



#### Task 1

- The TAC reached a decision as to which NOHMs to include in the project.

#### Task 2

- A literature search was conducted to gather information on the methods of analyzing for, or otherwise detecting, the various NOHMs. The more common methods that the literature search revealed are as follows:

Polarized Light Microscopy (PLM)

Transmission Electron Microscopy (TEM)

X-ray Diffraction (XRD)

Scanning Electron Microscopy (SEM)

Electron Microprobe (EPMA)

Phase Contrast Microscopy (PCM)

Imaging or Reflectance Spectroscopy

Raman Spectroscopy

Mossbauer Spectroscopy

Inductively Coupled Plasma – Atomic Emission and Mass Spectroscopy

Atomic Absorption Spectroscopy

A bibliography of literature was assembled for the above methods.

#### Task 3

- Work to enhance and update MILO is continuing. I anticipate this work will continue through to the end of the project as new sites are found. This is because new mapping by DOGAMI, USGS, students, along with ongoing publication searches (e.g. mine file and map inventory/cataloging) may reveal additional sites. As planned, the mineral records from the USGS's MRDS (Mineral Resource Data System) were added to MILO, along with addition of obsidian location information and gemstone locations. Since the project started over 9,800 new mineral locations have been added to MILO.
- Progress was made attributing MILO's data fields but was not completed as planned. It is much more tedious and time consuming process than I had previously anticipated, plus MILO was transferred from its original MapInfo Pro's software platform to ESRI's ArcMap software platform.
- Progress was made in the synthesis of various elemental geochemistry of volcanic rocks and sediments databases into one system called the Geoanalytical Information Layer for Oregon (GILO). So far, geochemical data from studies in the Klamath Basin and Crooked River STATEMAP projects were added to GILO.
- I reached a point in the latter part of September where I could start writing metadata for MILO. That effort continues.

#### Task 4

- Some preliminary work began on the process to tag NOHMs using links, relationships, new data tables, and the GIS model from Task 3 to associate Oregon's geologic units with the occurrence of the various NOHMs. The process involved querying those rocks units in the Oregon Geologic Digital Compilation (OGDC) that have links to asbestos and erionite. For example, in southwestern Oregon alone there are 2094 geologic units that can be associated with asbestos. As a means to finalize a

data table of NOHMs identified in Task 1 and assigning a potential hazard ranking (part of Task 7) to those geologic units, I have developed the following scheme:

**Levels of NOHM Potential:**

<b>HIGH</b> NOHM potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for NOHM occurrence, where interpretations of the data indicate high degree of likelihood for NOHM accumulation, where data support mineral-deposit models indicating presence of resource, and where evidence indicated that NOHM concentration has taken place. Assignment of NOHM potential to an area requires some positive knowledge that mineral-forming processes have been active in at least part of the area.
<b>MEDIUM</b> NOHM potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for NOHM occurrence, where interpretations of the data indicate high degree of likelihood for NOHM accumulation, where and (or) where an application of mineral-deposit models indicates favorable ground for the specified type(s) of deposits..
<b>LOW</b> NOHM potential is assigned to areas where geologic, geochemical, and geophysical characteristics define a geologic environment in which the existence of a NOHM is permissive. This broad category embraces areas with dispersed by insignificantly mineralized rock, as well as areas with obvious site limitations and little or no indication of having been mineralized.
<b>NO</b> NOHM potential is a category reserved for a specific type of resource in a well-defined area.
<b>UNKNOWN</b> NOHM potential is assigned to areas where information is inadequate to assign a low, moderate, or high level of NOHM potential.

**Levels of Certainty:**

A. Available information is not adequate for determination of the level of NOHM potential.
B. Available information only suggests the level of NOHM potential.
C. Available information gives a good indication of the level of NOHM potential.
D. Available information clearly defines the level of NOHM potential.

Other

- Gave a talk to the ODOT 2009 Geo/Hydro/Hazmat conference held in September about an overview of the NOHM project.

**5. Problems**

- None.

**6. Work Planned for Next Quarter**

- In the first part of October I will prepare a PowerPoint presentation for the 2009 Geological Society of America Meeting that will be held in Portland, Oregon. My talk is scheduled for Wednesday the 23<sup>rd</sup> at 9:30 a.m. This talk will focus more on NOHM distribution in Oregon rather than a project update for the ODOT conference.

Task 3:

- I plan to complete MILO's database with automatic attribution of data fields.
- Finish writing MILO's metadata and start the process for writing metadata for GILO.
- For the remainder of the Quarter there will be a concerted effort towards the synthesis and development of elemental geochemistry of volcanic rocks and sediments for GILO.

**In the next Quarter, I will have to take two mandatory furlough days: October 16<sup>th</sup> and November 27<sup>th</sup>.**

**7. Finances**

SPR Project Summary

<b>VENDOR</b>	<b>FY'09</b>	<b>FY'10</b>	<b>FY11</b>	<b>FY'12</b>	<b>TOTALS</b>
ORIGINAL BUDGET	\$ -	\$ -			\$ -
<b>REVISED BUDGET</b>	<b>\$ 41,477</b>	<b>\$ 120,000</b>	<b>\$ 18,000</b>		<b>\$ 179,477</b>
EXPENDITURES - VENDOR	\$ 41,477	\$ -	\$ -	\$ -	\$ 41,477
<b>BALANCE</b>	<b>\$ -</b>	<b>\$ 120,000</b>	<b>\$ 18,000</b>	<b>\$ -</b>	<b>\$ 138,000</b>
<b>ODOT</b>	<b>FY'09</b>	<b>FY'10</b>	<b>FY11</b>	<b>FY'12</b>	<b>TOTALS</b>
ORIGINAL BUDGET	\$65,000	\$124,000	\$0		\$ 189,000
<b>REVISED BUDGET</b>	<b>\$10,825</b>	<b>\$3,000</b>	<b>\$3,000</b>		<b>\$ 16,825</b>
EXPENDITURES - ODOT	\$ 10,825	\$ 1,127	\$ -	\$ -	\$ 11,952
<b>BALANCE</b>	<b>\$ -</b>	<b>\$ 1,873</b>	<b>\$ 3,000</b>	<b>\$ -</b>	<b>\$ 4,873</b>
<b>PROJECT</b>	<b>FY'09</b>	<b>FY'10</b>	<b>FY11</b>	<b>FY'12</b>	<b>TOTALS</b>
ORIGINAL BUDGET	\$ 65,000	\$ 124,000	\$ -	\$ -	\$ 189,000
<b>REVISED BUDGET</b>	<b>\$ 52,302</b>	<b>\$ 123,000</b>	<b>\$ 21,000</b>	<b>\$ -</b>	<b>\$ 196,302</b>
EXPENDITURES - PROJECT	\$ 52,302	\$ 1,127	\$ -		\$ 53,429
<b>BALANCE</b>	<b>\$ -</b>	<b>\$ 121,873</b>	<b>\$ 21,000</b>	<b>\$ -</b>	<b>\$ 142,873</b>