza Ormanları, Gen Koruma Alanları, Bilimsel Çalışmalar için Ayrılmış Araştırma Ormanı, Araştırma İstasyonu, Araştırma Proje Deneme Sahaları, devam eden araştırma projesi çalışma alanı, araştırma ve eğitim merkezi, Şehir Ormanları, Mesire yerleri, Kalmamaktadır.
- 14- Endemik ve Korunması Gereken Nadir Ekosistem Alanları, Tohum Meşçeresi, Milli Park, Av Yaban Hayatı, Av Üretme Sahası, Turizm Sahası, Özel Çevre Koruma Bölgesi, Askeri Yasak Bölgesi ve SİT alanı içerisinde veya etki mesafelerinde kalıp kalmadığı
- 15- Ormanlık çalışmaları açısından sakınca bulunup bulunmadığı; Bulunmamaktadır.
- 16- Orman-Halk İlişkileri açısından değerlendirilmesi, sosyal problem teşkil edip etmeyeceği Sosyal problem yoktur.
- 17- Orman Yangınları Açısından Hassasiyet Derecesi ve alınması gereken tedbirler Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından gerekli tedbirler alınacaktır.

M. S. 9

- 18- Proje sahasında amenajman plan verilerine göre meşcere tiplerine isabet eden ağaç adedinin ve etasının ne kadar olduğu Yoktur.
- 19- Proje sahasının yerleşim yerlerine, otoyollara, denizlere ve göllere olan mesafesi ve öngörünümünde kalıp kalmadığı, görüntü kirliliğine neden olup olmayacağı Kalmamaktadır
- 20- Faaliyet Sahasında ve 1 Km Yakın Çevresinde ÇED Olumlu/Olumsuz Belgesi Verilen Faaliyet Bulunup Bulunmadığı (Varsa Cinsi, Firması ve Faaliyet Sahası) Yoktur

SONUC :

KONYA ORMAN BÖLGE MÜDÜRLÜĞÜ AKSARAY ORMAN İŞLETME MÜDÜRLÜĞÜ AKSARAY/ AKSARAY OİŞ Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından yapılması planlanan Jeotermal Kaynak Arama Sondajları izin talebi, ÇED Yönetmeliği ve 6831 Sayılı Orman Kanunu kapsamında yapılan inceleme ve değerlendirme sonucunda söz konusu projenin uygulanmasında, orman olan kısım için izin alınması, tesislerden çıkacak toza ve orman yangınlarına karşı önlem alınması kaydıyla ormanlar ve ormancılık çalışmaları üzerinde olumsuz etkileri bulunmamaktadır.

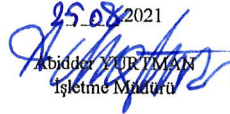
Bu inceleme ve değerlendirme formu tarafımızdan tanzim ve imza edilmiştir. 28/08/2021


BAŞKAN
Hasan ŞAYDAM
Orman İşl. Mtd. Yrd.


ÜYE
Musa BOZKURT
Orman İşl. Şefi

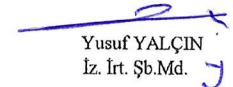

ÜYE
Oğuzhan İŞİKÇİ
Orm. İşl. Şefi

Yukarıda ayrıntılı olarak açıklandığı üzere, belirtilen Jeotermal Kaynak Arama Sondajları izin talebinin değerlendirilmeye alınmasında ÇED yönetmeliği ve 6831 Sayılı orman kanunu kapsamında yapılan inceleme ve değerlendirme sonucu söz konusu proje sahasının ormanlar ve ormancılık çalışmaları üzerinde olumsuz etkisi bulunmadığı görüşünü arz ederim.

25/08/2021

Abdülkerem YILMAZ
İşletme Müdürü

ÇED Yönetmeliği ve 6831 sayılı Orman Kanunu kapsamında yapılan değerlendirme sonucunda söz konusu faaliyetin ormanlar ve ormancılık çalışmalarına olumsuz etkileri olacak . / olumsuz etkisi bulunmamaktadır.

TETKİK EDİLDİ
27/08/2021


Yusuf YALÇIN
İz. İrt. Şb.Md.

UYGUNDUR

31/08/2021

Abdullah DUMAN
Bölge Md. Yrd.

Tastik Olunur
2021

Cafer BAL
Bölge Müdürü

DEĞERLENDİRME FORMU

(2014/1 sayılı Genelge Kapsamında değerlendirilen tüm talepler için)

- 1- İli Aksaray
- 2- İlçesi Güzelyurt
- 3- Köyü/Mevkii Yeni Mahalle ve Bozcayurt Köyü
- 4- Talep Sahibi Gmk Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş.
- 5- Talep Konusu Jeotermal Kaynak Arama Sondajları
- 6- Madenin Cinsi :
- 7- 03.03.2014 tarihli genelgenin 2.3.4 : Kalmamaktadır
madde kapsamında kalıp kalmadığı
- 7.a- Kalıyorsa (DKMP GM Bilimsel :
Rapor yada uygun görüş var mı?)
- 7.b- Kalıyorsa (DKMP GM görüşü : Görüşü yoktur
Maden İzni Taleplerinde
- 8- 03.03.2014 tarihli genelgenin 5. :
madde kapsamında kalıp kalmadığı
- 8.a- Hangi alt madde de kaldığı :
Kalıyorsa(02.06.2017 tarih ve 01
- 8.a.1- Nolu Bakanlık Olur'unun hangi :
istisnai maddesinde kaldığı)
02.06.2017 Tarih ve 01 Nolu
Bakanlık Olur'unun 2. istisna
- 8.a.1.1 maddesinde kalması durumunda, :
ruhsatta verilen ilk izin Olur tarihi
03.03.2014 ten sonra olanlar için,
Bölge Müdürlüğüne müracaat tarihi
- 8.b- İlgili kurum görüşü uygun mu (DSİ :
GM/ DKMP GM)
Enerji İzni Taleplerinde
03.03.2014 tarihli genelgenin 5.
- 9.a- maddesinin (a) fıkrasında kalıp :
kalmadığı
RES ve RES ölçüm direkleri izin
sahiplerinde 03.03.2014 tarihli
- 9.b- genelgenin 5. maddesinin (b) :
fıkrasında kalıp kalmadığı

HEYET GÖRÜŞÜ :

2014/1 sayılı Genelge ve genelgenin uygulaması ile ilgili 08.05.2018 tarih ve 01 Nolu Bakanlık Olur'u kapsamında yukarıda belirtilen talebin değerlendirmeye alınmasında sakınca vardır / yoktur.

BASKAN
Hasan SAYDAM
Orman İşl. Müd. Yrd.

HEYET
ÜYE
Musa BOZKURT
Orman İşl. Şefi

27.08/2021
ÜYE
Oğuzhan İYİKÇİ
Orm. İşl. Şefi

UYGUNDUR.
27.08/2021
Abdullah YURTMAN

2014/1 sayılı Genelge ve genelgenin uygulaması ile ilgili 08.05.2018 tarih ve 01 Nolu Bakanlık Olur'u kapsamında yukarıda belirtilen talebin değerlendirilmeye alınmasında sakınca vardır / yoktur.

Uygun görüşle arz ederim.

27.08/2021

Abdullah DUMAN
Bölge Müdür Yrd.

ONAY

27.08/2021

Cafer BAL
Bölge Müdürü

27.08/2021
Yusuf YALÇIN
İzin ve İrtifak Şb. Mg.

AKSARAY ORMAN İŞLETME ŞEFLİĞİ GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SAN. ve
TİC. A.Ş. TARAFINDAN AKSARAY İLİ, GÜZELYURT İLÇESİ YENİ MAHALLE ve BOZCAYURT KÖYÜ
SINIRLARI İÇERİSİNDE YAPILMASI PLANLANAN JEOTERMAL KAYNAK ARAMA SONDAJLARI ÇED
ALANINI GÖSTERİR KROKİDİR



ÖZEL İŞARETLER:

	ÇED Talep Edilen Alan
	Orman Sayılan Alan
	Orman Sayılmayan Alan


Musa BOZKURT
Aksaray Orman İşletme Şefi

AKSARAY ORMAN İŞLETME ŞEFLİĞİ GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SAN. ve
TİC. A.Ş. TARAFINDAN AKSARAY İLİ, GÜZELYURT İLÇESİ YENİ MAHALLE ve BOZCAYURT KÖYÜ
SINIRLARI İÇERİSİNDE YAPILMASI PLANLANAN JEOTERMAL KAYNAK ARAMA SONDAJLARI ÇED
ALANINI GÖSTERİR ORMAN KADASTRO HARİTASIDIR







K



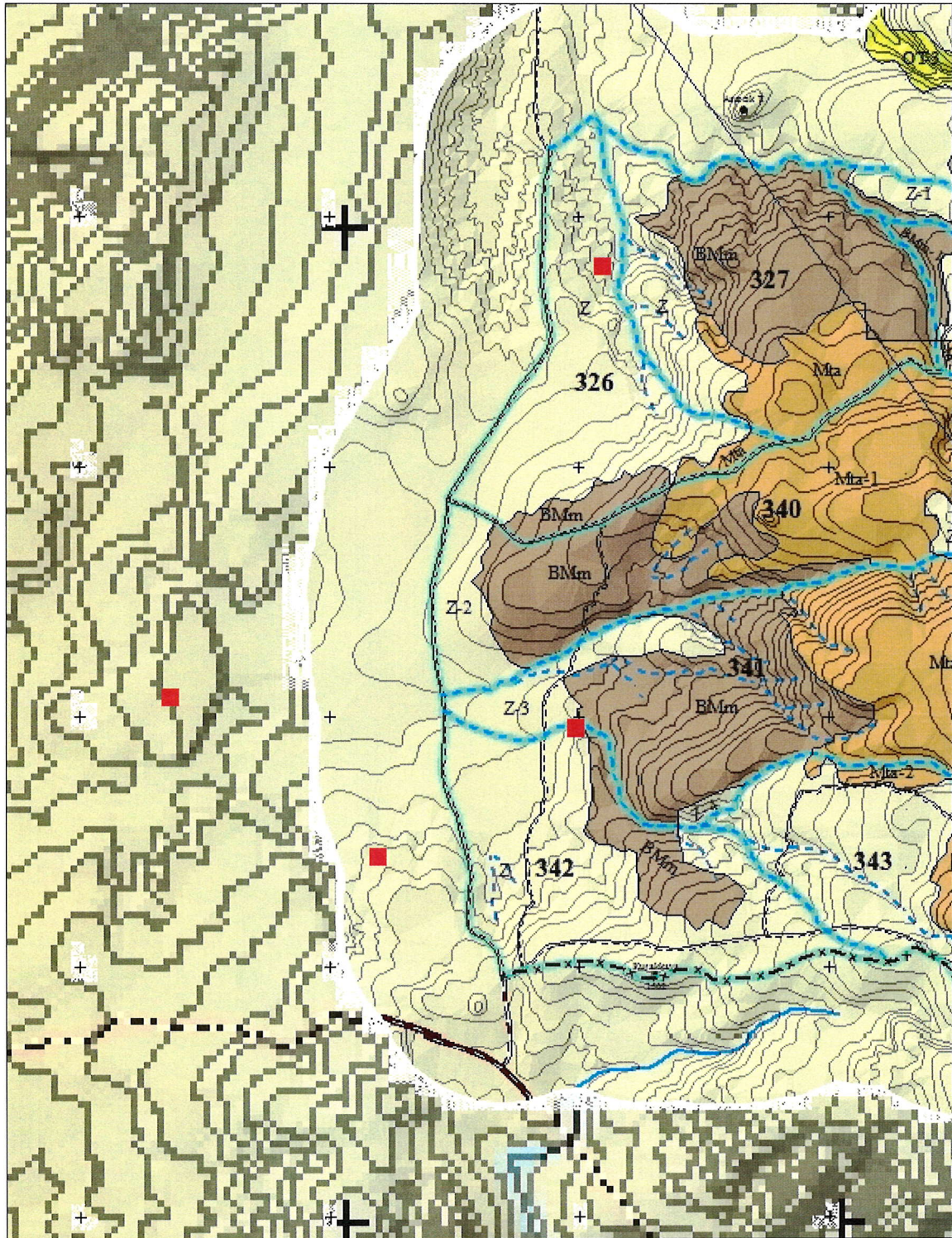
ÖLÇEK
1/25000

ÖZEL İŞARETLER:

	ÇED Talep Edilen Alan
	Orman Sayılan Alan
	Orman Sayılmayan Alan


Musa BOZKURT
Aksaray Orman İşletme Şefi

AKSARAY ORMAN İŞLETME ŞEFLİĞİ GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SAN. ve
TİC. A.Ş. TARAFINDAN AKSARAY İLİ, GÜZELYURT İLÇESİ YENİ MAHALLE ve BOZCAYURT KÖYÜ
SINIRLARI İÇERİSİNDE YAPILMASI PLANLANAN JEOTERMAL KAYNAK ARAMA SONDAJLARI ÇED
ALANINI GÖSTERİR MEŞCERE HARİTASIDIR



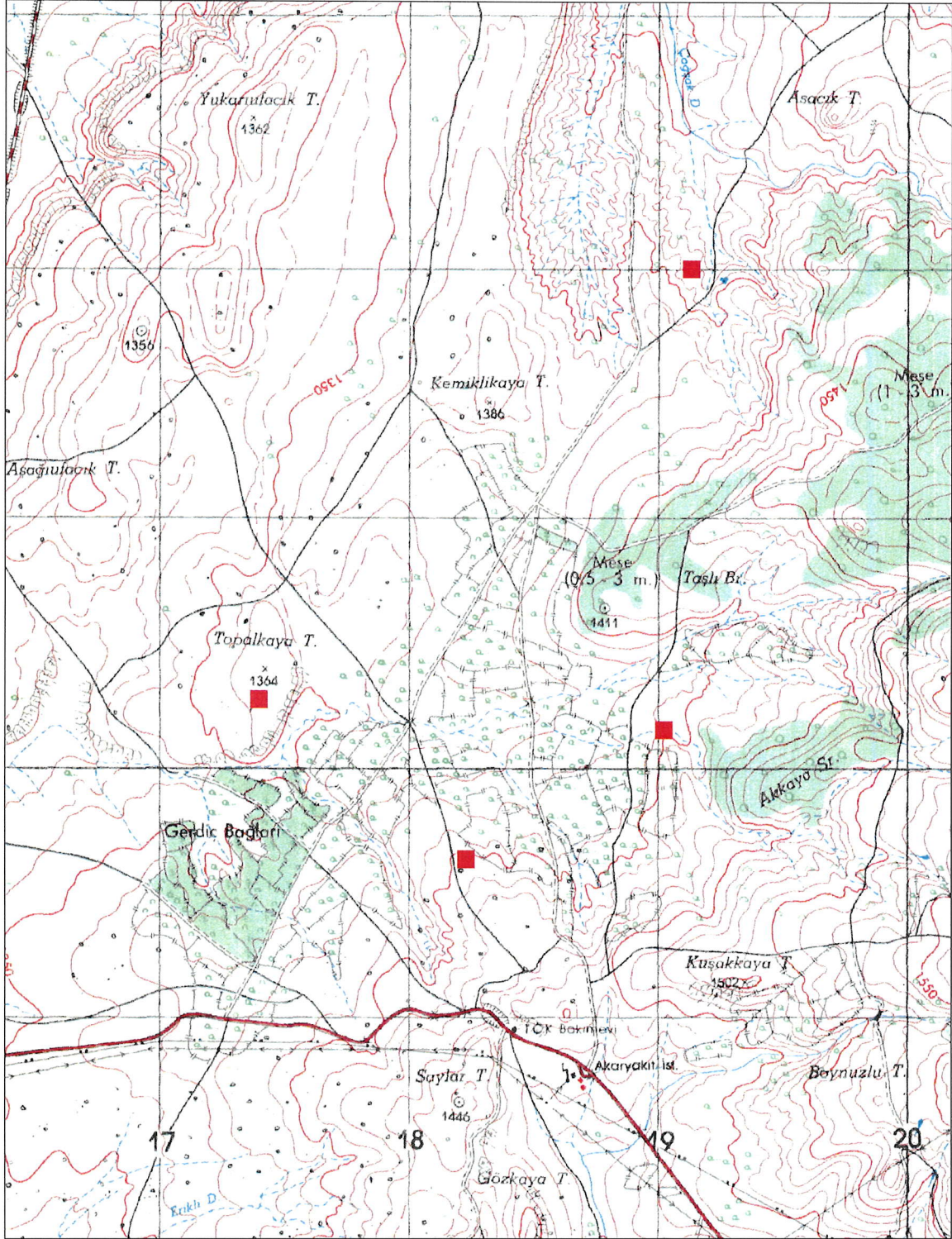
K
↑
ÖLÇEK
1/25000

ÖZEL İŞARETLER:

ÇED Talep Edilen Alan

M. Bozkurt
Musa BOZKURT
Aksaray Orman İşletme Şefi

AKSARAY ORMAN İŞLETME ŞEFLİĞİ GMK YENİLENEBİLİR ENERJİ MÜHENDİSLİK İMALAT SAN. ve
TİC. A.Ş. TARAFINDAN AKSARAY İLİ, GÜZELYURT İLÇESİ YENİ MAHALLE ve BOZCAYURT KÖYÜ
SINIRLARI İÇERİSİNDE YAPILMASI PLANLANAN JEOTERMAL KAYNAK ARAMA SONDAJLARI ÇED
ALANINI GÖSTERİR MEMLEKET HARİTASIDIR




K



ÖLÇEK
1/25000

ÖZEL İŞARETLER:

 ÇED Talep Edilen Alan



Musa BOZKURT
Aksaray Orman İşletme Şefi

MUVAFAKATNAME

Aksaray ili Güzelyurt İlçesi Akyamaç köyüne bağlı harman yeri/mera vasfı 1328 ve 879 parsel numaralı araziler kendi tarlam olmayıp, herhangi bir kuramdan kullanım hakkına dair bir iznim bulunmamaktadır. Bu parseller kendi tapulu tarlalarına komşu olduğu için tarafından tarım amacıyla sehvem sürülmüştür. Bu arazideki tarım faaliyetinden gelirim olumsuz yönde etkileyecek bir maddi kazanç sağlamadığımı, bu araziler üzerinde herhangi bir hak talehim ve maddi beklentim olmadığını beyan ediyorum.

Bu muvafakatnameyi kendi isteğim ile hiçbir zorlama ve baskı altında kalmadan onayladığımı bildiririm.

Muvafakatnameyi Veren:

Adı: Aliye

Soyadı: Özdemir

T.C. Kimlik No: 081 50 00000 00000

Adres: 08100 Güzelyurt İlçesi Akyamaç Köyü

İmza: [İmza]

Yer: [Yer]

Adı: Aliye

Soyadı: Özdemir

T.C. Kimlik No: 081 50 00000 00000

Adres: 08100 Güzelyurt İlçesi Akyamaç Köyü

İmza: [İmza]

Yer: [Yer]



QUESTION

1. A company has a fixed cost of \$100,000 and a variable cost of \$10 per unit. The selling price per unit is \$20. The company has a capacity of 10,000 units. The company is currently producing 8,000 units. Calculate the contribution margin ratio and the break-even point in units and sales dollars.

ANSWER

Contribution Margin Ratio

Break-Even Point in Units

Break-Even Point in Sales Dollars

Contribution Margin per Unit

Fixed Cost

Variable Cost

Selling Price

Capacity

Current Production

Fixed Cost

Variable Cost





GÜZELYURT GEOTHERMAL EXPLORATION DRILLING PROJECT

STAKEHOLDER ENGAGEMENT PLAN

GÜZELYURT GEOTHERMAL ENERJİ A.Ş.

Revision History

Revision	Prepared by	Date	Detail	Position
Rev V00	Can Cihan Yılmaz	25.10.2022	First submission	Environmental Engineer
	Burcu Colpan Uca			Mining Engineer
	Remzi Alper Biler			Geology Engineer
	Celile Ertunç			Sociologist
Rev V01	Remzi Alper Biler	06.12.2022	Due to comments dated 21.11.2022	Geological Engineer
Rev V02	Remzi Alper Biler	13.01.2023	Due to comments dated 21.12.2022	Geology Engineer
Rev V03	GMK+RSMC	25.01.2023	Edited for submission to the WB.	
Rev V04	Remzi Alper Biler	27.03.2023	Due to comments submitted on 24.03.2023	
Rev. V05		30.03.2023	Pre-approval was obtained with WB's edits on one paragraph.	
Rev. V06		09.05.2023	Changes have been made in drilling locations by the Beneficiary (Internal revision of the Beneficiary and not communicated to the RPM Unit).	
Rev. V07		03.07.2023	Drilling locations have been changed by the beneficiary	
Rev. V08		14.08.2023	Revised on 25.07.2023 upon a request for revision	
Rev.09		07.11.2023	Evaluated and edited together with ESMP_v11 of the same date.	
Rev. 10		13.12.2023	Information about the last SM dated 29.11.2023 has been entered	
Rev. 11		14.12.2023	Additional information of the last dated 29.11.2023 has been entered It is the final approved version.	

Prepared for:

This Stakeholder Engagement Plan has been prepared within the framework of the Environmental and Social Management Plan for the Güzelyurt Geothermal Energy Exploration Drilling Project.

Prepared by:

ENPARK Environment & Energy Consultancy
Ümit Mah. 2512 Sk. No:1 İç Kapı No:42
Çankaya/ANKARA/TURKEY

T: +90 312 4720813
www.enpark.com.tr

Güzelyurt Jeotermal Enerji A.Ş.
Kazım Özalp Mahallesi Reşit Galip Caddesi No:97
Çankaya / ANKARA

© 2022 GÜZELYURT JEOTERMAL ENERJİ A.Ş.
All Rights Reserved.

Table of Contents

Table of Contents	i
Tables	i
Maps.....	ii
Annexes.....	Hata! Yer işareti tanımlanmamış.
1.0 Introduction.....	1
2.0 Project Description.....	1
2.1 Project Activities and Schedule.....	1
3.0 Summary of Environmental and Social Impacts of the Project	1
4.0 Purpose of the Stakeholder Engagement Plan.....	1
5.0 Structure of the Stakeholder Engagement Plan.....	2
6.0 Local Legislation and International Standards on Stakeholder Engagement	3
6.1 National Legislation	3
6.2 International Legislation	4
7.0 Past Stakeholder Engagement Activities - Short Summary	5
8.0 Identification and Analysis of Stakeholders.....	10
9.0 Stakeholder Engagement Program	15
10.0 Resources and Responsibilities for Implementing Stakeholder Engagement Activities.....	23
11.0 Complaint Mechanism	25
11.1 Complaint and Request Mechanism for External Stakeholders	25
11.2 Complaint Mechanism for Internal Stakeholders.....	27
12.0 Monitoring and Reporting	29
13.0 Stakeholder Communication during Pandemic.....	31
14.0 Contact Information	32

Tables

Table 1 Draft Work Schedule.....	1
Table 2 Meetings / Interviews with Stakeholders within the Scope of the Project	5
Table 4 Stakeholders of the Project.....	10
Table 5 Stakeholder Engagement Program	16

Table 6 Duties and Responsibilities Related to the Implementation of SEP and Complaint Mechanism	23
Table 7 External Stakeholders Complaint and Request Management Process	25
Table 8 Internal Stakeholders Complaint Management Process	28
Table 8 Monitoring Framework for the Implementation of the Stakeholder Engagement Plan	30
Table 10 Contact Information	32

Maps

Map 1 Satellite Image Showing Settlements.....	1
Map 2 Satellite Image Showing Drilling Locations.....	2

Annexes

Annex 1 Suggestion Complaint Form	1
Annex 2 Complaint Closure Form	2
Annex 3 Stakeholder Engagement Meeting Photos Meeting Minutes - Announcement - Participant Forms - Brochure - Presentation	1

1.0 Introduction

A geothermal exploration project is planned to be conducted by GÜZELYURT JEOTERMAL ENERJİ A.Ş. in the area located in Aksaray Province, Güzelyurt District, with License No. 2019680002. Three geothermal exploration wells will be drilled as part of the planned project. The project falls under the World Bank Geothermal Resource Verification Risk Sharing Mechanism (RSM). This Stakeholder Engagement Plan (SEP) is prepared as a supplementary document to the Environmental Social Management Plan (ESMP) in accordance with RSM directives.

The relevant license has been transferred to Güzelyurt Jeotermal Enerji Anonim Şirketi established by GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. The transfer process of all permits is ongoing. Stakeholder engagement activities carried out in the past of the Project were carried out by GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş.

