PROPOSAL & CAPIBILITY STATEMENT

EXPLORATION MANAGER

I have over 30 years experience. About my career first 7 years (1995 - 2002) geotechnical works (HPP dam production , tunnel production) 24 years about metalic mineral exploration and production (2002 - 2024) i am QP/CP (Qualify person/Competent person) (16.01.2020 Certificate number 76) UMREK CODE 2018, YERMAM profeccional member (23.01.2019). AIG (australian Instute of geosecientists) member (Certificate No:9024)

some of the projects i worked for as follow ;

- **Sivas region**; Eskiköy , Kızıldağ (Cr). 6000 mt drill operation / year , 300,000 run of mine production (chromite mine)
- **Malatya Region**; Hekimhan , Bıcır (Fe , Cr).
- **Elazığ region**; Karaçeşme (Cr).1000 mt drill operation / per year 20.000 ton / year run of mine production
- **Adana Region**; Bozantı (Fe).
- **Erzincan Region** ; Bizmişen (Fe) 15,000 mt drilling operation , 25.000.000 ton resource estimation
- **Kayseri Region;** Pulpınar , Toruntepe (Cr). Over 100.000 ton chromite ore run of mine production (2002-2012) 10.000 meter drilling operation / per year (underground and surface)
- **Kayseri Region;** Aladağlar , Tekneli (Pb – Zn) 6000 meter drilling operation , 100.000 ton reserve estimation per year.
- **Adana Region;** Kıcak (Cr).15,500 meter drilling operation , 2.000.000 ton resource estimation
- **Balıkesir Region;** Balya (Pb – Zn).15,000 meter drilling operation 2.000.000 ton (pb-zn and ag) resource estimation

- **Gümüşhane-Mastra:** village Dedeman mining – Newmont Co. Joy venture About (Pb-Zn) Licence area and Ag Ore bodys research Project .2145 meter surface drilling operation. 1.000.000 ons (6 gr per ton au) 2003
- **Denizli – Acıpayam – Sandalcık:** Chromite area research 5394 meter surface drilling operation 2004

- **Adana – Bozantı – Kıcak:** Chromite area research 10,000 meter surface drilling operation and 1.000.000 ton reserve estimation 2006
- **BAKAY Rain Drainage Project**: (07 /2001–09 /2002)
- **DSİ (General Directorate of State Hydrolic Works)** Hydrolic drill hole Project. (01 /2001–07 /2001)
- **Tunnel Constraction:** Ankara ,01 /1999 – 01 2001
- **NATO Head Office Organisation,Ventilation Tunnel Construction Yeşildere / Ankara**
- Reconstraction for ventilation 3500 mm dimension and 1500 meter long Tunnel.
- **Samsun road Plevne street Tunnel and shaft connection per 100 meter Siteler/Ankara** (02 /1997–01/1999)
- **Bakay Project**,Water Drainage Tunnel 2200 mm Dimension and 2500 meter long.
- Every 100 meter 20 meter deep shaft connection totaly 1000 meter Tunnel construction

Dedeman mining chromite enrcihment plant (Pulpınar /Pınarbaşı / Kayseri)

ABOUT ME

Managing, Controlling, Supervising Project from early exploration to discovery.

Geology technical data review and exploration target generation.

Planning, prioritizing, managing and executing safe all exploration and resource geology activities.

Planning, supervising, installing and developing of water wells

Exposure to Advance Resource & Modeling

Self-motivated and flexible team player.

Identifying, assessing, developing and project management.

Challenging projects.

Work in many different environments and cultures, in a team effort and independently, always achieving the highest quality of work.

Details about my job description :

Geological studies.

Leader on exploration projects over metalic minerals.

İnterpretation of ore bodies,fault and structure.

Advising new projects,development of potential concessions

Enterpretation of data base,resources estimation.

Develop projects on metalic (Cr , Fe ,Cu, Pb, Zn, Ag, Au, etc.)minerals.