This SEP describes what kind of stakeholder engagement process and approach that the Beneficiary will follow within the project, what has been done so far and what will be done in the future. The plan consists of a stakeholder analysis, descriptions of planned public engagement activities and a 'Complaint Mechanism' for stakeholders to express their views, suggestions and concerns about the Project.

This Plan is a living document and may change and be updated throughout the project's continuation. It will be reviewed and updated by the Beneficiary.

The SEP is an open document susceptible to changes over time, and it will be regularly monitored, reviewed and updated by the Beneficiary during all phases of Project implementation. Whenever the Beneficiary identifies an Environmental Social (E&S) and/or Occupational Health and Safety (OHS) risk and impact on stakeholders arising from Project works that was not foreseen during the SEP development process, the Beneficiary will review and update this SEP to include appropriate stakeholder engagement mechanisms. The Beneficiary is solely responsible for revising and updating the revised SEP and obtaining the approval of the RPM Unit.

2.0 Project Description

It is planned by the Beneficiary to carry out geothermal exploration drilling in 3 different locations in Aksaray province. There are 3 different parcel areas.

The parcel areas where drilling will be carried out are as follows: Table 1 Gaziemir-1 (Aksaray Güzelyurt district Güzelyurt neighborhood 0 lot- 2863 parcel) drilling area is raw soil qualified treasury land. Gaziemir-5 (Aksaray Güzelyurt district Akyamaç neighborhood 0 lot- 1328 parcel and 0 lot- 879 parcel) drilling area is pasture land with the quality of threshing ground. AG-4 (Aksaray Güzelyurt district Güzelyurt neighborhood 0 lot- 3809 parcel) drilling area is pasture land. There is no existing road on the planned road route with a length of 65 m and a width of 5 m, which will be separated from the existing stabilized road for access to Gaziemir-5, and a new road will be built for connection to the drilling area. This access road will be located in Aksaray Güzelyurt district Akyamaç neighborhood parcel 0/616, which is a pasture qualified as a threshing floor. It has been determined that 12.373,19 m² of the northwestern part of Gaziemir-1 location is informally farmed. To avoid affecting unauthorized users, land use and drilling site plans have been arranged to avoid areas used for agriculture. This way, unauthorized users will not experience physical or economic displacement.

There is currently a wellhead and flow pool at the AG-4 location. The location was constructed within the scope of plans and standards. Previously, there was no information about cultivation activities in the last 4-5 years related to AG-4. It was learned that a person whose main occupation was not farming occupied the land for some years. The relevant person was contacted but stated that he was not interested in the land and did not plow himself in the years before that. For this reason, there was no occupation when the beneficiary entered the field for the structures he built on the land.

Regarding Gaziemir-5 land -----: it was understood that the owner of the parcel entered and occupied the pasture / threshing ground. He was contacted and the situation was explained. The person stated that he did not have any claim and that this land was not important for his livelihood. The beneficiary also informed the person that the land will not be entered until the crops planted for the summer of 2023 are harvested in the summer and stated that they will help him. The person in question also stated in writing in his own handwriting that he did not have any claim in the presence of the headmen.

In this way, there will be no physical or economic displacement of unauthorized users of the parcels.

Table 1 Parcel Areas of Planned Drillings

Drill No	Location	Lot-/Parcel	Parcel Area m ²	Permit Area m ²	Area to be used m ²	Usage %	Parcel Qualification
AG-4	Aksaray Province, Güzelyurt District, Güzelyurt Village	0 / 3809	101.600	19.291,29	6.000	3,11	Forage
AG-4 connection road	Aksaray Province, Güzelyurt District, Güzelyurt Village	0 / 3809	101.600	19.291,29	600=120x5	0,31	Forage
Gaziemir-5	Aksaray Güzelyurt District Akyamaç Neighborhood	0 / 1328, 0 / 879	9.950, 14.400 (24.350)	24.350	18.032	74,05	Threshing Place
Gaziemir-1	Aksaray Province, Güzelyurt District, Güzelyurt Village	0 / 2863	35.500	23.477,81	23.477,81	66	Treasury
Connection Road for Gaziemir-5	Aksaray Güzelyurt District Akyamaç Neighborhood	0 / 616	10.400	1.110,52	1.110,52	10,68	Threshing Place

Gaziemir-1: 0 Lot- 2863 parcel area and 35.500 m². Only 23.477,81 m² of this parcel will be used for drilling. Accordingly, 66% of the whole parcel will be used. Gaziemir-1 drilling will be carried out in this parcel.

The site is land without vegetation belonging to the treasury. Yield is low. It is a fourth class land. It is a stony and rocky land.

AG-4: 0 Lot- 3809 Parcel area and 101.600 m². Only 6.000 m² of this parcel will be used for drilling. Accordingly, 3.11% of the whole parcel will be used. AG-4 drilling will be carried out in this parcel. A 120 m long and 5 m wide road has been established on the same parcel for access to the AG-4 location. With a total area utilization of 600 m², 0.31% of the entire parcel will be utilized. The impact on the parcel will be 3.42% due to the Project.

The area is in pasture quality. According to the land asset map, the yield is low. It is seventh class land. It is a stony and rocky land.

No action has been taken on the land after December 2022. There have been no complaints about the site.

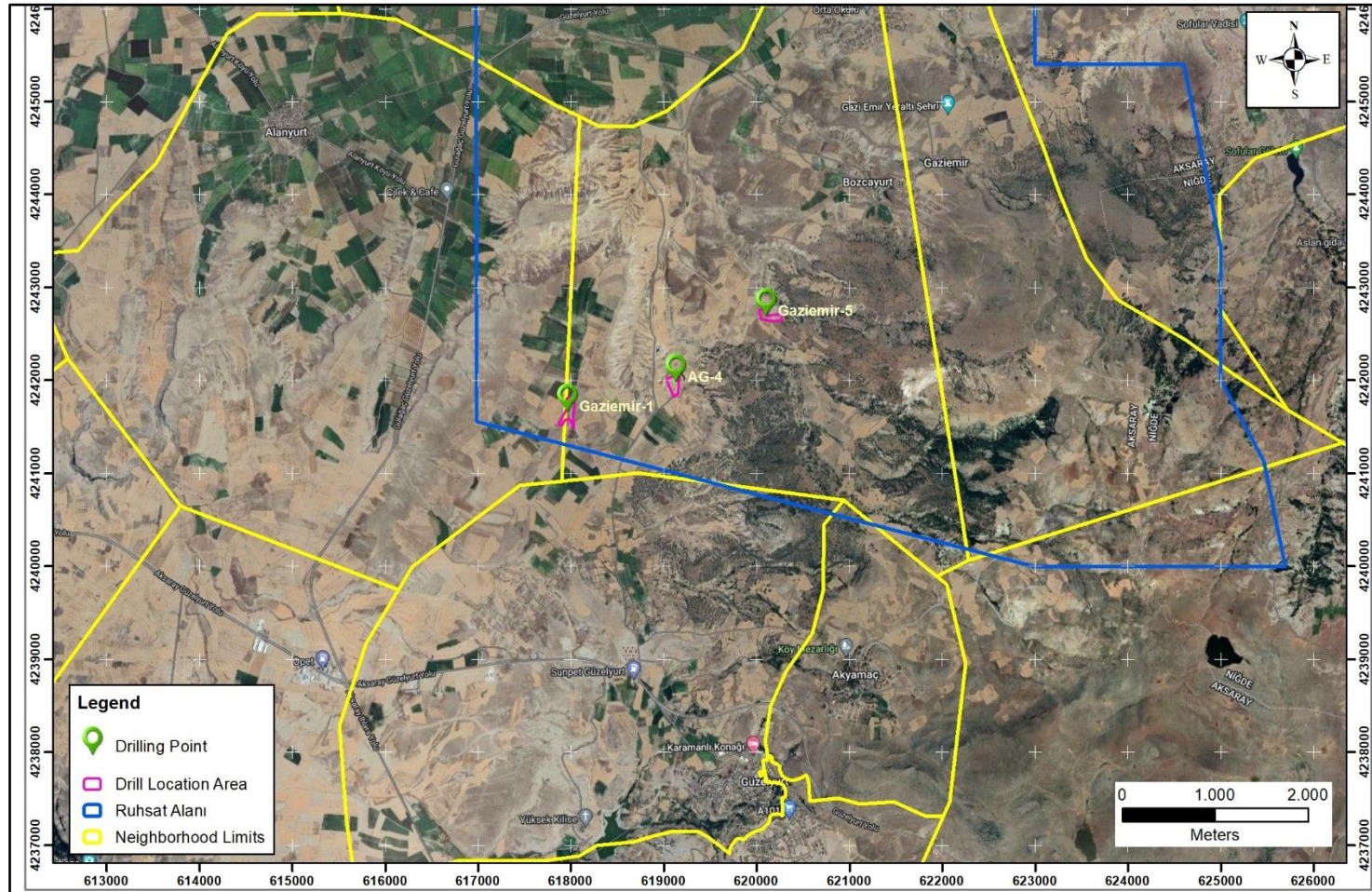
Gaziemir-5: 0 Lot- 1328 Parcel area and 9.950 m², 0 Lot- 879 Parcel area is 14.400 m². 74% of these two parcels, 18.032 m², will be used. Gaziemir-5 drilling will be carried out within the area determined in these parcels. Gaziemir-5 drilling will be carried out within the area determined in these parcels. The field is a threshing floor. According to the land asset map, the yield is low. It is sixth class land. It is a stony land.

The soil properties of the 65 m long and 5 m wide connection road to be built on the parcel 0, Lot-616, which is a threshing floor for access to the Gaziemir-5 drilling area and for which a usage permit has been applied, are partly class IV and partly class VI. The land where the connection road will be built is stony.

After the completion of this project, if the geothermal resources are not suitable for further exploration, the sites will be reinstated by the Beneficiary.

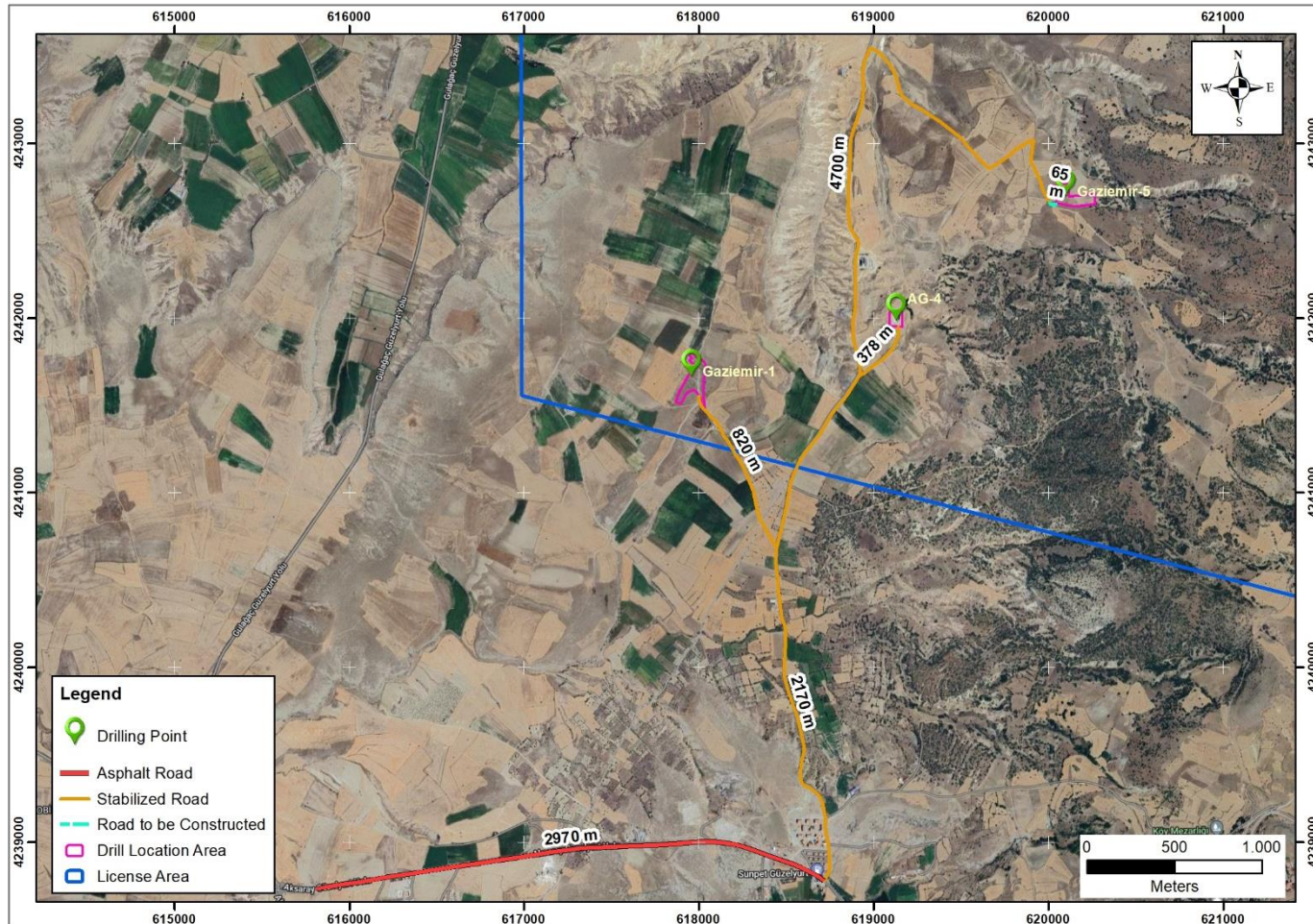
Drilling locations planned for the Project area and nearby settlements are indicated in the satellite image below.

Map 1 Satellite Image Showing Settlements



Güzelçay Geothermal Exploration Drilling Project
Stakeholder Engagement Plan

Map 2 Satellite Image Showing Drilling Locations



Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Plan

2.1 Project Activities and Schedule

The purpose of this project, prepared within the scope of RPM, is only to find the geothermal resource. In the project, it is planned to establish a geothermal power plant according to the nature of the resource within the scope of the RPM.

This project has 4 phases:

1. **Land preparation phase:** This phase covers following;
 - stripping and storage of topsoil,
 - the opening of pits such as geothermal fluid pools,
 - storage or utilization of the material from the excavated pits,
 - surface leveling operations, preparation of the transportation route (such as stabilized road reinforcement work),
 - concrete casting at the location,
 - The placement of containers to be used in the drilling activity.

This phase covers a period of approximately 1 (one) month.

2. **Drilling activities phase:**
 - It covers the start of drilling with the placement of the drilling rig and the work carried out until the drilling activity reaches its final depth.

This phase takes about 2 to 4 months.

3. **Well Testing:**
 - It covers the testing phases after the drilling activity has reached its final depth.

This phase covers a period of approximately 10 (ten) days.

4. **Rehabilitation (restoration) works:**
 - After the drilling activities and well tests are completed, if it is decided that the project is unsuccessful and the location will not be used by the Beneficiary, rehabilitation works of the area are carried out and delivered to the Provincial Directorate of Agriculture and Forestry for locations with pasture lands.

This phase covers these activities. This phase covers a period of approximately 20-25 days.

Draft work schedule planned for the project is given in Table 1.

Table 1 Draft Work Schedule

GÜZELYURT PROJECT DRAFT WORK SCHEDULE												
STEPS	02.2024	3.2024	4.2024	5.2024	6.2024	7.2024	8.2024	9.2024	10.2024	112024	12.2024	01.2025
Supply of Drilling Materials	■											
Mobilization for the Start of the First Drilling		■										
First Drilling Starts			■	■								
First Drilling and Activities			■	■								
First Drilling Tests					■							
Mobilization for the Second Drilling					■							
Second Drilling and Activities						■	■					
Second Drilling Tests								■				
Mobilization for the Third Drilling									■			
Third Drilling and Activities										■	■	
Third Drilling Tests												■

Further drilling and investment processes will be planned later depending on the success of the wells.

** The work schedule is a draft and may change according to the supply dates, financial situation and well achievements.

3.0 Summary of Environmental and Social Impacts of the Project

Although geothermal energy is an environmentally friendly, like any activity and project, it has both positive or negative environmental and social impacts.

The environmental impacts of the Project include waste and wastewater generated from land preparation, drilling operations and personnel employed, as well as emissions, soil and groundwater contamination due to the activities of the Project (land preparation, drilling activities, well testing and rehabilitation).

Social impacts of the Project include impacts on land uses, employment and labor force, social incidents related to project-related emissions, public health and safety.

Within the scope of the project, efforts will be made to enhance positive impacts, turning the project into a positive initiative. Additionally, mitigating measures will be implemented to eliminate negative impacts.

4.0 Purpose of the Stakeholder Engagement Plan

International best practice recommends that projects establish constructive relationships with all stakeholders and maintain these relationships throughout the project lifecycle. In this context, stakeholder engagement is seen as an integral part of an effective and adaptive environmental and social (E&S) management system. The requirements for the level of stakeholder engagement in projects are determined by the nature, scale and risks/impacts of the project and may include an active consultation and engagement process based on informing all individuals and organizations through effective mechanisms to communicate with internal and external stakeholders.

This SEP has been prepared in accordance with the requirements under the World Bank's relevant E&S Standards, taking into account international best practices. The main purpose of the SEP is to describe the strategies used and to be used by the Beneficiary in meeting and consulting with stakeholders. It establishes a framework for presenting information about the Project in a clear and timely manner to the project (internal and external) stakeholders, allowing them to share their views, requests, and complaints with the Beneficiary. It also provides a mechanism for the Beneficiary to evaluate and consider these inputs, providing feedback to the stakeholders.

With the implementation of the SEP, the Project aims to:

- Identify all relevant Project stakeholders and, taking into account the characteristics and needs of each stakeholder group, transparently and timely disclose information about the Project and its potential E&S impacts and risks (positive and negative) in an understandable format, thereby establishing a long-term, trusting relationship between the Beneficiary and Project stakeholders
- Inform stakeholders prior to consultation activities and decision-making processes

- Share information in places that are accessible to stakeholders, through culturally appropriate and pressure-free methods that facilitate access to information for them
- Establish a two-way dialog between stakeholders and the Beneficiary that allows for the exchange of information and consideration of issues raised in this process
- Establish a participatory mechanism that ensures that the views of vulnerable people/groups in society, women and all groups are represented
- Reflect Stakeholders' views and E&S issues on Project appropriately in Project processes and inform stakeholders about these processes
- Establish a clear mechanism for the management of stakeholders' opinions, requests and complaints

The Beneficiary undertakes to work in accordance with the National Legislation and international standards, taking into account the opinions and suggestions of the public and avoiding negative impacts on the local community during the project and in the future.

5.0 Structure of the Stakeholder Engagement Plan

The general structure of this Stakeholder Engagement Plan is as follows:

- Project Description
- Local Legislation and International Standards on Stakeholder Engagement
- Summary of Past Stakeholder Engagement Activities
- Stakeholders of the Project; Identification and analysis of stakeholders
- Stakeholder Engagement Program
- Resources and Responsibilities; To implement stakeholder engagement activities
- Complaint Mechanism
- Monitoring and reporting
- Stakeholder Communication during Pandemic

6.0 Local Legislation and International Standards on Stakeholder Engagement

This SEP has been prepared in accordance with local legislation on stakeholder engagement and World Bank E&S Standards.

Relevant Turkish legislation and international requirements are described in the following sections. The Beneficiary's institutional policies and procedures related to the stakeholder engagement processes it is currently implementing are also described in this section.

6.1 National Legislation

Constitution of the Republic of Turkey

The Constitution of the Republic of Turkey published in the Official Gazette dated November 9, 1982 and numbered 17863. It determines and regulates the rights, duties and freedoms of citizens. According to Article 24 (Freedom of Thought and Opinion):

"Everyone has the right to freedom of conscience, religious belief and opinion"

Article 26 (Freedom of Expression and Dissemination of Thought)

"Everyone has the right to express and disseminate his thoughts and opinions orally, in writing, in pictures or in other media, individually or collectively. This right shall include freedom to receive and impart information and ideas without interference by public authorities."

Article 74 (Right to Petition)

"Citizens have the right to apply in writing to the competent authorities and the Grand National Assembly of Turkey for their requests and complaints concerning them or the society. The petitioner shall be notified in writing of the outcome of the application."

Law on Right to Have Information

Law No. 4982 on the Right to Have Information, published in the Official Gazette No. 25269 dated October 24, 2003, defines the process regarding the right to information. It regulates this right in line with the principles of equality, impartiality and transparency, which are prerequisites for democratic and transparent governance.

Law on the Exercise of the Right to Petition

Law on the Exercise of the Right to Petition published in the Official Gazette dated November 10, 1984 and numbered 18571. The purpose of this law is to regulate the principles and procedures of the right to information in accordance with the principles of equality, impartiality and openness, which are essential for a democratic and transparent government.

Environmental Impact Assessment Regulation (EIA Regulation)

The first EIA Regulation in Turkey was published in the Official Gazette on February 7, 1993 based on Article 10 of the Environmental Law No. 2872 dated August 9, 1983. The Regulation

was re-published in 1997, 2002, 2003, and 2013, and the last EIA Regulation in force today was published on July 29, 2022.

In the process, with the revisions made to the EIA Regulation within the scope of European Union (EU) harmonization efforts, the EIA Regulation has been strengthened in terms of stakeholder participation and information sharing, and the main articles of the regulation that include the relevant requirements are presented below.

According to the relevant articles of the EIA Regulation, there are requirements for stakeholder participation in all stages of scoping, preparation and evaluation of the report and EIA Decision-making. The Public Information and Participation Meeting, which is held as part of the scoping phase, ensure that local people are informed about the projects and express their opinions on the project. Relevant public institutions and organizations in the commission established at the scoping stage of the process are involved in the determination of the scope of the report and the review and evaluation of the report. At the final stage, the EIA Report is opened to public consultation through the channels determined by the regulation, again within the specified period of time. All key stages and decisions taken are announced to the public through the Ministry and the relevant Governorship. A stakeholder engagement plan (SEP) is prepared and submitted as an annex to the EIA application file.

The EIA Regulation classifies investment projects into two categories, namely Annex I and Annex II. Mining, petroleum and geothermal resource exploration projects fall under Annex-II. There is no public participation process for Annex-II projects.

Since the project subject to this plan is a geothermal resource exploration project, it is listed in Annex-II of the EIA Regulation and no public participation meeting was held during the EIA process.

6.2 International Legislation

This project will be implemented under the ongoing Risk Sharing Mechanism program, financed by the World Bank and implemented by the Türkiye Kalkınma ve Yatırım Bankası A.Ş.

Under the World Bank's Operational Policy on Environmental Assessment (OP 4.01), projects are classified under categories A, B or C according to the degree of impacts on the environment. According to this classification, this project is classified as Category B.

For all Category A and B projects proposed for World Bank financing, during the Environmental Assessment process, the investor will consult with and obtain the views of affected groups and non-governmental organizations on the environmental aspects of the project.

Operational Policies of the World Bank

The Project is intended to meet applicable international standards and best practices. In this regard, the SEP follows the requirements of World Bank OP 4.01. OP 4.01 covers public consultation and disclosure and in this regard, necessary consultation and disclosure activities should be carried out taking into account the scale and nature of the Project, including

- Identification of stakeholder groups

- Providing affected communities with access to relevant project information
- Implementation and maintenance of the complaint mechanism
- Communicate with and provide information to project affected and other interested parties throughout the life cycle of the project

7.0 Past Stakeholder Engagement Activities - Short Summary

GMK Energy has been maintaining relations with relevant public institutions and organizations and project stakeholders since its establishment in 2017. Within the scope of the project in question, it has carried out the permit processes and exchanged opinions by making official correspondence with the relevant public institutions and organizations. In the current situation, for two years, since the effective date of the license (2019), continuous meetings have been held with the people affected by the Project. The table below provides information on the interviews and the first stakeholder engagement meeting.

Table 2 Meetings / Interviews with Stakeholders within the Scope of the Project

Date	Meeting	Participants	Scope	Issues
07.11.2020	-Public Information Meetings Headman Office Women were generally interviewed in the fields and men were generally interviewed in village coffee houses.	-Aksaray Project Area Affected Settlements Gaziemir Village residents, Ilisu Village residents, Alanyurt Village residents, Bozcayurt Village residents and Akyamaç Village residents	Headman interviewed Women's and Men's Group meetings were held in separate groups. Planned Project Activities were shared with relevant groups. Opinions, suggestions, comments and questions were answered.	The planned activities are supported by exploration drillings, a greenhouse and a fruit and vegetable drying facility that can be established afterwards. In the geological and geophysical studies carried out in the fields, the local people have supported the sponsoring company and no negative reaction has been reported.
20.12.2020	Public Information Meetings Headman Office Women were generally interviewed in the fields and men were generally	-Aksaray Project Area Affected Settlements Gaziemir Village residents, Ilisu Village residents, Alanyurt Village residents, Bozcayurt Village residents and Akyamaç Village residents	Headman Interview conducted Women's and Men's Group meetings were held in separate groups. Planned Project Activities were shared with relevant groups.	The planned activities are supported by exploration drillings, a greenhouse and a fruit and vegetable drying

Date	Meeting	Participants	Scope	Issues
	interviewed in village coffee houses.		Opinions, suggestions, comments and questions were answered.	facility that can be established afterwards. In the geological and geophysical studies carried out in the fields, the local people have supported the sponsoring company and no negative reaction has been reported.
11.04.2021	Public Information Meetings Headman Office Women were generally interviewed in the fields and men were generally interviewed in village coffee houses.	-Aksaray Project Area Affected Settlements Gaziemir Village residents, Ilsu Village residents, Alanyurt Village residents, Bozcayurt Village residents and Akyamaç Village residents	Headman interviewed Women's and Men's Group meetings were held in separate groups. Planned Project Activities were shared with relevant groups. Opinions, suggestions, comments and questions were answered.	The planned activities are supported by exploration drillings, a greenhouse and a fruit and vegetable drying facility that can be established afterwards. In the geological and geophysical studies carried out in the fields, the local people have supported the sponsoring company and no negative reaction has been reported.
06.06.2021	Public Information Meetings Headman Office Women were generally interviewed in the fields and men were generally interviewed in village coffee houses.	-Aksaray Project Area Affected Settlements Gaziemir Village residents, Ilsu Village residents, Alanyurt Village residents and Akyamaç Village residents	Headman Interview conducted Women's and Men's Group meetings were held in separate groups. Planned Project Activities were shared with relevant groups. Opinions, suggestions, comments and questions were answered.	The planned activities are supported by exploration drillings, a greenhouse and a fruit and vegetable drying facility that can be established afterwards. In the geological and geophysical studies carried out in the fields, the local people

Date	Meeting	Participants	Scope	Issues
				have supported the sponsoring company and no negative reaction has been reported.
19.07.2021	Public Information Meetings	-Aksaray Project Area Affected Settlements Gaziemir Village residents, Ilisu Village residents, Alanyurt Village residents, Bozcayurt Village residents and Akyamaç Village residents	Headman Interview conducted Women's and Men's Group meetings were held in separate groups. Planned Project Activities were shared with relevant groups. Opinions, suggestions, comments and questions were answered.	The planned activities are supported by exploration drillings, a greenhouse and a fruit and vegetable drying facility that can be established afterwards. In the geological and geophysical studies carried out in the fields, the local people have supported the sponsoring company and no negative reaction has been reported.
September 29, 2021	First Stakeholder Engagement Meeting Location : Güzelyurt Municipality Wedding Hall For the meeting, advertisements indicating the subject, date, place and time of the meeting were published in national and local newspapers at least 15 days in advance. On the day of the meeting, the nearest settlements (Helvadere, Güzelyurt, Elmacık, Yuva, Ihlara. Koçpınar, Ilisu, Gaziemir, Akyamaç, Bozcayurt, Alanyurt, Gulağaç), 6 shuttle buses were provided	Güzelyurt District and surrounding settlements affected by the Project. There were more than one hundred (100) participants from Helvadere, Güzelyurt Yeni Mahallesi, Güzelyurt Yukarı Mahallesi, Güzelyurt District, Elmacık Village, Yuva Village, Ihlara Town, Koçpınar Village, Ilisu Village, Gaziemir Village, Akyamaç Village, Bozcayurt Village, Alanyurt Village, Gulağaç Town and some institutions. Approximately 18 of the participants were women.	A presentation was made by the environmental consultancy firm and the purpose of the meeting, information about the project, its location, impacts, and benefits and how stakeholder engagement will be ensured were explained to the participants.	The views and suggestions of the public were listened to, recorded and questions from the participants were answered by the Sponsor company. In addition, detailed information about the project and the opportunities to be provided were explained in detail by the project owner company. Annex 3 provides details of participant

Date	Meeting	Participants	Scope	Issues
	for the public to come to the meeting place.			questions and answers.
July 19, 2022	Within the scope of Public Information Meetings (Güzelyurt District Governorship)	-Aksaray Project Area Affected Settlements Residents of Güzelyurt district center neighborhood, residents of Iisu Village, residents of Akyamaç Village 17 people participated	GMK Energy officials explained the activities to be carried out within the scope of the Güzelyurt project. Opinions, suggestions, comments and questions were answered.	The opinions and suggestions of the public were listened to, recorded and questions from the participants were answered by the Beneficiary company. In addition, detailed information about the project and the opportunities to be provided were explained in detail by the project owner company. The reactions of the participants were positive. Local people supported the beneficiary company during the geological and geophysical studies carried out at the sites, and no negative reaction was expressed.
July 20, 2022	Within the scope of Public Information Meetings (Gülağaç District Governorship)	Gülağaç district center neighborhood residents, Alanyurt Village residents, Bozcayurt Village residents, Residents of Gazimir village 14 people participated	GMK Energy officials explained the activities to be carried out within the scope of the Güzelyurt project. Opinions, suggestions, comments and questions were answered.	The opinions and suggestions of the public were listened to, recorded and questions from the participants were answered by the Beneficiary company. In addition, detailed information about the project

Date	Meeting	Participants	Scope	Issues
				and the opportunities to be provided were explained in detail by the project owner company. The reactions of the participants were positive. Local people supported the beneficiary company during the geological and geophysical studies carried out at the sites, and no negative reaction was expressed.
29 November 2023	Second Stakeholder Engagement Meeting Location: Guzelyurt Municipality Wedding Hall For the meeting, an announcement indicating the subject, date, place and time of the meeting was published on 20.11.2023 in Haber68 newspaper with high circulation in Aksaray. From 20.11.2023 to 28.11.2023, announcements were made 8 times in total, including weekdays and Saturdays, at 14:00 every day from Guzelyurt Municipality announcement system. On the day of the meeting, 3 shuttle buses were provided for the public to come to the meeting place from the nearest settlements	In order to increase participation in the meeting, a shuttle service was organized from Akyamaç-Bozcayurt and Gaziemir villages. The departure times of the shuttles were written on the brochure and posters before the meeting. There was no major disruption in the shuttle organization. Shuttles departed from Bozcayurt and Gaziemir villages at 13:30. From Akyamaç village, the shuttle departed at 13:40. The shuttles departed from the common points of the village from the points where public transportation was most comfortable. The meeting was attended by approximately 80 people from the local administrations and residents of Guzelyurt District, Gaziemir, Bozcayurt and Akyamaç villages and public institutions and organizations involved in local administration.	A presentation was made by the environmental consultancy firm and the purpose of the meeting, information about the project, its location, impacts, benefits and how stakeholder engagement will be ensured were explained to the participants.	The opinions and suggestions of the public were listened to, recorded and questions from the participants were answered by the Beneficiary. In addition, detailed information about the project and the opportunities to be provided were explained in detail by the project owner company. Annex 4 provides details of participant questions and answers.

Date	Meeting	Participants	Scope	Issues
	(Akyamaç-Bozcayurt and Gaziemir villages).			

Akyamaç, Gaziemir, Alanyurt, Bozcayurt, Sivrihisar, Iısu, Yuva, Elmacık, Koçpınar, Karkın, Helvadere/Aydınlar, Helvadere/Cumhuriyet, Helvadere/Kirazlı and Helvadere/Zafer neighborhood and village headmen attended the stakeholder participation meeting.

The second stakeholder engagement meeting was attended by approximately 80 people from the local administrations and residents of Güzelyurt District, Gaziemir, Bozcayurt and Akyamaç villages, and public institutions and organizations involved in local government. The meeting was scheduled for 29 November 2023 at 14:00, started at 14:18 with the completion of the participants, and ended at 15:12.

Photos of the meetings held on July 19 and July 20, 2022 are presented in Annex-3. Minutes of meetings held with stakeholders; Questions, suggestions and opinions received; Answers; Photos List of Participants; Meeting Announcement information are given in detail in the annexes.

The information note on the meeting held on November 29, 2023 is given in Annex-4.

8.0 Identification and Analysis of Stakeholders

A stakeholder is any person who will be directly (affected parties) or indirectly (other interested parties) affected by the project to be realized and who can influence this process. Stakeholders of a project include the community of affected local people, local landowners, national regulatory authorities, local regulators, local institutions and non-governmental organizations.

Within a project management framework, stakeholder engagement is essential in the development, implementation and termination of the project and in the assessment of impacts and problems. This is because it is the people living in the region and local institutions that know the problems and impacts.

The stakeholders in the project may change during the course of the project. The stakeholders will be reviewed and updated by the Beneficiary in line with the progress of the project.

Stakeholders likely to be affected by the current and future activities of this project are listed below:

Table 3 Stakeholders of the Project

Stakeholder Groups	Specific Stakeholders	Level of Interest	Impact Level	Impact / Issues of Interest
<i>External Stakeholders</i>				
Public Institutions and Organizations - Central	- Ministry of Energy and Natural Resources	Medium	High	Project-related permitting processes Strategic

Stakeholder Groups	Specific Stakeholders	Level of Interest	Impact Level	Impact / Issues of Interest
	- Ministry of Environment, Urbanization and Climate Change	Medium	High	planning Cumulative impacts assessment and management
	- Ministry of Treasury and Finance	Low	High	
	- Ministry of Family, Labor and Social Security	Low	High	
	- Ministry of Health	Low	High	
Public Institutions and Organizations - Local	- Aksaray Governorship	High	High	-Permission processes related to the project
	- Provincial organizations of relevant ministries	Medium	Medium	-Coordination of project activities and processes
	- Aksaray Municipality	High	Medium	-Management, monitoring and supervision of environmental, health and safety and social impacts
	- Aksaray Provincial Gendarmerie Command	Low	Medium	-Maximizing the local benefits of the Project
	- Aksaray Directorate General of Security	Low	Medium	-Emergency preparedness and coordination
	- Public hospitals in Aksaray province	Low	Low	-Planning social responsibility/social development projects
	- Aksaray Provincial Directorate of Civil Society Relations	Low	Low	
	• National Real Estate Directorate	Low	Medium	
State Economic Enterprises, State Companies	- MEDAŞ Aksaray Provincial Coordinatorship	Low	Low	-Coordination with construction activities of existing infrastructure services
	- BOTAŞ Salt Lake Operation	Low	Low	
	- Turkish Telecom Directorate	Low	Medium	
	- PTT Head Office	Low	Low	
	- Highways 38th Branch Chief Office	Low	Medium	
Settlements	- Aksaray Province, Central District, Güzelyurt Village	Medium	Medium	-Management of E&S impacts
(Headmen, local people)	- Gaziemir - Bozcayurt - Akyamac - Güzelyurt	Medium	Medium	Land Acquisition Impacts Livelihoods Impacts Management
Neighboring Land Owners / Users	- Aksaray Province, Central District, Akyamaç / Güzelyurt/Gaziemir/Bozcayurt Village	Medium	High	-Cooperation in planning and maximizing benefits related to local employment and the provision of goods and services

Stakeholder Groups	Specific Stakeholders	Level of Interest	Impact Level	Impact / Issues of Interest
				-Dust and emission impacts during land preparation and other phases
Settlements and workplaces	- Settlements and workplaces near the project area	Medium	Medium	-Planning social responsibility/social development projects
Settlements Vulnerable and Disadvantaged Persons/Groups	- Vulnerable persons/groups living or working around the project area	High	Medium	-Ensuring that Vulnerable and Disadvantaged Persons/Groups have access to adequate information about the Project and that these persons/groups benefit equally from the benefits of the Project
Non-governmental organizations (NGOs) - international, national and local	- Professional Organizations	Low	Low	-Management, monitoring and supervision of environmental, health and safety and social impacts
	- Confederation and Trade Union Representatives	Low	Low	-Management of cumulative impacts
	- Public Benefit Associations and Foundations	Low	Low	
	- TEMA Foundation Aksaray Provincial Representative	Medium	Medium	
	- JESDER	Low	Low	
	- Nature Association	Low	Medium	
	- Turkish Wildlife Foundation (WWF)	Medium	Medium	
Political Parties	- Aksaray MPs	Medium	Medium	-Management of environmental, health and safety and social impacts
	- Provincial and district presidencies of ruling and opposition parties	Medium	Medium	-Maximizing the local benefits of the Project
Academic Institutions/Educational Institutions	- Aksaray University	Low	Low	-Technical consultancy
				-Monitoring and supervision
Media (National and Local)	- National and local newspapers,	Medium	Medium	-Information sharing with stakeholders
	- National and local television channels	Medium	Medium	
	- Social media (Twitter and LinkedIn)	Medium	Medium	

Stakeholder Groups	Specific Stakeholders	Level of Interest	Impact Level	Impact / Issues of Interest
	- Written or visual media	Medium	Medium	
Industrial Projects, Local Businesses, Suppliers, Other	- Shopping centers around the project area	Low	Low	-Procurement of goods and services related to the project
	- Local businesses around the project area	Low	Low	-Management of cumulative impacts
	- Suppliers	Low	Low	
Credit Institutions	- World Bank	High	High	-Environmental and social performance of the Project -E&S monitoring
Internal Stakeholders				
Company Shareholders	- All shareholders	High	High	-Reputational relationship with the Project's E&S performance
				-Share values
Company	- Executive Committee	High	High	-Project performance, duration of construction, efficiency of operational activities
	- Board of directors	High	High	-The relationship between E&S and OHS performance and company reputation
	- Company Employees	High	High	
Contractors and Subcontractors	- Employees of contractors, subcontractors and business partners	Medium	Medium	-Project performance, duration of construction, efficiency of operational activities
				-The relationship between E&S and OHS performance and company reputation
Consultants	- Persons and organizations that the Company receives consultancy services on Environmental, Health, Safety and Social issues	Medium	Medium	-Management of technical risks of the Project
				-Management of E&S and OHS risks

Impact Categorization of stakeholders by Level of Interest			
Impact Level	Level of Interest		
	High	Medium	Low
High	Aksaray Governorship Aksaray Municipality	Ministry of Energy and Natural Resources Ministry of Environment, Urbanization and Climate Change	Ministry of Treasury and Finance Ministry of Family, Labor and

	World Bank All shareholders/ Executive Committee Executive Committee Company Employees		Social Security Ministry of Health
Medium		Settlements and workplaces near the project area Including vulnerable groups. Headmen and Local People (Gaziemir, Bozcayurt, Akyamaç, Güzelyurt) TEMA Foundation Aksaray Provincial Representative Turkish Wildlife Foundation (WWF) Aksaray MPs Provincial and district presidencies of ruling and opposition parties National and local newspapers, National and local television channels Social media (Twitter and LinkedIn) Written or visual media Employees of contractors, subcontractors and business partners Consultants , Persons and organizations that the Company receives consultancy services on Environmental, Health, Safety and Social issues	Aksaray Provincial Gendarmerie Command Aksaray Police Headquarters Aksaray General Directorate of Security Turkish Telecom Directorate Highways 38th Branch Directorate Nature Association National Real Estate Directorate
		Provincial organizations of relevant ministries	
		Land owners / users (Aksaray province Central district Akyamaç, Güzelyurt, Gaziemir, Bozcayurt)	
Low		-	Public hospitals in Aksaray province Aksaray Provincial Directorate of Civil Society Relations MEDAŞ Aksaray Provincial Coordinatorship BOTAŞ Salt Lake Operation

			PTT Head Office Confederation and Trade Union Representatives Professional Organizations Public Benefit Associations and Foundations JESDER Aksaray University Shopping centers around the project area Local businesses around the project area Suppliers
--	--	--	--

9.0 Stakeholder Engagement Program

The Beneficiary plans to continue its Stakeholder Engagement activities for information sharing and consultation throughout the activity period within the framework of SEP.

The Beneficiary will use appropriate methods to disclose information about the planned Project to the public and consult with stakeholders on the potential benefits and risks of the planned project and possible negative mitigation measures. Disclosure of relevant project information helps stakeholders to better understand the risks, impacts and opportunities associated with the proposed projects. Information will be disclosed at all project implementation stages using methods that will be appropriate for various stakeholder groups. The guidance of OP 4.01 and the World Bank's 2010 Policy on Access to Information will be followed for all disclosure initiatives, thereby holding the Project to World Bank standards. Relevant tools for stakeholder consultations are provided in the table below, with possible timing.

The Beneficiary will make the necessary announcements to all stakeholders through its website and will communicate effectively with its stakeholders by responding to complaints and requests received through the Complaint Management Process.

It is also possible to get more detailed information about the project at any time by contacting the Beneficiary's designated public relations representatives in the region (see Section 11).

Table 4 Stakeholder Engagement Program

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
All stakeholder groups	<ul style="list-style-type: none"> Sharing general announcements and updates about the project with all stakeholders 	<ul style="list-style-type: none"> Digital information texts 	<ul style="list-style-type: none"> Announcements made on the Project Company's website Announcements made on the Project Company's social media accounts 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> Project Activities in the public disclosure process Continuous
	<ul style="list-style-type: none"> For general information before the project starts 	<ul style="list-style-type: none"> Information to be shared: Project purpose, schedule, areas to be used, environmental and social approach of the project, potential environmental and social impacts and risks, management procedures related to these impacts and risks, ESMP requirements, Stakeholder Engagement Plan procedures and principles, complaint mechanism and contact information of the suggestion-complaint contact person. Placement of the draft final SEP, ESMP and other E&S documentation in public places and online on the Beneficiary website 	<ul style="list-style-type: none"> Stakeholder Engagement Meeting Project brochures Final Draft SEP, ESMP and other E&S documentation 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> With the finalization of draft E&S documents
	<ul style="list-style-type: none"> Sharing project-related E&S 	<ul style="list-style-type: none"> E&S documents Project brochure 	<ul style="list-style-type: none"> Publication of digital copies on the website of the Project 	<ul style="list-style-type: none"> See Chapter 10: Public 	<ul style="list-style-type: none"> Final Drafts Before Stakeholder

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
	assessment studies with all stakeholders	<ul style="list-style-type: none"> Other documents deemed necessary to be published by the Bank 	<p>Company and the Bank</p> <ul style="list-style-type: none"> By placing the outputs in places accessible to the public 	Relations Officers	<p>Engagement Meeting</p> <ul style="list-style-type: none"> Within 10 days after approval of the documents Project Activities in the public disclosure process
	<ul style="list-style-type: none"> Collecting feedback, complaints, requests and suggestions regarding project activities 	<ul style="list-style-type: none"> Communication tools announced on the beneficiary website Suggestion, wish and complaint boxes to be placed in Project and Village centers Communicated to public relations officers Official letters/petitions written through public institutions Presidential Communication Center (CIMER; https://www.cimer.gov.tr/) Governorship District Governorships Mayors' Offices 	<ul style="list-style-type: none"> Stakeholders can communicate their feedback, complaints, requests and suggestions to the Project Company through communication channels Stakeholders can convey their feedback, complaints, requests and suggestions to the Company through other public platforms, through relevant public institutions or private organizations Collection of feedback, complaints, requests and suggestions by the Project's field staff 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> During Project Activities Continuous (Ongoing: No complaints/requests received to date) The submitted complaints/suggestions/requests are included in the annex "Stakeholder Meetings Questions and answers from the sponsor".

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
Public Institutions and Organizations - Central	<ul style="list-style-type: none"> Managing the processes of obtaining permits, licenses, approvals and positive opinions related to the project Sharing up-to-date information about the project Coordination of the project process 	<ul style="list-style-type: none"> Brochures, booklets, posters, flyers, etc. summarizing current Project information. Specific documents required by authorities (e.g. information and documents required under permitting processes) 	<ul style="list-style-type: none"> Face-to-face interviews Formal correspondence, e-mail correspondence or a special method preferred by stakeholders Phone calls 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> Pre-project (with relevant institutions) When requested by the institutions during the project or when necessary When requested by institutions during operation and when necessary
Public Institutions and Organizations - Local State Economic Enterprises, State Companies	<ul style="list-style-type: none"> Managing the processes of obtaining permits, licenses, approvals and positive opinions related to the project Sharing up-to-date information about the project Coordination of the project process Coordination of processes such as emergency preparedness and response, public health and safety management 	<ul style="list-style-type: none"> Brochures, booklets, posters, flyers, maps, etc. summarizing current Project information. Specific documents required by authorities (e.g. information and documents required under permitting processes) Information and documents required by municipalities' online permit systems Specific information, answers to questions 	<ul style="list-style-type: none"> Face-to-face interviews Official correspondence Meeting Submitting the information requested in the permit application through online systems Formal correspondence, e-mail correspondence or a special method preferred by stakeholders Phone calls 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> Before the project (with relevant institutions) When requested by the institutions during the project or when necessary When requested by the institutions during the project and when necessary

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
Settlements Headmen Land users Households in the project direct impact area Local community representatives Women from the local community	<ul style="list-style-type: none"> Sharing general announcements and specific updates about the project Sharing information and warnings regarding construction activities within the scope of the project Coordination of processes such as emergency preparedness and response, public health and safety management Consultations on the project impacts they have experienced and their views, suggestions and complaints 	<ul style="list-style-type: none"> Brochures, booklets, posters, flyers, etc. summarizing current Project information. Technical project information Specific information, answers to questions Receiving feedback 	<ul style="list-style-type: none"> Face-to-face interviews (with affected settlements, businesses and headmen near the project area) Phone calls Meetings Focus group discussions in public spaces such as village coffee houses or mosques Face-to-face interviews and/or focus group discussions with women 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> At least once before the project During the project, when requested by settlements, workplaces and headmen or when necessary Once a month during the project
Vulnerable Groups	<ul style="list-style-type: none"> Ensuring that vulnerable and disadvantaged persons/groups have access to information about the Project and to the complaint and demand collection mechanism, and that they benefit from the benefits of the Project to the same extent as others 	<ul style="list-style-type: none"> Documents/materials to be developed specifically for the needs of vulnerable persons/groups The categories of vulnerable people listed below were included in the study process; <ul style="list-style-type: none"> Disabilities, Elderly People who are homebound due to illness, old age or disability Girls of school age but not attending school 	<ul style="list-style-type: none"> Face-to-face interviews Phone calls Focus Group Meetings 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> When necessary during the project

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
		<ul style="list-style-type: none"> Those who cannot speak Turkish The poor living on aid Persons without any social security insurance Women, especially female-headed households Childless widows Migrants/refugees 			
Local, regional, national and international NGOs	<ul style="list-style-type: none"> Providing specific information/answering questions in line with the relevant fields of NGOs 	<ul style="list-style-type: none"> Specific information, answers to questions 	<ul style="list-style-type: none"> Face-to-face interviews Email correspondence Phone calls Special engagement methods to be developed in line with the requirements by conducting regular media scans 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> When necessary during the project
Academic Institutions	<ul style="list-style-type: none"> Information exchange/consultation on specific issues within the scope of cooperation with academic institutions 	<ul style="list-style-type: none"> Specific information, answers to questions 	<ul style="list-style-type: none"> Specific engagement methods to be developed in line with requirements 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> When necessary during the project
Media (National and Local)	<ul style="list-style-type: none"> Providing the necessary/up-to-date information about the Project to the relevant parties in a timely, transparent and effective manner 	<ul style="list-style-type: none"> Digital information texts, visuals Video/audio recordings 	<ul style="list-style-type: none"> Sharing relevant text, visual material, video and/or audio recordings with the public through relevant local and national media agencies 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> When necessary during the project
Local Enterprises,	<ul style="list-style-type: none"> Exchange information/ideas on local employment, 	<ul style="list-style-type: none"> Specific information 	<ul style="list-style-type: none"> Face-to-face interviews 	<ul style="list-style-type: none"> See Chapter 10: Public 	<ul style="list-style-type: none"> When necessary during the project

Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Plan

Stakeholder	Purpose of Stakeholder Engagement and Information Activities	Information to be Shared within the Scope of Stakeholder Engagement and Disclosure Activities; Documents / Materials to be used,	Stakeholder Engagement and Disclosure Method to be used	Parties Responsible for Conducting Stakeholder Engagement and Disclosure Activities	Implementation Schedule
Other Industrial Projects,	<ul style="list-style-type: none"> local procurement, possible cooperation opportunities Cooperation to manage potential cumulative impacts 		<ul style="list-style-type: none"> Email correspondence Phone calls 	Relations Officers	
Credit Institutions	<ul style="list-style-type: none"> Sharing up-to-date information on the Project and its E&S processes, risk/impact management mechanisms 	<ul style="list-style-type: none"> Periodic E&S Monitoring Reports 	<ul style="list-style-type: none"> Through periodic reporting Other methods preferred by Credit Institutions 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> Once a month throughout the project
Internal Stakeholders	<ul style="list-style-type: none"> Sharing up-to-date information on project planning and implementation Employee rights, working conditions, complaint mechanism for internal stakeholders, occupational health and safety requirements, Project-specific E&S management system requirements communicated to employees 	<ul style="list-style-type: none"> Current Project information, work programs Labor contracts E&S policies, plans and procedures Education visuals Information posters, banners, etc. 	<ul style="list-style-type: none"> Announcements made in project offices and workspaces on bulletin boards and other appropriate locations On-boarding and orientation trainings Employee satisfaction surveys Management-employee meetings Company-subcontractor meetings Complaint mechanism for internal stakeholders 	<ul style="list-style-type: none"> See Chapter 10: Public Relations Officers 	<ul style="list-style-type: none"> At the start of employment Before each project phase Continuously throughout the project phase

Stakeholder Engagement Meeting: When the ESMP and Stakeholder Engagement Plan are "finalized", a stakeholder engagement meeting will be held with prior notice to stakeholders. In particular, informal users of the parcels will be invited to this meeting and their views/concerns will be collected and integrated into the final SEP. Public consultations will be widely publicized at least two weeks prior to the meeting, using local newspapers and other local information dissemination tools known to be effective. The Beneficiary will ensure that the draft final ESMPs and other assessment or supplementary documents are available in public places and their location is indicated in the meeting notice. Prior to the meeting, the draft final ESMP and Stakeholder Engagement Plan will be published on the Beneficiary's website, with the project brochure, and printouts of these will be left at the headman offices for public viewing and review.