JORC Standart for drilling operations

ERP (Enterprice resource Project) all the datas at mining operations (production , drilling , finance , transport , etc) at the program for management report

İSO 9001 (İnternational Standart Organisation)

OHSAS 18001 (Occopotional Health and safety)

İSO 14001 (Enviromental standarts)

Achievements & Awards & Scholarship

Hidrotermal yatakların aranmasında alterasyon minerallerinin jeokronolojik ve iz element izotop jeokimyası ve incelenmesi 09.01.2016

Using Multi-Purpose Geochemical Data: Mineral Exploration and Geometallurgy, Sarah Rice - ALS Minerals17.06.2015

Geometalurgy Dr. Barış G. Yıldırım*18.04.2015*

Ephithermal course Prof. Dr. İlkay Kuşçu *04.04.2015*

Ephithermal course (Site visit) Dr. Mesut Soylu 05.04.2015

Practical use of portable XRF and XRD devices in searches and mining projects Todd Houlahan 20.01.2016

Turkey-Eurasia mining Show 8 – 9 october 2015 istanbul rollertable speaker (2015)

Turkey-Eurasia mining Show 3 - 4 july 2014 istanbul rollertable speaker (2014)

Netcad certificate February 2013-005a/jeo/ODA-270213-06-30112

ARGOS Off-Road Driving Course 5 - 6 December (2011)

Search Minerals, Planing, Production, Computer Applications in Marketing (2010) .

First Aid Certificate(Turkish Red Crescent) Licence no : 143.01 (2009)

Metalic Mineral Exploration Course Practical Applications (2007)

Internal Auditor's Certificate TUV CERT NO : 15 07 066

SQS (Smart Quality Solutions) Managements (2007)

HYDROGEOCHEMICAL AND STABLE ISOTOPE TECHNIQUES AS A TOOL IN HYDROGEOLOGICAL CONCEPTUALISATION OF AYAZMANT MINE SITE (NW TURKEY)

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Occurrence of groundwater in mine sites is of major concern due to its two opposing impacts on mining activities. Particularly in arid and semi arid areas, groundwater in most cases is the major sources that can be used to meet the need for water at mine sites for different purposes such as process water and site water supply. On the other hand, mining commonly requires large excavations below the water table where groundwater flow into excavations may cause serious problems of dewatering and depressurization. Regardless of type of the problem, whether related to shortage or excess of groundwater, construction of a representative conceptual hydrogeological model has an essential role in achieving practical and effective solutions. However, conceptualization and characterization of groundwater systems, particularly in geologically complicated areas is not straightforward and various techniques need to be applied in combination of conventional methods. The combined use of hydrogechemical and isotopic techniques is proved to provide an effective tool in this regard. The value of this tool stems from the fact that it contributes to the understanding of how the groundwater occurs and circulates by tracing the water starting from the recharge area until it reaches a point of interest in the flow domain. This knowledge is of significant importance in construction of a representative conceptual model of the site.

This technique is applied in a mine site located in northwest of Turkey. The Ayazmant iron-copper mine is of contact-metasomatic/scarn type mineralization within plutonic rock mass [2]. The ore deposit is planned to be mined at two major phases; first as open pit mining to a certain elevation of pit bottom and by underground galleries excavated from the ultimate pit bottom. The plutonic (dominantly granodiorite and hornfels) rocks are fractured and jointed such that they have gained moderately high secondary permeability. The mine site is surrounded by surface water bodies from the east, west and the south. Two streams in the east and west of the site join the dam lake in the south. The elevation of the ultimate bottom of the open pit will be about 90 meters below the maximum level of the dam lake. The mine site is situated on a secondary groundwater divide where the groundwater level is about 30 m higher than the lake, which makes the groundwater flow to the streams and the lake in natural (pre-mining) conditions. The galleries will also be excavated below the groundwater level and the dam lake level. Thus, the major concern was to estimate the groundwater flow into the open pit and ingress to the galleries at different stages of mining to prevent any probable adverse impact. Analytical and/or numerical methods are applied to predict the groundwater inflow to excavations. For both methods, construction of a representative hydrogeological model is essential. A hydrogeological appraisal was performed based on hydrostratigraphic definition of

litohological units, core drilling and in-situ tests, and hydraulic head observations. A preliminary hydrogeological conceptual model was constructed to explain the occurrence of groundwater at the site. However, this study could not produced all information required in conceptualization of the groundwater system in terms of recharge-discharge relations and surface water-groundwater interactions, which is essential knowledge for definition of the boundary conditions needed in analytical and/or numerical analyses. Hydrogeochemical and stable isotope techniques were used to obtain this information.