During the meeting, stakeholders will be informed about the project purpose, schedule, areas to be used, environmental and social approach of the project, potential environmental and social impacts and risks, management procedures related to these impacts and risks, ESMP requirements, Stakeholder Engagement Plan procedures and principles, complaint mechanism and contact information of the suggestion-complaint contact person. Meeting notes will be kept and stakeholders' opinions and suggestions will be recorded. Information about the meeting, meeting notes, stakeholders' questions, comments and suggestions will be added to the ESMP and the ESMP will be finalized ("finalized"). Annex 12E of the Beneficiary Manual provides a table of contents for the documentation related to the public consultation meeting. Meeting notes will be kept and reported accordingly.

The final SEP, ESMP and Project brochure will be published on the Beneficiary's website and their printouts will be left at the project field office, headman offices, village cafes, etc. for the public to view and review.

Project Brochure: It will be used as a communication tool to introduce the Project to stakeholders. Sufficient number of Project brochures will be printed and distributed at the Stakeholder Engagement Meeting, made available at headman offices and public places (village cafes, mosques) as well as at the Project office at the drilling location. It will be ensured that the brochures are visibly displayed in the headman offices and public places. Households in the impact area of the drilling locations will be provided with the project brochure and evidence of the communication will be kept. Leaflets will also be delivered to women leaders in the area for distribution to other women. The project brochure will include general information about the project process as well as information about the complaint mechanism and contact information for those who wish to use the petition/complaint/suggestion mechanism. The project brochure will include:

- Non-technical project summary and project schedule;
- Future work to be carried out within the scope of environmental and social management;
- Summary of procedures for stakeholder engagement activities;
- Information and contact information about the request/complaint/suggestion mechanism. In the following period;

Stakeholder meetings will be held at regular intervals throughout the life of the Project to provide information to the people living in the region and to address their concerns, if any.

For disclosure of information:

- Informative brochures about the project and management plans will be kept at the project site.
- The targeted leaflet will be left house-to-house in the nearest villages with contact information and mechanisms for feedback.
- A separate page will be created on sponsor websites to provide information about the project.
- It will also be possible to disclose information through WhatsApp groups to be established between the Headmen and the sponsoring company.
- Meetings will be held regularly with neighborhood Headmen to receive their expectations and concerns about the project, taking into account COVID-19 pandemic limitations.

- According to the monitoring plan implemented in the project, reports including activities, measures taken, suggestions and complaints received, actions/results taken, analyzes that may be of interest to the public (such as water quality, noise emission measurements) will be periodically published on the company's website.

So far, no specific information on vulnerable or disadvantaged groups has been provided by the headmen or community members during the meetings and interviews. However, it is known that the majority of the village population consists of elderly people. Possible measures are planned to be taken to help vulnerable groups. However, these are planned to be increased depending on the success of the drillings and the progress of the project.

Work will continue to identify vulnerable or disadvantaged groups. If any of these groups are unable to attend the meetings, they will be reached separately. Care will be taken to get their opinions. Headmen will also be consulted to identify these people.

It is planned to establish communication through women representatives from within the village to enable women to voice their possible wishes and complaints. It is aimed to be able to listen to all women living in the region by communicating more frequently with representatives with strong communication skills from within the village.

10.0 Resources and Responsibilities for Implementing Stakeholder Engagement Activities

The Project's E&S Management System team designated by the Beneficiary will be responsible for the implementation of this Stakeholder Engagement Plan.

The Beneficiary will use the necessary resources to engage stakeholders as much as possible during the project, to involve them in the project, to guide them properly, to address their concerns and to avoid victimizing the community. An adequate budget will also be collected for stakeholder engagement.

The Beneficiary will share the Environmental and Social Management Plans, including the main components of the project, with the public after approval and make updates in line with their opinions, suggestions and comments. It will be responsible for informing the public of all possible changes and managing all feedback on this issue.

Sufficient resources for the implementation of the Stakeholder Engagement Plan will be allocated by the Beneficiary.

Table 5 Duties and Responsibilities Related to the Implementation of SEP and Complaint Mechanism

E&S Management System Team Member	Duties and Responsibilities
General Manager	<ul style="list-style-type: none"> • Communicating the project vision, policies and objectives to all stakeholders • Primary responsibility for representation of the Beneficiary outside the organization, including media communication. • Providing the necessary resources and authorizations for the implementation of the Stakeholder Engagement Plan and ensuring its requirements.
Human Resources (HR) Directorate	<ul style="list-style-type: none"> • Ensuring communication with internal stakeholders in accordance with the Project SEP

E&S Management System Team Member	Duties and Responsibilities
	<ul style="list-style-type: none"> • Keeping records of internal complaints received from all Project employees, including direct and contracted employees, in accordance with this SEP, analyzing and periodically reporting them to senior management • Ensuring that all Project staff, including direct and contract staff, are informed about and provided guidance on the use of the Project's complaint mechanism at the time of recruitment • Ensuring that the relevant personnel of the contractors are informed about the functioning and requirements of the internal complaint mechanism • Reviewing complaint records and ensuring that contractors implement Project complaint mechanisms
Finance Directorate	<ul style="list-style-type: none"> • Budgeting and appropriately allocating the financial resources required for the implementation of this SEP and the Complaint Mechanism
Corporate Communications Leadership	<ul style="list-style-type: none"> • Implementation of this SEP, ensuring effective and regular communication with all internal and external stakeholders and complaint management in accordance with IFC PS1 and DB ÇSS1/ÇSS10'a • Ensuring coordination with the Directorate of Facilities and Security in organizing the trainings to be given to the personnel under the Physical Security Leadership within the scope of the implementation of SEP and Complaint Management Mechanism • Coordinating all external corporate announcements, news and article production processes and managing social media accounts • Ensuring coordination with the relevant directorates to record the stakeholder interviews and actions taken within the scope of the project, and making the necessary follow-up and reporting • Providing input on stakeholder engagement and complaint management in the reports on the Environmental and Social Performance of the Project to be presented to the Senior Management Team
Legal Consultancy	<ul style="list-style-type: none"> • Checking the Project's compliance with laws and local legislation and providing support for legal problems
Quality System Directorate	<ul style="list-style-type: none"> • Coordinating the collection and sharing of information and data within the company
Procurement and Contracts Group Directorate	<ul style="list-style-type: none"> • Preparation of contracts with Project contractors and suppliers in line with the Project's E&S standards • Informing Project contractors and suppliers about the Project's E&S standards; reflecting these standards in procurement processes
Public Relations Personnel	<ul style="list-style-type: none"> • Ensuring that SEP implementation and complaint management are in line with WB requirements. • Internal EHS reporting to Corporate ESMS managers and Senior Management Team, including implementation of SEP and Project complaint mechanism. • Ensure that trainings on SEP and Project complaint mechanism are provided by contractors and the Project Company by reviewing training records and relevant training documents. • Supervision of contractors' compliance with the SEP. • Ensure that internal complaints are recorded and responded to in accordance with the Project SEP. • Ensuring effective and regular communication with external stakeholders during the project phase. • In coordination with the HR team and the Senior Field EHS Specialist, ensure that all Project staff (direct and contracted) is trained during recruitment on the implementation of the internal and external complaint mechanism developed for the Project (e.g. ways to make internal complaints, ways to manage external complaints, etc.). • Ensure that local community complaints are recorded and responded to in accordance with the Project SEP. • Support in managing internal complaints.
Main Construction Contractor and Subcontractors	<ul style="list-style-type: none"> • Ensuring compliance with the Project SEP through contractual obligations. • Notifying the Project Construction Group Chief of external complaints received within the scope of activities

Affected village headmen (settlements closest to the drilling sites - Table 6.) have been provided with phone numbers for people to contact if they have comments or questions about the project or the consultation process. GMK Energy's switchboard number was written on the brochures distributed at the first Stakeholder Engagement Meeting on September 29, 2021. These contact numbers will also be announced on the company's website. These contact numbers are as follows:

Murat Karadas - Project Officer: 0541 910 42 92

Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Plan

İlker Kırca - Public Relations Officer: 0534 933 46 43

Selim Tuna - Public Relations Officer: 0 546 825 85 27

If the Beneficiary engages a contractor for the project, the Beneficiary is responsible for ensuring that the contractor complies with the requirements of the Stakeholder Engagement Plan. In the event that the Contractor has a problem with the community and the public makes a complaint to it, it will be the responsibility of the Contractor to inform the Beneficiary of the complaint through the Public Relations Officer and to provide support to the company in resolving the complaints received.

All stakeholder engagement activities will be recorded and tracked with the tracking charts used within the scope of RPM Program. The Public Relations Officer to be assigned within the Beneficiary is responsible for filling in the schedule, following up, organizing and carrying out the engagement activities.

11.0 Complaint Mechanism

11.1 Complaint and Request Mechanism for External Stakeholders

The residential areas, workplaces, and public institutions near the project site are among the most significant external stakeholders of the Project. Stakeholder engagement activities will be carried out within the framework of SEP.

The functioning of the 'Complaint Mechanism for External Stakeholders' established under the SEP will be communicated on the Beneficiary's Project website and through posters to be placed at the Project site and headmen' offices and project brochures to be distributed to stakeholders.

The steps of the Complaint and Management process for External Stakeholders, which will be managed by Public Relations officers, are presented in the table below. The entire process will be recorded with the Suggestion/Complaint Tracking Schedule to be used within the scope of the RPM Program.

Table 6 External Stakeholders Complaint and Request Management Process

Complaint and Request Management Steps	Process Description
Step 1.	Receipt of Complaint / Request
	Complaints and requests from external stakeholders will be collected verbally and in writing through the following channels in accordance with this SEP: <ul style="list-style-type: none">• Suggestion, wish and complaint boxes to be placed in Project and Village centers• Contact link on the beneficiary website (http://gmkenjeri.com.tr/iletisim)• Telephone: 0 232 532 01 54• Mobile : 0 506 256 55 92• Project General Manager - Field Public Relations Officers Contact phone numbers:<ul style="list-style-type: none">• 0541 910 42 92(Murat Karadas) - Project Officer• 0534 933 46 43 (İlker Kırca) - Public Relations Officer

Complaint and Request Management Steps	Process Description
	<ul style="list-style-type: none"> • 0546 825 85 27(Selim Tuna) - Public Relations Officer • Email addresses: mkaradas@gmkenjerji.com.tr / ikirca@gmkenjerji.com.tr / stuna@gmkenjerji.com.tr • Presidential Communication Center (CIMER; https://www.cimer.gov.tr/) • Governorate official letter • Official letter from the District Governorate (also includes complaints made to Headmen' offices) • Official letter of the Mayor's Office Suggestions and complaints submitted to the Open Door Unit
Step 2	<p>Registering the Complaint / Request</p> <p>Incoming complaints and requests will be fully recorded by the Public Relations Officers. Anonymous complaints and requests will also be recorded.</p> <p>Complaints and requests submitted through all communication methods will be collected by the Corporate Communication Leadership and recorded using the Complaint Registration Formats given in Annex 1 and Annex 2. In addition, all complaints will be recorded and tracked with the tracking charts used within the scope of the RPM Program.</p>
Step 3	<p>Confirmation of Receipt of Complaint / Request</p> <p>When the registration process of complaints and requests submitted through other communication methods is completed, stakeholders who have submitted a complaint or request will be informed via e-mail or short message (SMS) that their complaint/request records have been received.</p>
Step 4	<p>Evaluating the Complaint / Request and Transferring it to the Relevant Unit</p> <p>If possible, the complaint and request will be forwarded to the relevant units and persons (e.g. Project Construction Group, Facilities Directorate, etc.), depending on the subject matter.</p>
Step 5	<p>Investigation of the Complaint, Evaluation of the Request and Resolution Process</p> <p>The relevant unit employees initiate and follow up the necessary work related to the solution process by conducting the necessary research and evaluations.</p> <p>The complaint / request resolved by the relevant unit employees are followed up by Public Relations. Warnings and explanations are made for complaints that delay action.</p>
Step 6	<p>Responding to Complaints / Requests</p> <p>The complaint is resolved by the relevant department.</p> <ul style="list-style-type: none"> • The target resolution time is 15 days depending on the subject of the complaint. • Complaints received through CIMER will be answered within 15 days. • Other complaints received through official letters will be finalized in accordance with the action dates specified in the letter. <p>Complaint/request owners are informed by the method (telephone, fax, e-mail, mail, etc.) appropriate to their return preferences for the resolved complaint/request. The information is recorded.</p> <p>For complaints whose resolution is not possible to be completed within the specified target resolution times, the complainant/requestor (if not anonymous) is informed about the new target times and the resolution process is described.</p>
Step 7	<p>Termination / Completion of the Complaint / Request (Resolution or Continuation of the Complaint)</p>

Complaint and Request Management Steps	Process Description
	<p>Feedback is provided to stakeholders regarding the resolved complaint/request.</p> <p>Feedback to anonymous complaints will be provided through information notes to be posted on boards in public places (headman's office, village coffee houses, etc.).</p> <p>If stakeholders are not satisfied with the solution, the complaint/request is transferred to other units (e.g. Finance Directorate, General Directorate of Operations, etc.) according to the subject matter and necessary actions are taken.</p> <p>If stakeholder satisfaction cannot be achieved even after the action taken by the relevant unit, the complaint is transferred to third/external parties for resolution.</p>
Step 8	Closure of Follow-up and Complaint / Request
	<p>Complaints and feedback resolved by the relevant department/person are recorded in the system along with an explanation of the resolution. The complaint / request are closed by returning to the stakeholders verbally or in writing.</p> <p>Monthly and annual complaint/request reports, analyses and presentations are prepared by the Public Relations Officer and submitted to Senior Management and the RPM Unit.</p>

11.2 Complaint Mechanism for Internal Stakeholders

Currently, there is no internal complaint mechanism for Project employees and contractor/subcontractor personnel in line with World Bank requirements. Currently, company employees and contractor/subcontractor company employees express their requests, suggestions and complaints in meetings with their line managers, and such feedback and complaints are forwarded to higher units by line managers.

The steps of the Internal Stakeholder Complaint Management process to be carried out under this SEP are described in Table 7. The entire process will be recorded with the Suggestion/Complaint Tracking Schedule to be used within the scope of the RPM Program.

Information on the Internal Complaint Mechanism will be provided to project employees (including contractors and subcontractors) during induction trainings, and complaint mechanism trainings will be repeated at regular intervals if deemed necessary.

Information on the Complaint Mechanism for Internal Stakeholders described in this SEP will also be provided to contractor and subcontractor employees to ensure that they use the mechanism effectively.

Table 7 Internal Stakeholders Complaint Management Process

Complaint and Request Management Steps	Process Description
Step 1	<p>Receiving and Recording Employee Complaints / Feedback</p> <p>Employee (direct or contractor/subcontractor employee) complaints, requests and feedback will be collected verbally and in writing through the following channels</p> <ul style="list-style-type: none"> • Feedback and complaint forms to be placed at the project site and accommodation (dormitory, dining hall, etc.) facilities • E-mail • Telephone • Petition • Verbal (can be addressed to managers or HR Directorate representatives) <p>Anonymous complaints and requests will also be recorded.</p> <p>Company employees and contractor/subcontractor company employees will be informed about the Internal Complaint Mechanism at the time of recruitment and will be supported to submit their complaints and feedback through designated channels.</p> <p>The Environment and Public Relations Specialist will check the complaint boxes and other relevant channels on a daily basis as far as possible and report to the General Manager and HR Directorate.</p> <p>The department/staff receiving the complaint/feedback through different channels will forward the relevant information/document to the HR Department.</p> <p>The HR Directorate will establish a database/system to record and track complaints and feedback from internal stakeholders and ensure that complaints and feedback are properly recorded. The database will be designed to allow entry of the following information:</p> <ul style="list-style-type: none"> • General information (information about the complainant/feedback owner if not anonymous - name, company, date, registration in the database, how the complaint/feedback was received, etc.) • Information about the Complaint/Feedback (subject, detailed description, whether action is required or not) • If corrective action is required, detailed information about the action (description of the corrective action, responsible department and persons, completion date, status, etc.) • Information on the Closure of the Complaint/Feedback (closure time, satisfaction status, etc.)
Step 2	<p>Confirmation of Receipt of Complaint / Feedback</p> <p>For non-anonymous complaints, the HR Directorate will confirm receipt of the complaint via e-mail or SMS within 1 business day.</p>
Step 3	<p>Evaluating the Complaint / Feedback, Transferring to the Related Unit and Making Assignments</p> <p>The HR Directorate, in consultation with the relevant administrative and technical units if necessary, will transfer the complaint / feedback to the relevant unit.</p> <p>The relevant unit managers will assign the relevant personnel to carry out the process of resolving the complaint/feedback.</p> <p>HR Directorate will record the information about the assignment in the database.</p>
Step 4	<p>Investigation of the Complaint, Evaluation of the Request and Resolution Process</p> <p>The target time for resolution of all complaints received directly or from contractor employees is 10 working days.</p> <p>The unit/personnel assigned by HR to resolve the complaint will determine the action to be taken to resolve the complaint and inform the HR Directorate about the definition of the action and the envisaged process.</p> <p>For complaints whose resolution cannot be completed within the set target resolution times, new target times will be set and the employee with the complaint will be informed (unless it is an anonymous complaint/feedback).</p>

Complaint and Request Management Steps	Process Description
Step 5	Responding to Complaints / Requests
	<p>The complaint will be resolved by the relevant unit within the target period determined as a result of taking the necessary actions.</p> <p>For the resolved complaint, the HR Directorate will inform the employee (direct or contractor/subcontractor) according to the employee's (direct or contractor/subcontractor) return request/preference (phone, SMS, e-mail, mail).</p> <p>Feedback to anonymous complaints will be provided through information notes to be posted on information boards at the project site.</p> <p>The information will be recorded.</p>
Step 6	Termination of the Complaint (Resolution or Continuation of the Complaint)
	<p>Whether the employee (direct or contractor/subcontractor) is satisfied with the resolution of the complaint will be confirmed by HR or its designated unit through face-to-face meetings, telephone or e-mail.</p> <p>In case the employee is satisfied, documents showing satisfaction will be taken by HR and stored in the database.</p> <p>If the employee is satisfied, new actions will be defined in consultation with the relevant units and the employee and will be completed within the agreed timeframe.</p> <p>If employee satisfaction is not achieved despite the actions taken, the reasons and documents will be stored in the database and transferred to third/external parties for complaint resolution.</p>
Step 7	Closure of Prosecution and Complaint
	<p>The complaint will be closed in the HR Directorate database .</p> <p>All documents supporting the process will be stored in the database by the HR Directorate.</p>

12.0 Monitoring and Reporting

Implementation of this SEP will be monitored and evaluated through internal monitoring conducted in coordination with the Public Relations Officers and HR Directorate, and external monitoring conducted by independent consultants to be appointed with the approval of the financing organizations. The methods, monitoring indicators and frequencies to be used in monitoring studies are presented in Table 8.

Within the scope of internal monitoring studies, monthly complaint/demand reports, analyses and presentations will be prepared and presented to the Senior Management by the Public Relations unit together with the Internal Stakeholder Complaint Mechanism data received from the HR Directorate.

Monitoring studies for the implementation of the SEP will be part of the E&S monitoring studies to be carried out in line with the requirements of the credit institutions and the activities, records, actions and results of the monitoring study related to the SEP will be submitted to the RPM Implementation Unit in the Monthly E&S Monitoring reports.

The Company will prepare annual E&S reports on the Project. The Company will share key information/indicators on the Project's E&S performance with its stakeholders by publishing these reports on its website.

At the beginning of the project, during the initial phase of plan execution, competent staff members or consultants will provide hands-on training to the personnel who will be in charge of carrying out this SEP and the internal and external complaint channels. Every project phase will commence with a repetition of these trainings.

Table 8 Monitoring Framework for the Implementation of the Stakeholder Engagement Plan

Monitoring Issue	Monitoring Methods	Monitoring Indicators	Monitoring Frequency
Stakeholder engagement, consultation and information activities	<ul style="list-style-type: none"> Examination of the record lists where stakeholder engagement activities (institutional interviews, institutional correspondence, headman meetings, meetings with settlements near the project area, etc.) are recorded Conducting interviews with stakeholders when necessary within the scope of monitoring studies Review of training records 	<ul style="list-style-type: none"> Number and content of meetings with stakeholder groups Information from different channels, their number and content Outputs of stakeholder interviews conducted within the scope of the monitoring study Number of personnel trained on the implementation of SEP Number of personnel trained on CC 	<ul style="list-style-type: none"> Internal monitoring (by the Company) <ul style="list-style-type: none"> Once a month during the project phase
Complaint Mechanism for External Stakeholders	<ul style="list-style-type: none"> Review of complaint and request records Examination of complaint and request records and trend analysis Conducting interviews with external stakeholders about the complaint mechanism within the scope of monitoring studies 	<ul style="list-style-type: none"> Stakeholders' level of knowledge about different complaint channels Keeping the number of complaints received from stakeholders through different channels below the set targets Actively used complaint channels Number of new/closed complaints Number of new/closed requests Distribution of complaints according to the following: <ul style="list-style-type: none"> Complaint subject Settlements Company/contractor/subcontractor Relevant unit/department Average resolution time of complaints Satisfaction rate of stakeholders who filed a complaint regarding the resolution of the complaint Rate of fulfillment of requests Number of complaints taken to court 	
Complaint Mechanism for Internal Stakeholders	<ul style="list-style-type: none"> Conducting interviews with internal stakeholders (company and contractor/subcontractor employees) about the complaint mechanism within the scope of monitoring studies 	<ul style="list-style-type: none"> Level of knowledge of company and contractor/subcontractor employees about the internal complaint mechanism Actively used complaint channels Number of new/closed complaints Distribution of complaints according to the following: <ul style="list-style-type: none"> Complaint subject Company/contractor/subcontractor Relevant unit/department Average resolution time of complaints Number of complaints taken to court Number of personnel (company/contractor/subcontractor) trained on internal complaint mechanism 	

13.0 Stakeholder Communication during Pandemic

During the pandemic process, depending on the development of the process, plans will be made in line with the requirements of local legislation and the recommendations of national and international health authorities;

IFC's Advice Notes to its Clients on Secure Stakeholder Engagement in the Covid-19 Process will be considered (May 2020)

IFC has released this advisory note to assist its clients in finding alternate strategies and channels for involving stakeholders, as well as in continuing to communicate Project-related details with and solicit input from local communities in their operational areas, all while ensuring that all required health and safety precautions are taken throughout the Covid-19 process.

In this advice note, the IFC takes into account the possibility that companies may not be able to carry out the same stakeholder engagement activities in the Covid-19 process as they do/plan to do under normal operating conditions.

IFC summarizes the key considerations for stakeholder engagement in the Covid-19 process to ensure a robust mechanism for communication and information sharing as follows:

- *Clearly describe the procedure to be applied for external communication and identify points of contact and personnel in accordance with the companies' existing procedures*
- *Ensuring that stakeholder engagement activities comply with local regulatory requirements and recommendations of national and international health authorities by closely following health-related recommendations and guidelines*
- *Identifying critical E&S risks that may further affect the operations of companies due to Covid-19 and communicating these risks and measures to be taken to relevant stakeholders*
- *Determining the stakeholder engagement initiatives that were scheduled before COVID-19 or that were in progress when the virus first surfaced, and examining and illustrating the prerequisites for these initiatives. A thorough evaluation of the risks to the company's employees, hired consultants, and other stakeholders should serve as the foundation for decisions about whether to continue with current initiatives or start new ones aimed at engaging stakeholders.*
- *Designing and adapting appropriate channels for external communication and access to complaint mechanisms to reflect current local conditions and the requirements of different activities; in parallel, taking measures to ensure the health and safety of all stakeholders, including company employees and consultants; radio announcements, cell phones, announcements on bulletin boards in public places are channels that can be used to share information, and channels where information can be shared securely should also be considered (e.g. encrypted messaging, applications that provide 2-factor authentication)*
- *Coordination with national/regional/local communication platforms currently used in the response to Covid-19 and adaptation and utilization of relevant channels in projects*
- *Identify existing channels and social structures in areas with limited capacity for access to technology and literacy (e.g. community leaders, community organizations, women's organizations)*
- *Paying special attention to vulnerable, marginalized and isolated groups and identifying barriers that may prevent meaningful stakeholder engagement with these people/groups (e.g. gender roles that limit stakeholder engagement, access issues for people with physical disabilities) and developing approaches that can support their access and participation*
- *Understanding the challenges that can be barriers to getting important messages across, such as information technology, literacy, distance, breach of confidentiality, fear of retaliation, trust issues, concerns about surveillance, and resistance to trusting proposed alternatives*
- *Reviewing and adjusting the participation methods to reflect the requirements of local legislation and changing circumstances related to Covid-19; introducing flexibility to the processes and adapting to changes, taking into account the objectives of the participation process and the complaint mechanism*

The secure stakeholder engagement methods recommended by the IFC in its recommendation note include virtual and remote engagement methods such as online communication, voice communication, offline communication channels.

IFC expects the company to share with stakeholders the activities that have changed due to Covid-19 and that may cause impacts on society.

In addition to this guidance note, IFC has published the following resources that provide advice to support stakeholder engagement:

- *Company Leadership in Crisis Response: Against the Covid-19 Pandemic*
- *Advice Note on Preventing and Managing Covid-19-related Health Risks at Workplaces*
- *Advice Note on Supporting Employees in the Covid-19 Process*
- *Covid-19 Advice Note on Developing an Emergency Preparedness and Response Plan*
- *Addressing Increased Reprisal Risks in the Covid-19 Process*
- *Advice Note for IFC and EBRD Clients on Migrant Workers and Covid-19*

Alternative Approaches and mechanisms could be presented as initial plans, including but not limited to the following;

- Open air meetings with limited participants
- Online Meetings
- Online Knowledge transfer - websites, corporate social media platforms
- Online calls, Phone calls
- Written information sharing, Brochures, Posters etc.

14.0 Contact Information

Table 9 Contact Information

GÜZELYURT JEOTERMAL ENERJİ A.Ş. CONTACT INFORMATION	
Project Company	Contact link on the beneficiary website (http://gmkenjerji.com.tr/iletisim) Telephone: 0 232 532 01 54 Mobile : 0 506 256 55 92
Field Public Relations Officers Contact	<ul style="list-style-type: none">• Murat Karadas - Tel: 0541 910 42 92 / e-mail : mkaradas@gmkenjerji.com.tr• İlker Kırça - Tel : 0534 933 46 43 / e-mail : ikirca@gmkenjerji.com.tr• Selim Tuna - Tel : 0 46 825 85 27 / e-mail : stuna@gmkenjerji.com.tr

Annex 1 Suggestion Complaint Form



GÜZELYURT JEOTERMAL ENERJİ A.Ş.
GÜZELYURT GEOTHERMAL EXPLORATION DRILLING
PROJECT

COMPLAINT FORM

Person Filling in the Form:	Date and Time:
Interview Agenda:	Reference No:

1. INFORMATION ABOUT THE COMPLAINANT

Name and Surname <i>(The complainant can fill out this form without providing personal information)</i>	How the complaint was received:
Identity No:	Telephone / Toll Free Line
Telephone:	Meeting/Face-to-Face Interview
Address:	Website / E-mail
E-Mail:	Other (Describe)

2. STAKEHOLDER GROUP

Public Institution <input type="checkbox"/>	PEB <input type="checkbox"/>	Private Enterprise <input type="checkbox"/>	Professional Chamber <input type="checkbox"/>	NGO <input type="checkbox"/>
Interest Groups <input type="checkbox"/>	Political Parties <input type="checkbox"/>	Media <input type="checkbox"/>	University <input type="checkbox"/>	Other <input type="checkbox"/>

3. DETAILED INFORMATION ON THE COMPLAINT

Explanation of the complaint:	
The solution requested by the complainant	

Registered by Name Surname/Signature	Complainant Name Surname/Signature
---	------------------------------------

Annex 2 Complaint Closure Form



GÜZELYURT JEOTERMAL ENERJİ A.Ş.
GÜZELYURT GEOTHERMAL EXPLORATION DRILLING
PROJECT

COMPLAINT CLOSURE FORM

Reference No:

1. DETERMINATION OF CORRECTIVE ACTION

1

2

3

4

5

Responsible Departments

2. TERMINATION OF COMPLAINT

This section will be filled and signed by the complainant in case the complaint specified in the "Complaint Registration Form" is resolved

**Date of Closing the
Complaint:**

**Name and Surname /
Signature of the Person
Closing the Complaint**

**Name and
Surname/Signature of the
Complainant:**

*Annex 3 Stakeholder Engagement Meeting Photos Meeting Minutes
- Announcement - Participant Forms - Brochure - Presentation*

Date: September 29, 2021



Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Plan





Stakeholder Meetings Questions and answers from the sponsor:

Q. It was asked by whom the fruits and vegetables will be produced and whether the products of individual people who set up greenhouses will be purchased.

A. In the facility planned to be established, it was stated that depending on the capacity, the products produced by the people of the region will also be dried. It was stated that the main purpose of the establishment of the facility is to ensure that the fruits and vegetables grown in the region are dried in the facility and to develop trade in the region.

Q. What is the impact of the activity on sheep flock owners and other citizens?

A. It was stated that the areas to be used for the activity cover less area than other renewable energy sources. It has been stated that necessary measures will be taken in case the possible drilling

Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Plan

locations coincide with the passage route of sheep. It has also been added that necessary measures and precautions will be taken to prevent the victimization of citizens engaged in animal husbandry.

Q. It was asked whether the vapor from the chimneys would cause climate change

A. It is stated that the facilities to be established will operate in a closed cycle system and there will be no steam output. It is stated that there will be no hot or cold discharge to the receiving environment.

Q. It was asked whether the geothermal waters will be used for irrigation purposes after the heat is removed.

A. It is stated that geothermal waters cannot be used for irrigation purposes due to their chemical structure. It is also added that discharge will not be allowed.

Q. It was asked whether a facility will be built in the town of Iİsu.

A. It was stated that they also have licenses in the vicinity of Iİsu, but since this area is within the Special Environmental Protection Lot-, a separate EIA application will be made. It was added that the springs in this area are deeper than 3500 meters and that a special study would be conducted. It was stated that it would be very costly to transfer water from Iİsu to Güzelyurt and therefore a separate project would be developed for Iİsu.

Q. It was asked whether the extracted resource will be used for heating residential areas.

A. It has been stated that geothermal heating may be economical for areas with mass housing, but the resource extracted in this project will be used primarily for electricity generation, establishment of modern greenhouses and fruit-vegetable drying facilities.

Q. It has been asked whether private entrepreneurs who want to do greenhouse cultivation can benefit from the resource.

A. It is stated that the current focus is on the geothermal resource and its use in electricity generation, greenhouse and fruit and vegetable drying facility, depending on the power of the resource. It is stated that the tomatoes to be produced in the greenhouse will be exported, but the vegetables and fruits to be used in the drying facility will be supplied from the people of the region. It was also added that the people of the region would be employed. On the other hand, it was stated that Specialized Organized Greenhouse Lot-s based on Agriculture will be published and that there may be studies on this issue.

Q. It was asked whether ground surveys have been carried out and how long the projects will be realized.

A. It is stated that geological, geochemical and geophysical studies are carried out during the exploration of the resource. As a result of these studies, geothermal drilling points were determined. It was stated that the project is targeted to be completed in 24 months. Prof. Dr. Hasan Sözbilir, Director of Dokuz Eylül University Earthquake Research Center, and Cemil Adıgüzel, retired from MTA, were said to be working on the project. It was stated that exploration and development studies will continue at every stage of the project. With the completion of the official processes, it is stated that drilling will begin in early 2022.

S. Citizen stated that there are reactions against geothermal in the media and that it is said that geothermal activities damage cultivated areas. It was asked what measures will be taken against cultivated lands.

A. It is stated that the Project will be managed with the requirements of the World Bank and the Risk Sharing Mechanism. It has been added that the works will be carried out under completely environmentally friendly conditions, respecting human, animal and nature. It is stated that the process will be carried out in a transparent manner by involving stakeholders. It was stated that monitoring of endemic species was started at the very beginning of the project. It was stated that they will protect agricultural lands and cultivated areas at every stage of the project and necessary measures will be taken.

Q. It was asked whether the reserves of geothermal fluids underground are calculated. It was asked how many millions of years these fluids were formed.

A. It is stated that the underground fluid will be detected by drilling and that it is necessary to drill and test multiple wells for reserve calculation. It was stated that the fluid continues to percolate underground in drops over time, the presence of the rock that will form the reservoir and the heating system should heat the fluid and it should not be able to reach the surface with the cover rocks. It was added that this process is a process of thousands of years. It was said that the heating system is Hasan Mountain itself. It is stated that it is still hot. It was said that after the heat of the fluid to be produced by drilling is taken, it will be pumped back to the same reservoir and it will be heated again.

General Opinions and Assessments;

- Overall, public reactions have been positive and supportive of the project.
- Local people want the project to start as soon as possible.
- Feedback from the public is positive.
- In the time period after the meeting, headmen were asked to call the company owner and ask when the activities would start.
- The people of the region show supportive behaviors for investment in that region
- Unemployment is one of the biggest problems in the region. The surrounding agricultural lands are not productive agricultural lands. Wheat is generally cultivated in agricultural lands. New investments are needed in the region.
- As mentioned earlier, the sponsor company plans to establish greenhouses and fruit and vegetable drying facilities, if geothermal potential is found. Employment in these facilities is planned to be made from local people. In particular, over 50% of the staff will be women. These people will be from the local community. Therefore, the realization of the projects will positively benefit the unemployment problem, which is a major problem in the region.
- Additional consultations will be carried out with livestock owners in the area (taking into account COVID19 pandemic restrictions), although pasture areas are widespread in this region and the planned drilling will not adversely affect grazing activities in the area.

ANNOUNCEMENT

Stakeholder Engagement Meeting

GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. plans to carry out "Exploration Drilling for Geothermal Energy Exploration" projects in the geothermal exploration licenses with license numbers "2019680001" and "2019680002" and "2019680005" in Güzelyurt district of Aksaray province and in the exploration license with license number 2019680006 in Central district of Aksaray province. These projects will be carried out within the framework of the Turkey Geothermal Risk Sharing Mechanism Program in partnership with the World Bank and the Development Investment Bank of Turkey.

For the projects in question, a "Stakeholder Participation Meeting" will be held on the date and time specified below in order to inform the stakeholders who may be affected by the project within the scope of the program about the projects, to inform the public about the activity and to receive their opinions and suggestions.

It is respectfully announced to our people.

Meeting Venue: Güzelyurt Municipality Wedding Hall

Address of the Meeting Place: Yeni Mahalle Vali Sebati Buyuran Cad. Above A101, Güzelyurt/Aksaray

Meeting Date: 29.09.2021

Meeting Time 14:00

Project Owner: GMK Yenilenebilir Enerji Mühendislik İmalat San. ve Tic. A.Ş.

Tel: 90 232 532 01 54

Organization Preparing the Stakeholder Engagement Plan:

Enpark Çevre En. Mad. Eng. Dan. and Müş. Ltd. Sti.

Tel: 0(312) 472 08 13

Fax: 0(312) 472 08 14

ANNOUNCEMENT
Stakeholder Engagement Meeting

68Haber

Haber

15 Eylül 2021 Çarşamba 7

Konut Satışlarına Gurbetçi Dopingi

Yaşanan yükselişin Ağustos ayında gerçekleşmesi gurbetçilerin ellerindeki nakitli yeniden konuta çevirmeye başladığı yönünde algılanırken talebin artması konut yüksek seyreden konut fiyatlarının yeniden artmasına neden olacağı iddiaları konut alacakların geri adım atmasına neden olmaya başladı.

Özellikle arsa payları başta olmak üzere son bir yıl içerisinde inşaat maliyetlerindeki artış oranı yüzde 50'yi aşarken konut fiyatlarına yapılan zamları bu oranın bile üzerine çıkı. Böyle bir dönemde Türkiye İstatistik Kurumunun açıkladığı veriler

inşaat sektörü için Ağustos ayının iyi geçtiğini ortaya çıkardı. Son günlerde artan çimento fiyatları nedeniyle sıkıntılı günler geçiren müteahhirlere inşaat döneminde konut fiyatları ve satışları konusunda nasırlı bir yıl izleyeceği merakla beklenen Ağustos ayında konut satış oranının beklentilerin çok üzerinde çıkması gurbetçilerin yeniden konuta ilişkin artışı şeklinde yorumlandı. Ağustos ayı süresince 929 konutun el değiştirdiği Akarsay'da yüksek konut fiyatları sürükleyici olarak satışları hızlandırdı. İnşaat sektörünün yeniden zam hareketine geçeceğini

belirterek yaptıkları açıklamada; "Akarsay kimine

alanına süreklilik olarak yatırım yapan ilerin başında.



göre uzun kimine göre de çok pahalı konut fiyatları ile inşaat

Çevremizdeki illere göre çok fazla konut yapıldığı ve

sabıtlığı ilimizde son 2-3 yıl içerisinde konut fiyatlarına gelen zamlar ülkemizin hiçbir ekonomik gelişmesiyle izah edilemez. 300 bin lira olan konutların fiyatları şimdiye kadar 600-800 bin seviyelerine kadar yükseldi. Bu rakamlara kadar yükselen konutların satışının devam etmesi yeni zamların zeminini hazırlıyor.

Gurbetçi hemşerilerimiz için hiçbir şeyin önemi yok. Ellerindeki paraları nedeniyle onlara bu rakamlar hesaplı veya alınabilecek düzeyde gelebilir.

Ancak Akarsay gibi illeri için bu rakamlar çok fazla. Şimdi Ağustos'ta artan konut satışları müteahhirlere ve bazı

emlakçılara hareket geçirecek ve fiyatları bir 50-100 bin ayar olacaktır. Ancak Ağustos verileri kimseyi kandırmadan yerli halk bu fiyatlara konut alacak gücü değil.

Son olarak bu arsa payları yeniden gözden geçirilmeli ve çimento üreticilerine boykot etkileri gibi bu arsa sahiplerini de boykot etmeler. 5 sene önce 3 daire verilen arsaya 6 daire verilen müteahhit o aradaki farkı müteahhitlerinden alıyor bu da en az çimento fiyatları kadar maliyetleri yükseltiyor.

Yüzde 50 ile inşaat alanları çimento fiyatları gelen zam için boykot yapayın" dediler. (Haber: E.BUDAK)



ASÜ ve THİSF Arasında İş Birliği

Protokolü İmzalandı

ASÜ ile Türkiye Herkes İçin Spor Federasyonu (THİSF) arasında iş birliği protokolü imzalandı. Her iki kurum hem sporun toplum geneline yayılması hem spor ve sağlık alanında işbirliği çalışmalarının önemini artması hem de fiziki ve akademik imkânların ortak kullanımının sağlanması yönünde çalışmalar yapacak. Rektör Prof. Dr. Yusuf Şahin, "İhtisaslama sürecinin son derece verimli biçimde ilerlediğini ve pek çok somut işin ortaya çıktığını diye gettirmek. gerek ASÜ gerekse Akarsay için farklı ve yeni bir sürecin inşa edildiğini

belirtti. Bunun sağlanabilmesi için yeni paydaşların desteğinin ve katkısının önemli olduğunu söyleyen Şahin, "THİSF ile imzaladığımız iş birliği protokolü ile çalışmalarımız yeni bir boyut kazanacak. Eğitimler, etkinlikler, bilimsel çalışmalar, üretime dönük projeler... İhtisaslama görevi bir işbirliği değil ve biz, tüm bu alanlarda en etkili çalışmalar yapmaya gayret ediyoruz" dedi. ASÜ Rektörü Şahin, iş birliği protokolüne katılan müteahhitlerin Federasyon Başkanı Yasın Bölükbaşı'na teşekkür etti ve sürecin hayırlı geçmesini temennisinde bulundu. (Basın bülteni)

Altınsoy "Milletimizin Emrindeyiz"

Vatandaşların sorunlarını, taleplerini, şikayetlerini, isteklerini dilek ve önerilerini ilk aşından öğrenmek için haftanın belirli günlerinde parti teşkilatında diğer günlerde ise bizzat halk, esnaf ve kırsal ziyaretlerinde bulduklarını aktaran Başkan Altınsoy, "AK Parti olarak bizler, seçimin seçime vatanızda hatırlayan bir parti değiliz. Bugüne kadar süren pelen bu anlayış, AK Parti iddianı ile birlikte son bulmuştur. Biz, halka güvenen bir siyasi hareketiz. Yine zorlu yolları aşacak, Türkiye'nin ve Akarsay'ımızın istikrarını bir



şekilde yükseltili için önmüze bakacağız. Yolumuz devam ederek, hedeflerimize odaklanacağız. Milletvekillerimiz, Merkez İlçe teşkilatımız, kadın kollarımız, gençlik kollarımız da yarı

gettiğimizi ve buralarda bulunmuş gayemiz çok iyi biliyoruz. Genel Başkanımız ve Cumhurbaşkanımız Recep Tayyip Erdoğan'ın teveccühü ile İl Başkan olarak bu makamda bulunuyoruz ve sorumluluğumuzun farkındayız. Bizler mahalle temsilcilerimiz, belde ve ilçe teşkilatlarımız, belediye başkanlarımız ve milletvekillerimizle birlikte büyük bir aileyiz ve tek derdimiz gelişmek, ülkemize hizmet etmek. İlk günkü heyecan ve azimle çalışmaya, gönüllere girmeye, inandığımız yolda yürümeye devam edeceğiz" dedi. (Basın bülteni)

Tacin'de Asfalt Serimi Sürüyor

Birden çok mahalleyi birbirine bağlayan Bin 600 metre uzunluğunda 12 metre genişliği olan yolun öncelikli olarak alt yapısı yenilendi. Akarsay Belediyesi'nin yaptığı tüm yıl çalışmalarında olduğu gibi Tacin Mahallesi'nde yapımı devam eden yolun zemini iyileştirmek için asfalt serimi çalışmaları başlatıldı ve büyük oranda tamamlanma aşamasına gelinen yolun Akarsay Eğitim ve Araştırma Hastanesine olan ulaşımı daha da kolaylaştırması amaçlanıyor.

Hacılar Harmanı, Mehmet Akif Ersoy, Selçuklu sanayi ve Akarsay Eğitim ve Araştırma hastanesi arasındaki yol yenileme çalışmalarının hızı bir şekilde tamamlanarak hizmete açılması için ekipler mesai kavramı gözlemeksizin çalışmalarını gerçekleştiriyor.

"Akarsay Belediyesi yetkilileri yolun kullanım ömrünü uzatmak ve vatandaşların görüntü ve gürültü kirliliğine maruz bırakılmak için alt yapısını tamamladıkları sonra sıcak asfalt serimini yaptıklarını ifade ediyor. Sıcak asfalt serimi çalışmalarının ardından orta refüj düzenleme ve peyzaj çalışmaları ile yolun hizmete sunulacağını bilgisini paylaştılar. (Basın bülteni)



Bir Yılda 10 Bin Kişi Ziyaret Etti

Akarsay Belediyesi, Korona Virüs salgını nedeniyle işlerimizin hızla ilerlemesi için tesislerin hizmetlerine sınırlama getirmişti. Ülkede genelinde girilen yeni süreçte tüm tesislerimizi açtık. Genç Osman Millet Kiraathanesi'nin de kapıları kitap severlere açıldı.

Belediye Başkanı Dr. Evren Dinçer'in yönetiminde hayata geçirildiği eğitim ve kültür tesisleri her yaş grubundaki vatandaşlar tarafından beğenilerek kullanılıyor. Genç Osman Millet Kiraathanesi açılışı yapıldığı günden bugüne kadar geçen süre içerisinde

2 Bin 400 vatandaş üye oldu. Aylık 500 kitap sevecin kullandığı Kiraathane aktif üyelerle birlikte 10 Bine yakın ziyaretçiye ulaştı. Geçtiğimiz yıl açılışı yapılarak hizmet vermeye başlayan ve Akarsay'ın ilk Millet Kiraathanesi olan Genç Osman Millet Kiraathanesinde toplam 11 bin kitap yer alıyor. Vatandaşların ücretsiz olarak kullanabildiği kiraathanesinin içerisinde zengin kitap varlığını yanı sıra kafeterya, çalışma odaları, grup çalışma odaları ve bilgisayar odası bulunuyor. Kitap severlerin yeni uğrak noktası olan

Genç Osman Millet Kiraathanesinde ücretsiz çay ve kahve ikramı da yapılıyor.

Akarsay'da başta öğrenciler ve gençler olmak üzere her yaş grubundan vatandaşın faydalanabileceği Millet Kiraathanesinde yetişkin ve çocuk kütüphanesi olarak iki ayrı bölüme hizmet veriliyor. Belediye Başkanı Dr. Evren Dinçer de bu yılın ilgilie kayıtları tamamlayarak Millet Kiraathanelerinin sayısını artırmak adına Kalkanlar Mahallesi'nde 42 bin metrekarelik alan üzerinde hayata geçirdiği Kalkanlar Millet Bahçesinin

İçerisine bir Millet Kiraathanesi daha kazandırdı.

Görünce geldiği gündün beri Akarsay'da eğitim ve kültür alanında yeni mekanlar oluşturan Belediye Başkanı Dr. Evren Dinçer Genç Osman Millet Kiraathanesinin vatandaşlar tarafından sevekle kullanıldığını söyledi. Vatandaşlara kitap okuma alışkanlığı kazandırmak ve kitap okumaya teşvik etmek adına Kalkanlar Millet Bahçesi projesi içerisinde yeni bir Millet Kiraathanesinin de hayata geçirilmesini de duyurdu. (Basın bülteni)

DUYURU

Paydaş Katılım Toplantısı

GMK Yenilenebilir Enerji Mühendislik İmalat Sanayi ve Ticaret A.Ş. tarafından, Akarsay İl Güzelçay İlçesine bağlı bulunan "2019680001" ve "2019680002" ve "2019680005" Ruhsat nolu jeotermal arama ruhsatlarında ve Akarsay İl, Merkez İlçesine bağlı bulunan "2019680006" Ruhsat Numaralı arama ruhsatında "Jeotermal Enerji Arama Amaçlı Arama Sondajları" projesinin yapılması planlanmaktadır. Bu proje Dünya Bankası ve Türkiye Kalkınma Yatırım Bankası ortaklığındaki Türkiye Jeotermal Risk Paylaşım Mekanizması Programı çerçevesinde yürütülecektir.