Various water points representing surface waters and groundwater were sampled for hydrogeochemical and stable isotope analyses. Some basic physio-chemical properties such as temperature, specific electrical conductivity, total dissolved solids, dissolved oxygen, pH and oxidation-reduction potential of waters were also measured on site by a multi-probe. Samples were analysed at registered laboratories for some trace elements as well as major ions and for stable isotopes, namely oxygen-18 ($\delta^{18}O$) and deuterium (D). In addition to samples collected from the site and its near vicinity, seasonal springs located at different altitudes were also sampled to establish the altitude effect on stable isotopes.

Values of physical and chemical parameters of sampled waters vary over a large range, exhibiting the effect of mineralization on groundwater. The dam lake water, the water in direct contact with ore deposits and the non-contact groundwater from wells were evaluated as end members whilst other water points were found to be of mixed water character. Anomalies in hydrogeochemical properties were interpreted in terms of regional and site-specific hydrodynamics.

Isotopic characterization of the regional precipitation was represented by the local meteoric line whose regression equation is $\delta D=8*\delta^{18}O+17$ (Figure 1). Deviations from the meteoric line suggested that some of the waters were affected by different processes such as evaporation and mixing. A plot of $\delta^{18}O$ vs altitude suggested that the precipitation is depleted in this isotope at a rate of 0.33‰ per 100 m of change in altitude (Figure 2). Using this information, the recharge area of the groundwater at the mine site was found to be located at higher elevations (450-480 m amsl) and at a distance of about 8 km from the mine site and that the direct recharge from precipitation over the mine site is insignificant compared to the regional recharge. Based on this information the hydrogeological model of the mine site was completed with a clear definition of the site-specific water balance and boundary conditions.

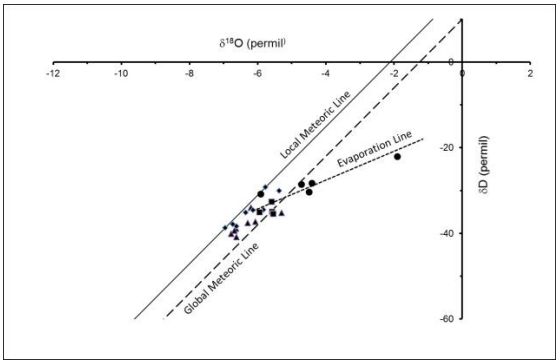

***Figure 1**: Plot of meteoric line for stable isotopes* [2]

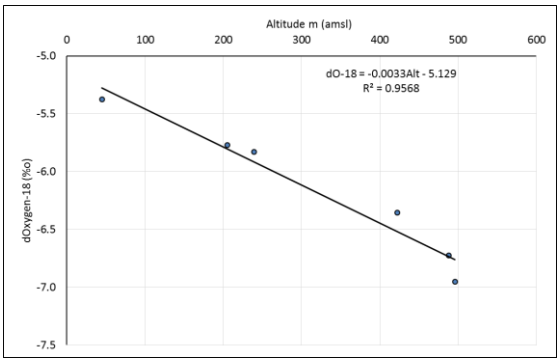

***Figure 2**: Altitude effect on $\delta^{18}O$* [2]

Key words:
Ayazmant mine, conceptual model, hydrochemistry, stable isotope

References:

[1] Jeopark: Geology and Reserve Estimation of Iron-Copper Ore Deposit in Karahayıt (Ayvalık-Balıkesir) (İr: 489). BILFER Mining Report, 2011

[2] Ekmekçi, M., and Açıkel Ş.: Hydrogeological Appraisal Ayazmant Mine Site: Implications for Underground Mining Activity. HU-UKAM Report for BILFER Mining Co., 2015