Söz konusu projeler için, program kapsamında projeden etkilenilecek paydaşlar, projeler hakkında bilgilendirilebilecek amacıyla aşağıda belirtilen tarih ve saatte, faaliyete ilişkin halkı bilgilendirmek, görüş ve önerilerini almak için "Paydaş Katılım Toplantısı" yapılacaktır. Halkımıza saygı ile duyurulur.

Toplantı Yeri	: Güzelçay Belediye Döğün Salonu
Toplantı Yerinin Adresi	: Yeni Mahalle Vahi Sebati Buyuran Cad. A101 üstü, Güzelçay/Akarsay
Toplantı Tarihi	: 29.09.2021
Toplantı Saati	: 14:00
Proje Sahibi	: GMK Yenilenebilir Enerji Mühendislik İmalat San. ve Tic. A.Ş.
Tel	: (232) 532 01 54
Paydaş Katılım Toplantısını Hazırlayan Kuruluş	: Enpark Çevre Enerji Maden Mühendislik Danışmanlık ve Müşavirlik Ltd. Şti.
Tel	: (0 312) 472 08 13
Faks	: (0 312) 472 08 14

Resmî İletiler: www.ilan.gov.tr/ido Basın:11446746

ADI SOYADI	Katılmaya İstediği Kurum	Bölge Numarası	İzlenim

②

ADN NO/ADI	Katılm Yeri (Yerleşim Yeri/Kurum adı)	Buğün Numarası	İmza
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
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50

KOÇPINAR-GÜZELYURT

GEOTHERMAL EXPLORATION DRILLING PROJECT

Environmental and Social Management Plan Process Stakeholder Information Meeting - I MINUTES OF MEETING

KOÇPINAR-GÜZELYURT

JEOTERMAL KAYNAK ARAMA SONDAJLARI PROJESİ

Çevresel ve Sosyal Yönetim Planı Süreci Paydaş Bilgilendirme Toplantısı - I

Toplantı Yeri : Güzelyurt Belediye Döğün Salonu – GÜZELYURT/AKSARAY
Toplantı Zamanı : 29 Eylül 2021 14:00
Proje Sahibi : GMK Yenilenebilir Enerji Mühendislik İmalat San. ve Tic. A.Ş.
Çevre Yön. Danışmanı : ENPARK Çevre Enerji Maden Müh. Danışmanlık ve Müşavirlik LTD. ŞTİ.

TOPLANTI TUTANAĞI

29 Eylül 2021 saat 14:00'te Koçpinar - Güzelyurt bölgelerinde yapılması planlanan Jeotermal Kaynak Arama sondajları projesi Çevresel ve Sosyal Yönetim Planı çerçevesinde Paydaş Bilgilendirme Toplantısı gerçekleştirildi. Toplantıya proje sahibi GMK Yenilenebilir Enerji Müh. San. Tic. A.Ş. ve Çevre Yönetim Danışmanı ENPARK Çevre Danışmanlık firması eşliğinde yapıldı. Proje etki alanı içerisinde çevresinde yer alan Güzelyurt - Gazimeci - Akayurt - Akayurt - İhsan - Sürüşler yerleşimleri Koçpinar - Hekimözü - Yuvacık - Koculu - yerleşimlerinin sakinleri ve mahalli idarecileri ve Aksaray Çevre İl Müdürlüğü - İl Turizm Müd. davet edildiği ve 100 kişiden fazla katılım ile toplantı gerçekleştirildi. Katılım listesi tertemiz eklendi.

Paydaş Bilgilendirme Toplantısı kapsamında yapılmış planlanan Jeotermal Kaynak Arama Sondajları ve sondajlardan elde edilecek kaynak ile ileride tahmini 24 MW'lık kapasiteli Jeotermal Elektrik Santrali ve buna entegre olacak 100000 m² jeotermal ısıtım alanı Maden Sıra ve günlük 10 ton yeşil Meyve Sebze Kurutma Tesisi kurulumu hakkında sunum yapıldı. Katılımcılara projenin yeri, etki alanı faaliyetleri, proje hedefleri ve paydaş olarak süreci nasıl izleyebilecekleri hakkında bilgi veren el broşürleri dağıtıldı.

Proje tartışım sunumu sonrası katılımcıların soruları alındı. Proje yöneticisi Sn. Murat Karadağ ve Sn. Gülşah Tuncel Karadağ tarafından kendilerine yöneltilen sorular cevaplandırıldı.

Vatandaş Sorusu: Çevresel-Sosyal Etkisi değerlendirilerek kaynaklarımızın sebilimize yaklaşıyor mu diyeceğiz? Nasıl kontrol edeceğiz? Vatandaşın etkisi nedir?

①
Muren

TOPLANTI TUTANAĞI

VI-S2: Meyve Sebzeyi gerçek kişi mi üretecek fizel kişi mi? Yani Sera kurmuş bir kişinin meyvesini-sebzelerini de kurutmak üzere olacak mıdır?

Cevap: M.K. = Jeotermal enerji üretimi için kullanılacak alanlar diğer yenilenebilir enerji kaynaklarından daha az alan kaplanmaktadır. Olayı Sondaj lokasyonumuz kayın görsel güzelliğine daha geliyorsa bunlara ilgili gerekli önlemler alınacaktır. Hayvancılık yolları vasıtasıyla maduriyeti dursu derhal karılacaktır ve gerekli tedbir ve önlemler alınacaktır.

Jeotermal ısıtmalı modern sera da toprak ısıtım yapılacak ve bu işletmelerde çalışanların kadın personellerinden oluşan bölge halkı istihdam edilecektir. M.K. = Kuracağız meyve-sebze kurutma tesisinde bölge halkının ürettiği elma, çilek ve diğer ürünlerin kurutması sağlanacaktır. Kurulacak tesisin kapasitesine bağlı olarak gerçek vs fizel kişilerin ürünlerinin kurutma yapılabilir. Kurutma tesisinin asıl amacı bölgede/yerleşen meyve sebzelerin bu tesisde kurutulmasını sağlamak ve ticaretini geliştirmek olacaktır.

VI-S3: Bacalardan çıkan buhardan iklim olarak değişiklik olacak mı?

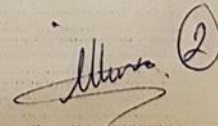
Cevap: M.K. = Kuracağız tesisler tamamen kapalı çevrim olacak. Yani Jeotermal su ısıtı alınıldıktan sonra tekrar yeraltına basılacaktır. İlk testler sırasında buhar sikisleri görülebilir fakat işletmeye geçildiğinde tamamen kapalı çevrim olacaktır. Dışarıya sıcak yada soğuk deşaj kesinlikle olmayacaktır.

VI-S4: Isısını aldığınız suların meyve-sebze sulama yapmak amacıyla tahsisi mümkün müdür?

Cevap: M.K. = Olmaz. Çünkü Jeotermal sular içerisinde karındakileri yüksek miktarda ve tuzlu olarak nedeniyle sulama amacıyla kullanılamazlar. Deşaja izin vermezler.

VI-S1: Tesisler İlisu'da da yapılacak mı?

İlisu civarında ruhatımız bulunmakta. Fakat burası Özel Gevre Kömür Alanı olduğu için buraya ayrıca bir GFD başvurusu hazırlandı. Buradaki kaynaklar 3500 metreden daha derinde. Buraya özel bir çalışmamız olacak. İlisu'dan Bütüncü'ye su taşımak çok maliyetli. Bu sebeple İlisu için ayrı bir proje geliştireceğiz.

 (2)

TOPLANTI TUTANAĞI

V3.S1 = ^{öncelikle} Sivrihisar'da açılmış kuyulardan haberinizi var mı? 80c ile 250c arasında çok ciddi buhar/enerji üretimi söz konusudur. Siz bu kaynağı kullanımı için mesken mahal ısıtması düşünüyor musunuz?

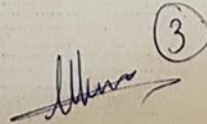
Cevap M.K. = Sivrihisar'da kuyudaki sıcaklıkları çok yüksek olan bir kuyu tarçıldı. Bu Türkiye'nin en sıcak kuyusudur. Bu bölge ısı radyasyonu olarak oldukça yüksektir. Komşu ruhsatımızdaki bu sıcaklıkları bir de belleklerimiz. Bu enerji kaynağının en iyi şekilde kullanımı için çalışacağız. Toplu konut olan yerler için bölgesel ısıtma ekonomiktir, kullanıktır. Fakat öncelikle elektrik santrali, modern sera ve yaz meyve sebze kurutma tesisidir.

V3.S2 = Serada yapmak isteyen özel müteahhisi sizin sınırdan yararlanabilecek mi?

Cevap M.K. = Tarıma Dayalı İhtisalı Organize Sera Bölgesi yönetmeliği yapılmış. Bu kapsamda bir salamama olabilir. Her de bunu yapmak istiyorsanız. Su ar. yapıntestimiz. Kaun jeotermal kaynağın bulunması ve kaynağın gücüne bağlı olarak elektrik santrali, sera ve meyve sebze kurutma tesis kurulabilir. Serada üretilen domates ihracat edilecek, fakat kurutma tesisinde meyve-sebzeler bölge halkının üreteceği ürünlerden olacaktır. Ayrıca burada bölge halkı istihdam edilecektir.

V4.S1 = Zemin Etüdü yapıldı mı? Ne kadar sürede bu projeleri yapacaksınız?

Cevap M.K. = Kaynağın arınması sırasında jeolojik, jeokimyasal ve jeofiziksel etütler yapıldı. Bu çalışmalar neticesinde sondaj noktalarımızı belirledik. Yaklaşık 24 ay gibi bir sürede tamamlanmayı planlıyoruz. Dokuz Eylül Üni. Deprem Araştırma Merkezi müd. Sn. Prof. Dr. Halim Şakir ile ve MTA emeltileri ENB. Levent Dan. Cemil Akpazal ile çalışıyoruz. Projenin her aşımında aram-geliştirme çalışmalarında devam edeceğiz. Resmî süreçlerin tamamlanması ile 2022 yılı başında sondajları geçmeyi düşünmekteyiz.

 3

TOPLANTI TUTANAĞI

V5 St= Telkinizinde jeotermal karşı tepkiler görüyor. Gevresi gruplar doğaya karşı zararlı olduğunu savunmaktalar. Özellikle kurumuş ağaçları gösteriyorlar. Bununla ilgili olarak ekili alanları garanti altına alıyor musunuz? vs önlem alacak mısınız?

Cevap= MK= Projenin Dünya Bankası Risk Paylaşım Mekanizması'na gereklilikleri ile yönetiyoruz. Tamamen Gevresi, İnsan, hayvan ve doğaya saygılı olarak çalışmalarını yürüteceğiz. Ayrıca Türk Gevresi Mevzuatı ile değil Dünya Bankası Avrupa'da market standartlarını göz önüne alıyoruz. Örneğin; şu aşamada "GED gerekli değildir" dlmı. elmanıza rağmen Dünya Bankası mevzuatı gereği daha Sondaj çalışması başlamadan siz değerli paydaşlarımızı süreci dahil ediyoruz. Bu süreci seffof bir şekilde yürüteceğiz.

Projenin daha bu aşamasında endemik bitkileri ve ender canlıların izlenmeye başlandı. Bunun için Gazi Üniversitesi Ekoloj. Mehmet Gül ile çalışıyoruz. Bölgeye foto kameranlar kuruyoruz. Ayrıca bölgeye her 2 (iki) yarıya tarımın silesini kaydedecek cihaz bağlayacağız. Projenin her aşamasında tarım araştırmaları ve ekili alanları korumaya ve gerekli önlemleri alacağız.

V6 St= Yeraltındaki jeotermal akışkanın rezervini hesapladınız mı? Kaş mı Jeyer yulda bu akışkanlar oluşuyor? haberi var mı?

Cevap= MK= Yapılacak sondajlar ile yeraltındaki akışkanın varlığı tespit edilecek ve Rezerv hesabı için bir deniz çukuru kaynağı yapmak ve bunları belirli bir süre test etmek gerekecektir.

Akışkan yeraltına damla damla süzülme devam etmektedir. Fakat burada rezervuarı oluşturacak kaynağın varlığı ve ısıtıcı sistemin akışkanın ısıtması ve örtü kayalardan ile yüzeye çıkarmaya başlaması gereklidir. Bu süreç birleceği yıllık bir süreçtir. Isıtıcı sistem Hazarajının kendisidir. Hala sıcak almayı araştırmaktayız. Sondajlarla üretilen akışkan ısıtıldıktan sonra yine aynı rezervuara geri basılacak ve tekrar ısıtılması sağlanacaktır.

29 Eylül 2021

TOPLANTI TUTANAĞI

Katılımcının Soruları Cevaplandı 5 sayfa olan bir tutanak
imza altına alınmıştır. Katılımcı Listesi Uziçitedir.
Toplantı fotoğraf ve video kaydı ile kaydedilmiştir.

Reportör:-

Jeoloji Müh.

ILKER KIRCA

Ilker

Koçınar-Güzelyurt Jeotermal Kaynak Arama Sondajları Projesi
Çevresel ve Sosyal Yönetim Planı Süresi Paydaş Bilgilendirme Toplantısı - I

Ilker (5)

PROJENİN YERİ ve TANIMI

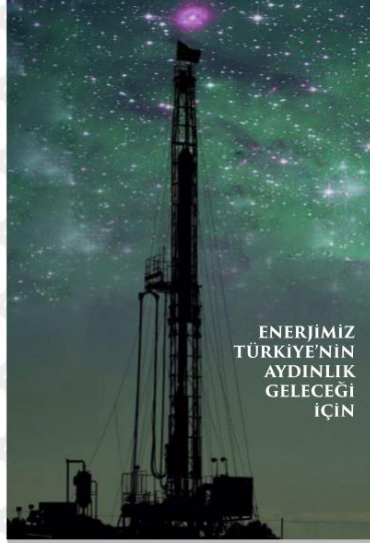
GMK Yenilenebilir Enerji Mühendislik İmalat San. ve Tic. A.Ş. tarafından Aksaray İli Merkez ve Güzelyurt ilçelerinde bulunan "2019680001", "2019680002", "2019680005" ve "2019680006" numaralı jeotermal kaynak arama ruhsatlarında "**Jeotermal Kaynak Arama Sondajları**" yapılması planlanmaktadır.



Güzelyurt ve Koçpinar Projelerini Gösterir Harita

PROJENİN HEDEFİ

Kısa vadede **Entegre 100.000 m² Jeotermal Isıtımlı Modern Sera** ile günlük **10 ton Yaş Meyve-Sebze Kurutma Tesisi** kurmak olup; uzun vadede kaynağın niteliğine göre **24 MWe güç kapasitesinde Jeotermal Elektrik Santrali** kurulması planlanmaktadır. Ayrıca, Jeotermal Elektrik Santrali-Modern Sera-Kurutma Tesisi kurulumu ile birlikte **10 MWe kapasiteli Hibrit Güneş Enerji Santrali** kurulumu da söz konusu olacaktır.



ENERJİMİZ
TÜRKİYE'NİN
AYDINLIK
GELECEĞİ
İÇİN



Merkez Ofis: Adalet Mh. Manas Bly.
Folkart Towers A Kule 47 B Kat:26/2601
Bayraklı / İZMİR
+90 232 532 01 54
www.gmkenerji.com.tr

GÜZELYURT KOÇPINAR JEOTERMAL ENERJİ ARAMA SONDAJLARI PROJESİ

AKSARAY İLİ
MERKEZ İLÇESİ ve
GÜZELYURT İLÇESİ

PAYDAŞ KATILIMI TOPLANTISI



29 EYLÜL 2021 Çarşamba Saat:14.00
Yer: Güzelyurt Belediye Düğün Salonu
Yeni Mh. Vali Sebati Buyuran Cd. A101 Üstü
Güzelyurt / AKSARAY



PROJENİN YARARLARI

Kurulacak tesislerde **istihdamın yerel halktan yapılması** düşünülmektedir. Özellikle **%50'nin üstünde kadın personel istihdamı** yapılacak ve eğitimleri organize edilecektir. Dolayısı ile projelerin gerçekleşmesi, bölgede büyük bir sorun olan işsizlik sorununa, pozitif açıdan yarar sağlayacaktır.



PROJE HAKKINDA

Her projede, projenin ilerleyişine göre, 5'er adet arama sondajı yapılması planlanmaktadır.

Bir sondaj yaklaşık 3 ay sürmektedir.

Projelerin hazine ve mera arazilerinde yapılması planlanmaktadır. **Mümkün olduğunca şahıs arazilerinin ve tarım arazilerinin kullanılması planlanmamaktadır.**



PAYDAŞLAR OLARAK BU SÜRECE NASIL DAHİL OLABİLİRSİNİZ?

- Paydaş Katılım Toplantıları Sırasında, yazılı ve sözlü görüşlerinizi ve önerilerinizi bildirerek
- Belirli zamanlarda ve aralıklarda yapılacak küçük toplantılara katılım sağlayıp görüşlerinizi bildirerek
- Belirlenecek Sondaj Lokasyonlarına en yakın yerleşim yerlerinde, herkesin ulaşabileceği lokasyonlara (**kahvehaneler, muhtarlıklar gibi...**) yerleştirilecek olan şikayet kutularına bırakılacak görüş ve öneri formlarını doldurarak
- Telefon ile arayıp ulaşarak

+90 541 910 42 92

Murat KARADAŞ

+90 534 933 46 43

İlker KIRCA

+90 546 825 85 27

Selim TUNA

sürece dahil olabilirsiniz.

GÜZELYURT-KOÇPINAR
EXPLORATION DRILLING PROJECT

Stakeholder Information Meeting

Environmental and Social Management Plan Process



GÜZELYURT – KOÇPINAR
ARAMA SONDAJLARI PROJESİ
Paydaş Bilgilendirme Toplantısı
Çevresel ve Sosyal Yönetim Planı Süreci



*Annex 4 Second Stakeholder Engagement Meeting Information
Note*

Date: November 29, 2023



GÜZELYURT GEOTHERMAL EXPLORATION DRILLING PROJECT

STAKEHOLDER ENGAGEMENT PLAN

GÜZELYURT JEOTERMAL ENERJİ A.Ş.

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Revision History

Revision	Prepared By	Date	Detail	Position
Rev V00	Selim Tuna	05.12.2022	First submission	Project Manager



Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Purpose of Preparation:

This Stakeholder Engagement Meeting Information Note has been prepared within the framework of the Environmental and Social Management Plan for Güzelyurt Jeotermal Enerji Exploration Drilling Project.

Prepared by:

Güzelyurt Jeotermal Enerji A.Ş.
Kazım Özalp Mahallesi Reşit Galip Caddesi No:97
Çankaya / ANKARA

© 2023 GÜZELYURT JEOTERMAL ENERJİ A.Ş.
Bütün Hakları Saklıdır.

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Index

1.0	Introduction	1
2.0	Preparations for Stakeholder Engagement Meeting	1
2.1	Announcement Posting Activities	1
2.2	Invitees	2
3.0	Meeting Program / Calendar	3
4.0	Minutes of Meeting	6
5.0	Conclusion.....	10

Maps

Map 1	Satellite Map showing the Meeting Location	Hata! Yer işareti tanımlanmamış.
Map 2	Satellite Map Showing Service Points and Transportation Routes.....	5

1.0 Introduction

The project for which an Environmental and Social Management Plan and Stakeholder Engagement Plan have been prepared within the scope of the World Bank Risk Sharing Mechanism (RSM) for Geothermal Resource Verification is the "3 Geothermal Exploration Wells to be Drilled for Electricity Generation Project" planned to be realized by GÜZELYURT JEOTERMAL ENERJİ A.Ş. in Aksaray Province, Güzelyurt District, License No. 2023/15.

In line with the Environmental and Social Management Plan and Stakeholder Engagement Plan prepared by Güzelyurt Jeotermal Enerji Anonim Şirketi, a Stakeholder Engagement Meeting was held on 29.11.2023 at the Municipality Wedding Hall in Güzelyurt District of Aksaray Province. In this document, information about the Stakeholder Engagement Meeting and the preparation process is shared and the results are presented.

2.0 Preparations for Stakeholder Engagement Meeting

2.1 Announcement Posting Activities

The preparations made to announce the stakeholder participation meeting to the stakeholders are given below.

- - The approved ESMP and its annexes, posters and brochures prepared for the meeting were published on www.guzelyurtjeotermal.com on 16.11.2023.
- - In order to announce the meeting, posters and brochures prepared with the approval of RSM expert and RSM unit were printed on 18.11.2023. 15 posters and 250 brochures were printed.
- - An agreement was made with an agency to place an advertisement in Haber68 newspaper, which has a high circulation in Aksaray. The advertisement text was published in the newspaper dated 20.11.2023.
- - Güzelyurt Municipality was contacted to announce the meeting from the municipality's sound system and the municipality stated that they could announce the meeting free of charge. Accordingly, the following announcement text was announced 8 times in total, including weekdays and Saturdays, every day at 14:00 from 20.11.2023 to 28.11.2023. Audio recordings of the announcement were also shared with the RSM team and RSM consultants.

Within the scope of the "Güzelyurt Geothermal Exploration Drilling Project" planned by "GÜZELYURT JEOTERMAL ENERJİ A.Ş.", a "Stakeholder Participation Meeting" will be held on November 29, 2023 at 14:00 at Güzelyurt Municipality Wedding Hall in order to inform the Project stakeholders and to receive their opinions and suggestions. All our people are invited. "

- On 28.11.2023, the draft presentation to be made at the Stakeholder Engagement Meeting was shared with RSM consultants and their approval was obtained.

The website announcement image, prepared brochures and posters, newspaper advertisements are given in Annex-1.

2.2 Invitees

- On 20.11.2023, visits were made to the following project stakeholder settlements and posters were pasted at points visible to the public. One-on-one meetings were held with the mukhtar's office and the people around it and they were invited to the meeting.

- o Gaziemir village mukhtar's office
- o Bozcayurt village mukhtar's office
- o Akyamaç village mukhtar's office
- o Güzelyurt Merkez/ Yeni neighborhood mukhtar's office
- o Güzelyurt Merkez/ Yukarı neighborhood mukhtar's office
- o Güzelyurt Merkez/ Aşağı neighborhood mukhtar's office

In addition, the printed ESMP booklet was left at mukhtars' offices.

- On 21.11.2023, visits were made to stakeholder officials, institutions and organizations and they were invited to the meeting. In this context, the following institutions were interviewed.

- o Aksaray Special Provincial Administration / License and Inspection Directorate
- o Aksaray Provincial Directorate of Agriculture and Forestry
- o Aksaray Provincial Directorate of Culture and Tourism
- o Aksaray Provincial Directorate of Environment, Urbanization and Climate Change
- o Aksaray Museum Directorate
- o Güzelyurt Municipality
- o Güzelyurt District Governorship
- o Güzelyurt Gendarmerie Command

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

With the announcements, poster activities and distribution of the printed brochures, especially the participation of Akyamaç - Gaziemir and Bozcayurt villagers was targeted. The public was also informed through shopkeeper activities in Güzelyurt district center. In addition, shopkeepers and neighborhood surveys were conducted to reach women.

Photographs showing the preparation process for the announcement of the meeting and the signed minutes of the ESMP booklet and posters left at the Muhtar offices are given in Annex-1.

3.0 Meeting Program / Calendar

In accordance with the pre-determined schedule, all preparations for the meeting were made for Wednesday, November 29, 2023 at 14:00. In addition to the announcements, announcements and invitations that continued throughout the week, the meeting hall and catering were also organized.

Due to the cold weather in Güzelyurt, the heating systems of the hall were turned on at the day of the meeting by paying an additional fee to the Municipality. In addition, hot tea and snacks were served to the guests at the tea room, which was organized in advance.

In order to increase participation in the meeting, a shuttle service was organized from Akyamaç-Bozcayurt and Gaziemir villages. The departure times of the shuttles were written on both brochures and posters before the meeting. There was no major disruption in the shuttle service organization.

Shuttles departed from Bozcayurt and Gaziemir villages at 13:30. From Akyamaç village, the shuttle departed at 13:40. The shuttles departed from the common points of the village where public transportation was most convenient. The location of the meeting place and the departure routes of the shuttles are shared in the satellite images below.



Map 1 Satellite Map showing the Meeting Location

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



Map 3 Satellite Map Showing Service Points and Transportation Routes

Although the meeting was scheduled to start at 14:00, the meeting was started about 15 minutes late in case anyone was coming. The whole meeting lasted approximately one hour. All participants left the hall at 15:30.

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

4.0 Minutes of Meeting

29 Kasım 2023

GÜZELYURT JEOTERMAL ARAMA SONDAJLARI PROJESİ

Paydaş Katılımı Toplantısı

Toplantı Yeri : Güzelyurt Belediye Düşün Salonu – Güzelyurt/AKSARAY
Toplantı Zamanı : 29 Kasım 2023 14:00
Proje Sahibi : Güzelyurt Jeotermal Enerji A.Ş.
Çevre Yön. Danışmanı : ENPARK Çevre Enerji Maden Müh. Danışmanlık ve Müşavirlik LTD. ŞTİ.

TOPLANTI TUTANAĞI

29 Kasım 2023 saat 14:00'da Güzelyurt Jeotermal Arama Sondajları Projesi kapsamında paydaş katılım toplantısı gerçekleştirildi. Toplantıya proje sahibi Güzelyurt Jeotermal Enerji A.Ş. ve çevre yönetim danışmanı ENPARK çevre danışmanlık firması ev sahipliği yaptı. Proje etki alanı içerisinde yer alan Güzelyurt İlçesi, Gazisemir, Beşevler ve Atıyaman köylerinin mahalli idarecileri ve sakinleri ile yerel yönetime yer alan kamu kurum ve kuruluşları davet edilerek 80 kişilerin katılımıyla toplantı gerçekleştirildi. Toplantı katılım listesi katılımcıların iletişim bilgileri ve imzaları alınarak tablolara eklendi. Toplantı serresesinde Güzelyurt Jeotermal Arama Sondajları Projesi nedir, sahibi kimdir, projenin hedefleri, önemi ve yararları nedir sorularına cevap verilerek ayrıca çevresel ve sosyal yönetim planının uygulanması ve paydaş katılım sürecine nasıl dahil olunacağı hakkında sunum yapılmıştır. Katılımcılara projenin yeri, yararları, hedefleri ve paydaş olarak sürece nasıl dahil olabilecekleri hakkında bilgi veren el broşürleri dağıtıldı. Sunum sonunda katılımcılara soruları alındı. Proje yönetiminden Sr. Murat KARADAS kendilerine yöneltilen sorulara cevapladı.

GÜZELYURT JEOTERMAL ARAMA SONDAJLARI PROJESİ
Paydaş Katılımı Toplantısı

①

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

TOPLANTI TUTANAĞI

Soru 1 - M. Özgür: Projenin uygulanmasıyla ilgili verdiğiniz bilgilere göre proje şu an hangi aşamada?

Cevap 1: Fieketimin sahada 6 yıldır faaliyet göstermektedir. Bu zaman zarfında sahada jeoloji ve jeofizik çalışmalarını yapıldı. Bu çalışmalar neticesinde muhtemel kuyu yerleri belirlenerek gerekli izinler alındı. Arama sahasını işletme sahasına çevirebilmek amacıyla sahada iki adet kuyu açıldı. Kuyulardan elde edilen jeotermal akışkan sızdırmazlı sahalara işletme sahasına çevirildi. Daha sonra elde edilen veriler ışığında kuyu yerleri revize edilerek bu sahalara ait gerekli izinler alındı. Önümüzdeki aylarda ise Dünya Bankasının son aşamaya alarak risk paylaşım mekanizması kapsamında sahadaki kuyulardan daha derin bir kuyuya asılması ve niteliği bakımından uygun bir jeotermal akışkanın elde edilmesi planlanmaktadır.

Soru 2 - A. Arın: Proje kapsamında elde edilecek jeotermal akışkandan halk bireysel olarak sera ısıtmasında kullanılabilecek mi?

Cevap 2: Projenin birincil öncelikli amacı Jeotermal Elektrik Santralinin kurulmasıdır. İkincil amacımız ise sosyal olarak düşünülürken de kadın iş gücünü ve istiholamını da destekleyen bir proje olan jeotermal ısıtmalı seralarda kurulmasıdır. Proje kapsamında yapılacak olan jeotermal akışkanın, sızdırmazlı kendi arazileri üzerine kuracakları bireysel seralarda kullanılacak şekilde paylaşılması, gerek üretimin verimliliği ve sürdürülebilirliği gerekse arzilerin imar durumları ile ilgili yasal düzenlemeler bakımından pek mümkün görülmemektedir. Güzelyurt bölgesinde seracılık faaliyetleri ile ilgili geleceğe yönelik planlarımız olmakla beraber önceliğimizin jeotermal elektrik santrali olduğuna ve yapılacak jeotermal akışkanın öncelikli olarak santralde kullanılmasına odaklandığımızı söyleyebiliriz.

TOPLANTI TUTANAĞI

Soru 3 - S. Koç : Proje kapsamında üretilecek jeotermal akışkanlarda kayıp olarak mı? Ne kadarı geri dönüştürülecek?

Cevap 3 : Yer altındaki jeotermal kaynağı sıcak olduğun göz önüne alındığında gerek teknik olarak projenin sürdürülebilirliği bakımından gerek jeotermal akışkanın çevreye verebileceği riskler açısından gerekse çevre ile ilgili yasal düzenlemeler sebebiyle jeotermal akışkanın çevreye bırakılması söz konusu değildir. Projenin sürdürülebilir olması için üretim süreçlerinin kapalı çevrim sistemi ile yapılması gerekmektedir. Bu şekilde jeotermal akışkan kayıplarının en aza indirilmesi hedeflenmektedir.

Soru 4 - E. Abay : Tesisin yapılaşığı alanda vatandaşların arazilerinde mülkiyet açısından bir düzenleme yapılacak mı? Jeotermal tesisin kurulacağı alanda bulunan parsellerde herhangi bir kamulaştırma durumu söz konusu mu? Jeotermal Elektrik Santralini'nin (JES) Güneş Enerji Santralinden (GES) farkı nedir?

Cevap 4 : Proje kapsamında esmiş olduğumuz ve gerekli işleri almış olan (GED vb) ileride kullanılacak planlanan muhtemel kuyu noktaları tarıma elverişli olmayan kamu arazileri üzerinde bulunmaktadır. Yapılacak çalışmalardan mesbuk kalmadıkça bölge halkının tarımsal faaliyetlerinin etkilenmemesi amaçlanmıştır. Jeotermal kaynaklarına şirkete sağladığı kamulaştırma hakkımız olmasına rağmen şirketimiz böylece kadar bu hakkı kullanmamıştır ve kullanmayı istememiştir. Şirket olarak önceliğimiz her zaman vatandaşla anlaşma yoluna gitmek olmuştur. Jeotermal santral kuruluşunda alaral bir imar salıması yapılmamaktadır. Sadece santralin kurulacağı alana imar vecililer olup serresizdeki arazilerin niteliği değişmemektedir. GES'lerde mevsime bağlı olarak ve günün belirli bir bölümünde üretim yapılabilir olması ayrıca aynı kapasitede üretim yapan GES ve JES santrallerinin kurulumları alan bakımından karşılaştırıldığında JES'lerin daha verimli üretim yaptığını ve daha avantajlı olduğunu görebiliriz.

GÜZELYURT JEOTERMAL ARAMA SONDAJLARI PROJESİ
Paydaş Katılımı Toplantısı

③

TOPLANTI TUTANAĞI

Soru 5 - R. Yeldan: Proje kapsamında jeotermal konut ısıtması ile alakalı bir planınız veya salımlarınız var mı?

Cevap 5: Projenizin amacının ve önceliğinin elektrik üretimi olduğunu daha önce de belirtmiştik. Ancak ileride yapılacak salımlarda elde edilecek jeotermal akışkanın miktarı ve niteliği göz önüne alınarak yeterli kadar kaynağa sahip olduğumuz takdirde yeni projelere ve gelecek tekliflere kapımız açık olacaktır.

Soru 6 - H. Gal: Jeotermal Elektrik Santralleri bölgede yaşayan halkın sağlığını tehdit ediyor mu? Santralin halk sağlığına zararı olacak mı?

Cevap 6: Bu konuyla alakalı elimizde yeterli bilimsel bir veri alınmakla beraber özellikle JES'lerin yoğun olduğu bölgelerde (Ege bölgesi, Aydın vb.) konu hakkında kesin bir yarguya varabileceğimize herhangi bir bilimsel salımda olmadığını söyleyebiliriz.

Raporör
Jeoloji Müh.
Levent GÜBÜK



The participant list is provided in Attachment 2. The photos from the meeting are presented in Attachment 3.

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

5.0 Conclusion

At the meeting, a presentation was made by the Environmental Consultant company Enpark. Following the presentation, a question-and-answer session was held and the questions were answered by the company representative Murat Karadaş. No bad incidents or reactions were encountered during the meeting.

The following decisions were made at the end of the meeting.

- Some of the questions were about the utilization of the geothermal resource by the public. In this regard, it was stated that the geothermal resource will primarily be used in electricity generation. It was stated that individual use requests would not be allowed by explaining that it would not be economical, but it was informed that the company could be evaluated by the company if there are plans such as Agriculture Based Specialized Organized Greenhouse Industrial Zone or City District heating system as public investment and if the resource is sufficient.
- - During and after the presentation, it was stated that the company officials could always be reached at the numbers given in the brochures and posters.
- - It was conveyed that requests and complaints can be left in the complaint boxes to be left in the mukhtars' offices.
- - It was also stated that the details of the project can be learned from the Environmental and Social Management booklet left at the mukhtars' offices.
- - At the end of the meeting, it was informed that a stakeholder participation meeting will be held again in the future depending on the progress of the project.

Attachment-1
ANNOUNCEMENTS, BROCHURES, AND POSTERS
BOOKLET DELIVERY RECORDS
PHOTOS FROM THE ANNOUNCEMENT ACTIVITIES



Paydař Katılımı Toplantımız Yapılacak

Toplantı Projeden Etkilenebilecek Paydařları, Proje Hakkında Bilgilendirebilmek Ve Görüş Ve Önerilerini Almak Amacıyla Düzenlenmektedir. Projenin Çevresel Ve Sosyal Konular İle İlgili Raporları, Ařağıdaki Linklerde Sunulmuş Olup, Basılı Halleri Muhtarlıklarda İncelemeye Açıktır. Bu Proje Dünya Bankası Ve Türkiye Kalkınma Yatırım Bankası Ortaklığındaki Türkiye Jeotermal Risk Paylaşım Mekanizması Programı Çerçevesinde Yürütülecektir. Proje Kapsamında, 3 Adet Jeotermal Kaynak Arama Sondajı Yapılması Planlanmaktadır.

GÜZELYURT JEOTERMAL
ARAMA SONDAJLARI PROJESİ
AKSARAY İLİ
GÜZELYURT İLÇESİ
AG-4 KUYUSU, GÜZELYURT MAHALLESİ 3809 PARSEL
GAZİEMİR-1 KUYUSU, GÜZELYURT MAHALLESİ 2863 PARSEL
GAZİEMİR-5 KUYUSU, AKYAMAÇ KÖYÜ 1328 PARSEL

Toplantı 29 Kasım 2023 Tarihinde Saat 14:00'Da Düzenlenecektir.

[Çevresel Ve Sosyal Yönetim Planı Ve Ekleri](#)

[Toplantı Afıřı](#)

[Broşür](#)

*Figure 1 Website Meeting Announcement and ESMP Download Link
(www.guzelyurtjeotermal.com)*

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note


**GÜZELYURT JEOTERMAL ARAMA
SONDAJLARI PROJESİ
AKSARAY İLİ
GÜZELYURT İLÇESİ**


AG-4 KUYUSU, GÜZELYURT MAHALLESİ 3809 PARSEL
GAZİEMİR-1 KUYUSU, GÜZELYURT MAHALLESİ 2863 PARSEL
GAZİEMİR-5 KUYUSU, AKYAMAÇ KÖYÜ 1328 PARSEL

**PAYDAŞ KATILIMI
TOPLANTISI**

Toplantı projeden etkilenebilecek paydaşları, proje hakkında bilgilendirebilmek ve görüş ve önerilerini almak amacıyla düzenlenmektedir. Projenin çevresel ve sosyal konular ile ilgili raporları, firmamız web sayfasında ve muhtarlıklarda sunulmuş olup incelemeye açıktır.

Bu proje Dünya Bankası tarafından desteklenen ve Türkiye Kalkınma Yatırım Bankası tarafından uygulanan "Türkiye Jeotermal Risk Paylaşım Mekanizması Jeotermal Geliştirme Projesi" kapsamında yürütülecektir. Proje kapsamında, 3 adet Jeotermal kaynak arama sondajı yapılması planlanmaktadır.

 **GÜZELYURT
JEOTERMAL**
www.guzelyurtjeotermal.com



29 KASIM 2023 / Çarşamba Saat: 14:00

Yer: Güzelyurt Belediye Düşün Salonu

Adres: Yeni Mahalle Vali Sebati Buyuran Cad. A101 üstü, Güzelyurt/Aksaray

Servis Kalkış Saatleri ve Yeri:

Bozcayurt Köyü: 13:15, Muhtarlık Önü
Gaziemir Köyü: 13:30 Köy Meydanı
Akyamaç Köyü: 13:40 Köy Meydanı

Figure 2 Meeting Announcement Poster

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

PROJENİN YERİ VE TANIMI

GÜZELYURT JEOTERMAL ENERJİ A.Ş. tarafından Aksaray İli, Güzelyurt İlçesine bağlı 2023/15 Ruhsat No'lu sahada Güzelyurt Jeotermal Arama Sondajları Projesi yapılması planlanmaktadır.

Bu proje Dünya Bankası tarafından desteklenen ve Türkiye Kalkınma Yatırım Bankası tarafından uygulanan "Türkiye Jeotermal Risk Paylaşım Mekanizması Jeotermal Geliştirme Projesi" kapsamında yürütülecektir. Proje kapsamında, 3 adet Jeotermal kaynak arama sondajı yapılması planlanmaktadır.





GÜZELYURT JEOTERMAL

BİZE ULAŞIN
Merkez Ofis:
Kazım Özalp Mahallesi,
Reşit Galip Cd. No:97, 06680
Çankaya/Ankara Teli: +90 312 439 43 34
www.guzelyurtjeotermal.com

GÜZELYURT JEOTERMAL ARAMA SONDAJLARI PROJESİ

**AKSARAY İLİ,
GÜZELYURT İLÇESİ**

PAYDAŞ KATILIMI TOPLANTISI

Toplantı projeden etkilenebilecek paydaşları, proje hakkında bilgilendirebilmek ve görüş ve önerilerini almak amacıyla düzenlenmektedir.

**GÜZELYURT
JEOTERMAL**

29 KASIM 2023 / Çarşamba
Saat: 14:00
Yer: Güzelyurt Belediye Düşün Salonu
Adres: Yeni Mahalle Vali Sebati
Buyuran Cad. A101 üstü,
Güzelyurt/Aksaray

Servis Kalkış Saatleri ve Yeri:
Bozcayurt Köyü: 13:15, Muhtarlık Önü
Gaziemir Köyü: 13:30 Köy Meydanı
Akyamaç Köyü: 13:40 Köy Meydanı

PROJENİN HEDEFİ

Bu projenin amacı, jeotermal kaynağın bulunmasıdır. Proje sonunda jeotermal kaynak bulunması halinde, jeotermal elektrik santrali kurulması öncelikli hedeftir.



PROJENİN YARARLARI

Projede olumlu etkileri artırmak amacıyla yerel istihdama öncelik verilmesi ilkesi benimsenecektir. Bu ilke taşeronlar tarafından da benimsenecektir. Vasıfsız işlerde %80, yarı vasıflı işlerde %50 ve vasıflı işlerde %20 oranında yerel istihdam sağlanması uygulanabilir. Projejen etkilenen bölgelerden gerekli işgücünün sağlanması, kadınlara çalışma önceliği verilmesi, bölgede olumlu bir etkiye sebep olacaktır.



PROJE HAKKINDA

Söz konusu projede, projenin ilerleyişine göre, 3 (üç) adet arama sondajı yapılması planlanmaktadır. Bir sondaj yaklaşık 3-4 ay sürmektedir.

Projelerin, izinleri alınmış olan, hazine ve mera arazilerinde yapılması planlanmaktadır. Projejen çevresel ve sosyal konular ile ilgili raporları, firmamız web sayfasında ve muhtarlıklarda sunulmuş olup incelemeye açıktır.



BU SÜRECE NASIL DAHİL OLABİLİRSİNİZ?

- ❖ Paydaş Katılım Toplantıları sırasında, yazılı ve sözlü görüşlerinizi ve önerilerinizi bildirerek,
- ❖ Belirli zamanlarda ve aralıklarda yapılacak küçük toplantılara katılım sağlayıp görüşlerinizi bildirerek,
- ❖ Belirlenecek sondaj lokasyonlarına en yakın yerleşim yerlerinde, herkesin ulaşabileceği lokasyonlara (kahvehaneler, muhtarlıklar gibi...) yerleştirilecek olan şikayet kutularına bırakılacak görüş ve öneri formları ile,
- ❖ Telefon ile arayıp ulaşarak
 - 0532 256 92 60 (Erdal Palamut)
 - 0530 820 86 06 (Zeki Nezir Eren)
 - 0546 825 85 27 (Selim Tuna)

sürece dahil olabilirsiniz...

**GÜZELYURT
JEOTERMAL**

Figure 3 Brochure Prepared and Distributed

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

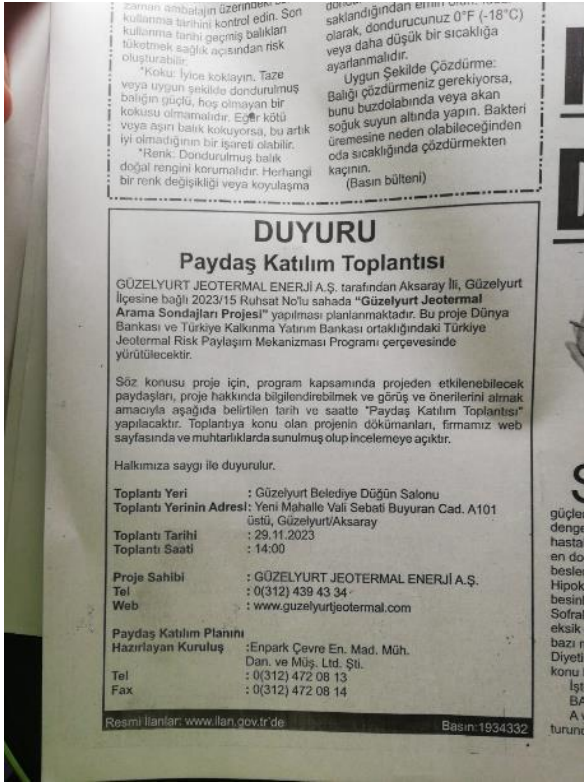
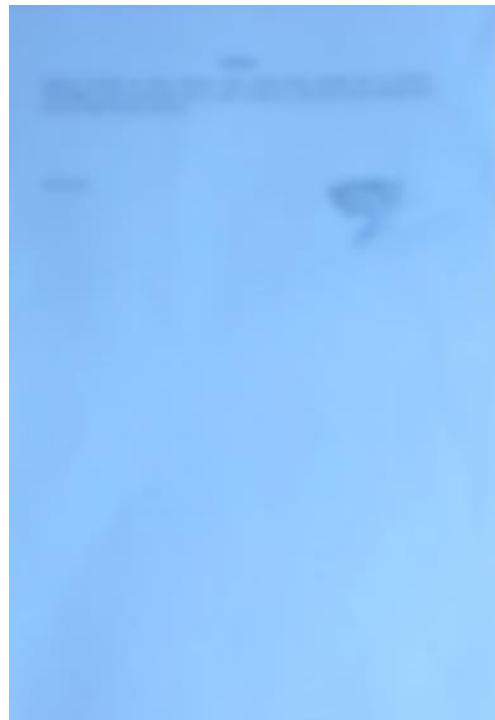
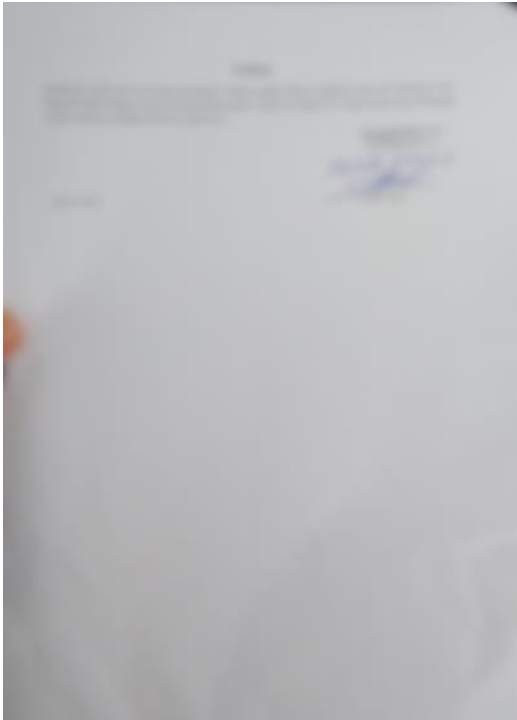
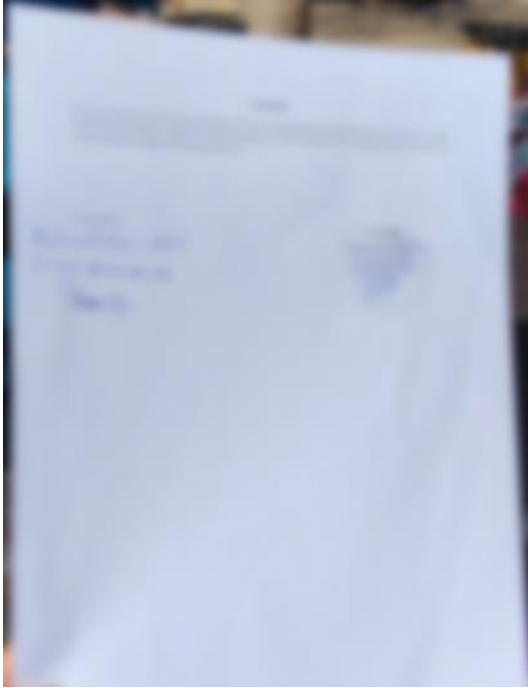


Figure 4 Haber 68 Newspaper Meeting Announcement (20.11.2023)



Figure 5 ESMP Booklet Delivered to Mukhtars

Güzelyurt Geothermal Exploration Drilling Project
 Stakeholder Engagement Meeting Information Note



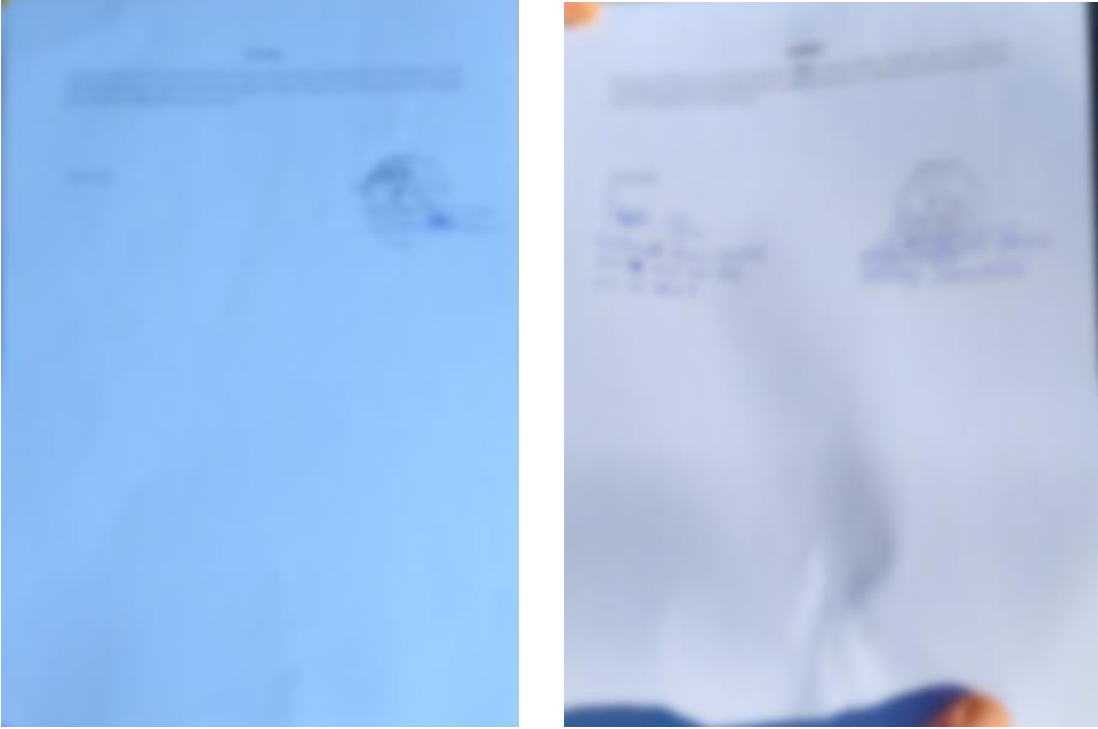


Figure 6 Muhtarlık Delivery Records





Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



Figure 7 Photos related to brochures and posters

Attachment-2
Meeting Participation List

The image shows a table with multiple columns and rows, likely containing names and roles of meeting participants. The text is extremely blurry and cannot be read.

Sl. No.	Topic	Remarks	By
1	Introduction of the project	Project details and objectives	Project Manager
2	Current status of the project	Progress of drilling and exploration	Project Manager
3	Environmental impact assessment	Findings and mitigation measures	Environmental Specialist
4	Community concerns	Addressing local issues and expectations	Community Liaison Officer
5	Regulatory requirements	Compliance with national and international standards	Legal Advisor
6	Financial aspects	Project budget and funding sources	Finance Officer
7	Timeline and milestones	Key dates and project completion	Project Manager
8	Stakeholder roles and responsibilities	Clarifying the roles of various stakeholders	Project Manager
9	Open discussion and questions	Addressing queries from the audience	Project Manager
10	Summary and next steps	Recap of key points and future actions	Project Manager

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Sl. No.	Name of Stakeholder	Contact Information	Status
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

No	Adı Soyadı	Unvanı	İletişim Bilgileri
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
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50

No	Adı Soyadı	Unvanı	İletişim Bilgileri
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
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50

Güzelyurt Geothermal Exploration Drilling Project
 Stakeholder Engagement Meeting Information Note

Attachement-3
Meeting Photos





Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Stakeholder Information Meeting Photos

Date: July 19, 2022

Location: Güzelyurt District Governorship

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



Güzelyurt Geothermal Exploration Drilling Project
Stakeholder Engagement Meeting Information Note



Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note

Stakeholder Information Meeting Photos

Date: July 20, 2022

Location: Gülağaç District Governorship

Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



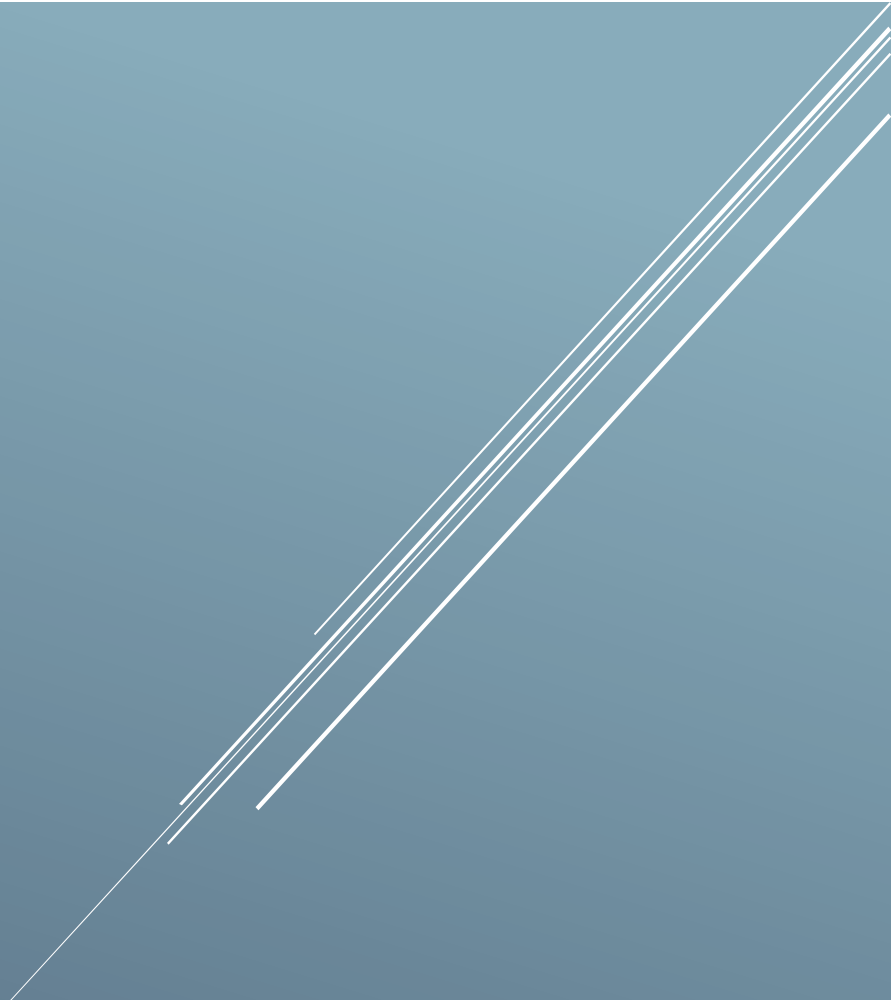
Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



Güzelyurt Geothermal Exploration Drilling Project

Stakeholder Engagement Meeting Information Note



GÜZELYURT GEOTHERMAL EXPLORATION DRILLING PROJECT

NOISE CALCULATION

Prepared by:

ENPARK Çevre ve Enerji Danışmanlığı
T: +90 312 4720813
www.enpark.com.tr

Güzelyurt Jeotermal Enerji A.Ş.
Proje Ekibi
T: +90 312 439 43 34
F: +90 312 439 43 36
www.gmkenerji.com.tr

© 2023 ENPARK Environment and Energy Consultancy

All Rights Reserved.

The calculations in this document are based on the "Principles for the Preparation of EIA Reports and Project Introduction Files within the Scope of the Regulation on Environmental Noise Assessment and Management (2018)".

The sound power levels of the machinery-equipment that will cause noise are given in the table below.

Table 1. Construction Machinery that will Cause Noise Emission in the Open Area during the Works within the Scope of the Project

Machine-Equipment Name	Number of Machinery-Equipment (Number)
Drilling rig and equipment	1
Generator	1
Compressor	1
Mud pump	1

"Principles for the Preparation of EIA Reports and Project Introduction Files within the Scope of the Regulation on the Assessment and Management of Environmental Noise (2018)" was published in the Official Gazette dated 30.12.2006 and numbered 26392 for the calculation of the total sound power levels in the four octave bands between 500-4000 Hz of the machinery-equipment that will be used in the open area during the works within the scope of the project and will cause noise. 2006 dated 30.12.2006 and numbered 26392 published in the Official Gazette No. 26392 "Regulation on Noise Emission in the Environment Generated by Outdoor Equipment (2000/14/AT)", the formulas given according to the engine power levels in Article 5, Permissible Sound Power Levels and Noise Marking and Standards, were used and given below.

Table 2. Sound Power Levels defined in accordance with the Type of Equipment and their Net Power Levels

Type of equipment	Net kurulu güç P (kW) Elektrik gücü P _{el} ⁽¹⁾ (kW) Uygulama kütlesi, m (kg) Kesme genişliği L (cm)	Permissible sound power level dB/1 pW	
		3 Ocak 2004'den itibaren	3 Ocak 2006'dan itibaren
Welding and power generators	$P_{el} \leq 2$	$97 + \log P_{el}$	$95 + \log P_{el}$
	$2 < P_{el} \leq 10$	$98 + \log P_{el}$	$96 + \log P_{el}$
	$P_{el} > 10$	$97 + \log P_{el}$	$95 + \log P_{el}$
Compressors	$P \leq 15$	99	97
	$P > 15$	$97 + 2 \log P$	$95 + 2 \log P$

(1) Kaynak jeneratörleri için P_{el} : İmalatçı tarafından verilen faktörün en küçük değeri için bilinen yük gerilimi ile çarpılan klasik kaynak akımı.

Güç jeneratörleri için P_{el} : ISO 8528-1: 1993 standardının madde 13. 3. 2'sine göre ana güç.

(2) II. Safhaya ait değerler aşağıdaki ekipman tipleri için tamamen örnek niteliğindedir:

- arkasından yürünen titreşimli silindirler,
- titreşimli plakalar (> 3 kW)
- titreşimli çekiçler
- dozerler (çelik raylı)
- yükleyiciler (çelik raylı > 55 kW)
- içten yanmalı motorla çalışan karşı ağırlıklı hidrolik kaldırmalı kamyonlar
- sıkıştırma parçalı kaldırım perdah makineleri
- elle tutulan içten yanmalı motorlu beton kırıcılar ve kazmalar (15 < m < 30)
- çim biçme makineleri, çim düzeltme makineleri / çim kenar düzeltme makineleri

Kesin değerler, Komisyonun yapacağı değişikliklere bağlı olacaktır. Böyle bir tadilat olmaması durumunda I. Safhaya ait değerler II. Safha için geçerli olmaya devam edecektir.

(3) Tek motorlu seyyar vinçler için, I. Safhaya ait değerler 3 Ocak 2008 tarihine kadar geçerli olmaya devam edecektir. Bu tarihten sonra II. Safha değerleri geçerli olacaktır.

Type of equipment	Net kurulu güç P (kW) Elektrik gücü P _{el} ⁽¹⁾ (kW) Uygulama kütlesi, m (kg) Kesme genişliği L (cm)	Permissible sound power level dB/1 pW	
		3 Ocak 2004'den itibaren	3 Ocak 2006'dan itibaren
İzin verilen ses gücü seviyesi en yakın tamsayıya yuvarlanmalıdır (0,5'ten küçükler için küçük sayı, 0,5'e eşit veya büyükler için büyük sayı kullanılır).			

The sound power levels of construction machinery and other equipment to be used within the scope of the Project are summarized in the table below.

Drilling rig and equipment and mud pump sound power levels are taken from the reference document (Source: Kuyucu M., Assessment of Geothermal Drilling in terms of Occupational Health and Safety, Ankara 2016).

The sound power levels of the generator and compressor were calculated using the formulas given in Table 2.

Considering that the power of the generator used is approximately 490 kW (Source: Ura K., Saitou S. Geothermal Binary Power Generation System, 2000);

$$L_w = 95 + \log 490 = 97,7 \text{ dB}$$

Considering that the power of the compressor used is maximum 15 kW;

$$P \text{ (kW)} \leq 15, \text{ Ses Gücü Seviyesi} = 97 \text{ dB}$$

Table 3. Sound Power Levels of Construction Machinery and Other Equipment to be Used within the Scope of the Project

Machine-Equipment Name	Number	Lwt, dBA
Drilling rig and equipment	1	106
Generator	1	97,7
Compressor	1	97
Mud pump	1	101

In the "Principles for the Preparation of EIA Reports and Project Introduction Files within the Scope of the Regulation on Environmental Noise Assessment and Management (2018)", it is stated that "if atmospheric absorption is taken into account, calculations regarding the noise level should be made according to 4 octave bands (500Hz-1000Hz-2000Hz-4000Hz). Table 4 was made accordingly.

$$L_{w(i)} = 10 \log \frac{10^{L_w/10}}{4}$$

The distribution of the total sound power level of each noise source into 4 octave bands between 500-4000 Hz, the sound power level in each octave band was calculated using the above formula.

Table 4. Distribution of Sound Power Levels on Octave Bands within the Scope of the Project

Noise Source	Sound Power Level (dB)				
	Total	500 Hz	1000 Hz	2000 Hz	4000 Hz
Drilling rig and equipment	106	100	100	100	100
Generator	97,7	92	92	92	92
Compressor	97	91	91	91	91
Mud pump	101	95	95	95	95

Using the formula $L_p = L_{wt} + 10 \log(Q / 4 \pi r^2)$, the distribution of sound pressure levels of each equipment over octave bands according to distance is given.

$$A = 4 \pi r^2$$

Q= Orientation coefficient (The hemispherical distribution of the sound source at ground level, Q=1)

r = Distance from source (m)

Table 5. Distribution of Sound Pressure Levels on Octave Bands by Distance within the Scope of the Project

Noise Source	Distance (m)	Sound Pressure Level (dB)			
		500 Hz	1000 Hz	2000 Hz	4000 Hz
Drilling rig and equipment	120	47,41	47,41	47,41	47,41
	180	43,88	43,88	43,88	43,88
	320	38,89	38,89	38,89	38,89
	750	31,49	31,49	31,49	31,49
	1000	28,99	28,99	28,99	28,99
	2000	22,97	22,97	22,97	22,97
	3000	19,45	19,45	19,45	19,45
Generator	120	39,11	39,11	39,11	39,11
	180	35,58	35,58	35,58	35,58
	320	30,59	30,59	30,59	30,59
	750	23,19	23,19	23,19	23,19
	1000	20,69	20,69	20,69	20,69
	2000	14,67	14,67	14,67	14,67
	3000	11,15	11,15	11,15	11,15
Compressor	120	38,41	38,41	38,41	38,41
	180	34,88	34,88	34,88	34,88
	320	29,89	29,89	29,89	29,89
	750	22,49	22,49	22,49	22,49
	1000	19,99	19,99	19,99	19,99
	2000	13,97	13,97	13,97	13,97
	3000	10,45	10,45	10,45	10,45
Mud pump	120	42,41	42,41	42,41	42,41
	180	38,88	38,88	38,88	38,88
	320	33,89	33,89	33,89	33,89
	750	26,49	26,49	26,49	26,49
	1000	23,99	23,99	23,99	23,99
	2000	17,97	17,97	17,97	17,97
	3000	14,45	14,45	14,45	14,45

Table 6. Correction factors in the frequency range 500Hz to 4000 Hz

Center Frequency (Hz)	Correction Factor
500	-3,2
1000	0,0
2000	+1,2
4000	+1,0

As a result of the calculation with the correction factors, the sound levels of each noise source for 4 octave bands were found and Table 7 was created.

Table 7. Table Generated after correction factors in the frequency range 500Hz to 4000 Hz

Noise source	Mesafe (m)	Sound Pressure Level (dBA)			
		500 Hz	1000 Hz	2000 Hz	4000 Hz
Drilling rig and equipment	120	47,37	47,25	46,79	44,94
	180	43,83	43,65	42,96	40,18
	320	38,78	38,48	37,24	32,31
	750	31,25	30,52	27,63	16,07
	1000	28,67	27,70	23,85	8,43
	2000	22,33	20,40	12,69	-18,14
	3000	18,48	15,59	4,03	-42,22
Generator	120	39,07	38,95	38,49	36,64
	180	35,53	35,35	34,66	31,88
	320	30,48	30,18	28,94	24,01
	750	22,95	22,22	19,33	7,77
	1000	20,37	19,40	15,55	0,13
	2000	14,03	12,10	4,39	-26,44
	3000	10,18	7,29	-4,27	-50,52
Compressor	120	38,37	38,25	37,79	35,94
	180	34,83	34,65	33,96	31,18
	320	29,78	29,48	28,24	23,31
	750	22,25	21,52	18,63	7,07
	1000	19,67	18,70	14,85	-0,57
	2000	13,33	11,40	3,69	-27,14
	3000	9,48	6,59	-4,97	-51,22
Mud pump	120	42,37	42,25	41,79	39,94
	180	38,83	38,65	37,96	35,18
	320	33,78	33,48	32,24	27,31
	750	26,25	25,52	22,63	11,07
	1000	23,67	22,70	18,85	3,43
	2000	17,33	15,40	7,69	-23,14
	3000	13,48	10,59	-0,97	-47,22

The following table was created by calculating the atmospheric absorption values for each frequency with the formula $A_{atm} = 7,4 \times 10^{-8} \times f^2 \times r / \phi$

In this formula;

A_{atm} = Reduction in sound pressure level with atmospheric retouching (dBA)

f = Frequency of transmitted sound

r = Distance from source (m)

ϕ = Relative humidity of the air (57,6 for Aksaray province)

Atmospheric trapping values in each octave band according to the frequency-distance relationship using the average humidity of the Meteorological Station are given below.

Table 8. Atmospheric Absorption Values in Each Octave Band According to Frequency-Distance Relationship

Frequency (Hz)	Distance (m)	Atmospheric Trapping
500	120	0,039
	180	0,058
	320	0,103
	750	0,241
	1000	0,321
	2000	0,642
	3000	0,964
1000	120	0,154
	180	0,231
	320	0,411
	750	0,964
	1000	1,285
	2000	2,569
	3000	3,854
2000	120	0,617
	180	0,925
	320	1,644
	750	3,854
	1000	5,139
	2000	10,278
	3000	15,417
4000	120	2,467
	180	3,700
	320	6,578
	750	15,417
	1000	20,556
	2000	41,111
	3000	61,667

After deducting the atmospheric absorption values, the net sound pressure level of the source in the 4 octave band; The following table (Table 9) was created using the formula $L = L - A_{atm}$

The total sound level was calculated using the following formula as stated in the "Principles for the Preparation of EIA Reports and Project Introduction Files within the Scope of Environmental Noise Assessment and Management Regulation (2018).

$$\text{Formula} = L_{pt} = 10 \log \sum^n L_{pi} / 10$$

Table 9. Net Sound Pressure Levels of Construction Machinery and Other Equipment to be Used within the Scope of the Project according to Correction Factors

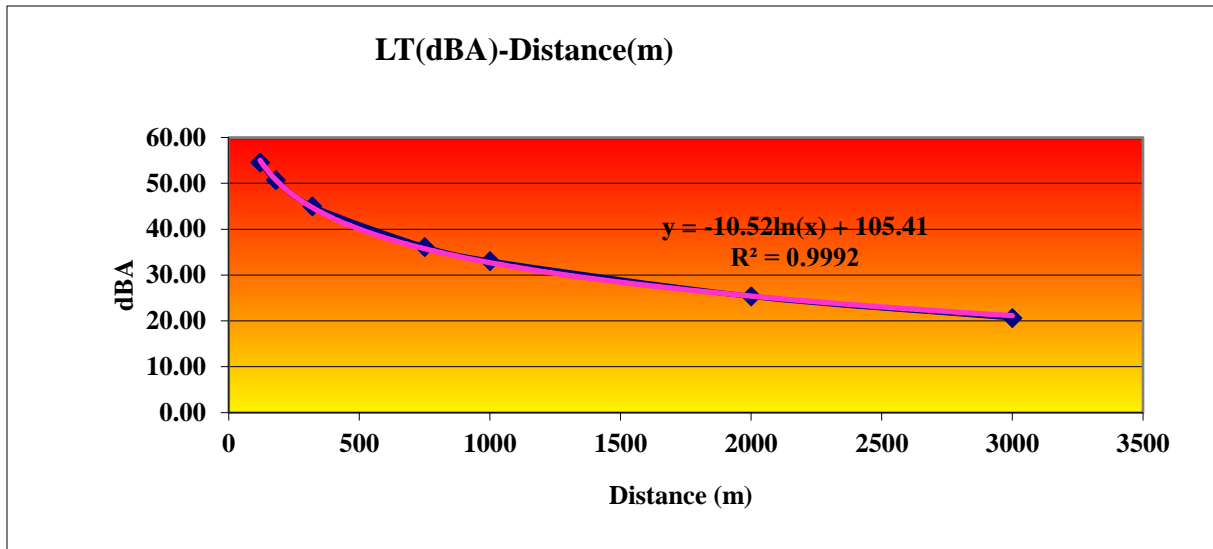
Noise Sources	Distance (m)	Noise Level (dBA)				Total Noise Level (dBA)
		500 Hz	1000 Hz	2000 Hz	4000 Hz	
	120	44,17	47,25	47,99	45,94	52,587

Drilling rig and equipment	180	40,63	43,65	44,16	41,18	48,688
	320	35,58	38,48	38,44	33,31	42,963
	750	28,05	30,52	28,83	17,07	34,119
	1000	25,47	27,70	25,05	9,43	31,040
	2000	19,13	20,40	13,89	-17,14	23,343
	3000	15,28	15,59	5,23	-41,22	18,653
Generator	120	35,87	38,95	39,69	37,64	44,287
	180	32,33	35,35	35,86	32,88	40,388
	320	27,28	30,18	30,14	25,01	34,663
	750	19,75	22,22	20,53	8,77	25,819
	1000	17,17	19,40	16,75	1,13	22,740
	2000	10,83	12,10	5,59	-25,44	15,043
	3000	6,98	7,29	-3,07	-49,52	10,353
Compressor	120	35,17	38,25	38,99	36,94	43,587
	180	31,63	34,65	35,16	32,18	39,688
	320	26,58	29,48	29,44	24,31	33,963
	750	19,05	21,52	19,83	8,07	25,119
	1000	16,47	18,70	16,05	0,43	22,040
	2000	10,13	11,40	4,89	-26,14	14,343
	3000	6,28	6,59	-3,77	-50,22	9,653
Mud pump	120	39,17	42,25	42,99	40,94	47,587
	180	35,63	38,65	39,16	36,18	43,688
	320	30,58	33,48	33,44	28,31	37,963
	750	23,05	25,52	23,83	12,07	29,119
	1000	20,47	22,70	20,05	4,43	26,040
	2000	14,13	15,40	8,89	-22,14	18,343
	3000	10,28	10,59	0,23	-46,22	13,653

As stated in the "Principles for the Preparation of EIA Reports and Project Introduction Files within the Scope of the Regulation on Environmental Noise Assessment and Management (2018)", the following table was created by calculating the Equivalent Noise Levels ($L_{day}=L_{eq}$) from the formula $L_{eq}=10\log\sum 10^{L_T(i)/10}$

Table 10. Distribution of Average Sound Pressure Levels to be Generated within the Scope of the Project according to Distances

Distance (m)	LT (dBA)
120	54,60
180	50,70
320	44,98
750	36,13
1000	33,05
2000	25,36
3000	20,67



Şekil 1. Distribution of Noise Generated by the Project according to Distances

Environmental Noise Control Regulation published in the Official Gazette dated 30.11.2022 and numbered 32029

Environmental noise criteria for construction sites

ARTICLE 13- (1) Construction site activities causing environmental noise in residential areas shall be carried out in accordance with the provisions in Annex-2.

(2) Noise abatement measures shall be applied for the control of noise emitted to the environment from construction site activities.

(3) Additional control measures for the management of environmental noise from all construction site activities in holiday resorts and touristic areas shall be determined by the relevant administration.

The provisions in Annex-2 of the Environmental Noise Control Regulation are as follows:

Table 11. Environmental Noise Level Limit Values

Noise Source	Measured Parameter	Environmental Noise Level		
		Daytime	Evening	Night
Industrial Plants, Transportation Resources	$L_{A_{eg,5min}}$	65 dB(A)	60 dB(A)	55 dB(A)
Other sources	LC_{max}	100 dB(C)		

LC_{max} : dBC is the maximum impulse noise, which is the highest value of the C-weighted rms-based sound level within the measured measurement time.

In the World Bank Group General EHS guidelines, these values are 55 dBA for daytime and 45 dBA for nighttime. The guidelines also state that the existing background noise level cannot be increased by more than 3 dB.

The World Bank Group General EHS Guidelines define the daytime period as 07:00-22:00 and the nighttime period as 22:00-07:00. The national "Regulation on the Assessment and Management of Environmental Noise" defines daytime as 07:00-19:00, evening as 19:00-23:00 and nighttime as 23:00-07:00. In addition, the absolute low limit of 45 dBA for nighttime

is based on World Health Organization guidelines to ensure that people sleeping indoors are not disturbed when windows are open.

Within the scope of the Project, there is a difference between local legislation and WB standards for noise emission limit values, in which case the more stringent limit value will be determined as the project requirement. For this reason, IFC guideline values will be taken as reference and noise level will be kept below the limit values of 55 dBA during the day and 45 dBA at night.

The noise level drops below 45 dBA at 320 meters. The nearest sensitive structure within the scope of the Project is approximately 120 meters away. Necessary measures will be taken to ensure that the noise from the activity subject to this file does not have a negative impact on the nearest sensitive structure.

Measures that can be taken against noise can be listed as follows;

- If necessary, noise curtains will be used, these equipment reduce noise.
- It will be checked whether the machinery and equipment to be used are regularly maintained.
- If vehicles do not have noise-reducing silencers, they will be ensured to have them.
- The load and transportation limits on the axle weights of the vehicles will not be exceeded.
- Work machines and vehicles will not be equipped with light and sound equipment that will disturb the environment and distract attention.
- Moving parts of construction machinery, vehicles and machinery-equipment shall be regularly lubricated and noisy engine parts shall be isolated.