ExxonMobil
Global Services Company
Colony Shale Oil Project
P.O. Box 2567
Houston, Texas 77252-2567

May 3, 2012

Colorado Division of Reclamation Mining & Safety
Grand Junction Office
101 South 3rd Street, Suite 301
Grand Junction, Colorado 81501

Attention: Travis Marshall

Re: Mined Land Reclamation Board Permit No. M-1980-047
Colony Shale Oil Project
Technical Revision 17

Mr. Marshall:

Exxon Mobil Corporation respectfully requests administrative approval for the attached technical revision to State of Colorado Mined Land Reclamation Board Permit No. M-1980-047.

We appreciate your assistance with this matter. Should you have any general questions regarding this application, please contact me at 281-654-6246. In addition, technical questions may addressed to Roy Springfield at 713-431-7581. You may also email Roy at roy.l.springfield@exxonmobil.com.

Sincerely,

Tom L Adams

Tom L. Adams
Colony Supervisor
ExxonMobil Global Services Co.
Acting for and on behalf of
Exxon Mobil Corporation

attachments:
Fee for $175.00
Attachment A (Location Map)
Attachment B (Location of Wells)
Attachment C & D (Wellbore Sketches)
Attachment E (Reclamation Cost Estimate)

APPLICATION FOR TECHNICAL REVISION TO

STATE OF COLORADO
MINED LAND RECLAMATION BOARD PERMIT NO. M-1980-047

Date received by the Division of Reclamation, Mining and Safety:

Applicant: Exxon Mobil Corporation

Contact Person: Tom L. Adams
Colony Supervisor
ExxonMobil Global Services Company
Acting for and on behalf of Exxon Mobil Corporation
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Fax Number: 281-654-6392

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P. O. Box 2567
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Alternate Contact:
Michele Thomas
Research Supervisor
ExxonMobil Upstream Research Company
P. O. Box 2189
Houston, Texas 77252-2189
Telephone Number: 713-431-7325
Fax Number: 713-431-6707

Application Fee: $175.00

Name of Operations: Colony Shale Oil Project

Location Information:

Garfield County, Colorado

Section 7, Township 5 South, Range 95 West, 6th PM

Approximately 16 miles north of Parachute, Colorado

Approximate elevation: 7,000 – 8,000 feet

Map showing the location of the proposed project is included as Attachment A.

Land Ownership: Exxon Mobil Corporation

General Project Description:
ExxonMobil Upstream Research Company ("URC"), a subsidiary of Exxon Mobil Corporation ("ExxonMobil"), has an ongoing research program on the development of *in situ* oil shale conversion technology. As part of the ongoing research, ExxonMobil is conducting field experiments of this process at the Colony Oil Shale Mine.

Project Status:
ExxonMobil has advanced this technology by conducting a series of field experiments at the Colony Mine. Specifically, the following results have been achieved.

- Under TR-11 to the Colony reclamation permit, *in situ* planar heaters, EF1 and EF3 were constructed. After installing instruments for the measurement of temperature, voltage, current, and rock movement, EF1 and EF3 were each heated in a "low-temperature experiment" at temperatures up to 140°F.
- Under TR-12, EF1 and EF3 were each heated in a "medium-temperature experiment" at temperatures up to 300°F.
- Under TR-13 and TR-14, additional water monitoring wells and water drainage holes were drilled.
- Under TR-15, installation of a grout curtain beneath EF1 is in progress.
- Under TR-16, installation of a vertical gas barrier is pending DRMS approval.

Revision Description:
ExxonMobil is considering conducting a high-temperature experiment at Colony. Prior to conducting such an experiment, ExxonMobil would apply for an amendment to receive approval.

In preparation for such an experiment, ExxonMobil would install additional ground water monitoring wells in the immediate vicinity of the experiment. The operator of record respectfully requests administrative approval to construct six additional ground water monitoring wells with this application for Technical Revision.

Two of the six wells (EF-V9 and EF-V10) will be drilled inside the mine. The remaining four wells (EF-V5, EF-V6, EF-V7, EF-V8) will be drilled from the old road above the mine entrances. Attachment B is a survey plat showing the locations of all six wells. Attachments C and D provide wellbore sketches for the proposed wells. Attachment C pertains to the two wells to be drilled inside the mine. Attachment D pertains to the four wells drilled from the old road. All these water monitoring wells will sample the B-Groove aquifer (assuming the presence of water). Attachment E provides reclamation cost information for all six wells.

Ground and Surface Water Monitoring:
While the probability of any impact to ground or surface water from the experimental work is extremely small, ExxonMobil has nevertheless implemented a program of water monitoring to allow early detection of any impacts, should they occur.

This request for additional water monitoring wells would expand our existing monitoring program in anticipation of submitting an amendment application to conduct a high

temperature experiment at Colony. Initially, the sampling and analysis program for these wells would be similar to pre-existing monitoring program approved under TR's 11 and 13. The permit amendment application that ExxonMobil plans to submit in advance of a high temperature experiment, would provide a detailed monitoring and response plan which these wells would be used to implement.

Rule 3.1.7(7)(b) Requirements:
The following sections specifically address the requirements of Rule 3.1.7(7)(b). In each instance the rule is recited in *italics* and ExxonMobil's response is in ordinary typeface.

(b) If groundwater monitoring is required, the Operator shall include the following information as part of a permit application, NOI, or permit or NOI modification:

(i) a map that accurately locates all proposed groundwater sample points and any locations that are proposed as a point of compliance,
A location survey is included in Attachment B.

(ii) the method of monitoring well completion where monitoring wells are required,
See Attachments C and D for wellbore sketch and completion information.

(iii) method of sampling, frequency of sampling and reporting to the Office,
The initial sampling frequency for these six wells would be monthly. ExxonMobil submits quarterly reports on all water monitoring wells and an annual hydrology report. Each annual report is submitted to DRMS by November with our annual payment.

The following describes the ground water sampling method employed. Field notes are kept of all work in an organized manner. The data recorded would be; well identification, date and time, well casing, diameter, casing material, total depth, water depth, bore volumes, pumping depth, pumping time, purging flow rate (when possible), pH, conductivity, temperature, samples collected, and equipment used. Water level measurements are static water level measurements made at each well from a known reference point at the top of the well casing.

Sample collection would be performed after well purging. Raw sample bottles would be filled directly from the pump discharge tube. Filtered sample bottles are filtered from a triple rinsed plastic bottle. Some sample bottles require filtration to fill the bottles. A peristaltic pump is used to slowly pump the water through a 0.45µm pore size disposable filter. The pump tubing is rinsed with distilled water before and after use.

The following describes sample handling. Sample sets would be ordered from the laboratory. They arrive in a cooler with the required paper work and preservatives. Instructions are included for filling bottles, labeling, packing and chain of custody. Labels are filled out for each bottle as to sample I.D., date, time, analysis, preservative and filtration. Sample bottles would be labeled and filled in the field according to

laboratory instructions. The bottles are cleaned, dried and placed in a cooler with ice. The current sample size is one site per cooler. At the end of each day's sampling a Chain of Custody (COC) document and overnight shipping papers are filled out. Coolers are repacked with all glass bottles bubble wrapped, new ice containers and additional packaging are added so there can be no movement of bottles in the cooler. The shipping papers and COC are attached to the outside of the cooler, and a copy of the COC placed inside the cooler. Coolers are sealed with wrapping tape and tamper proof seals then delivered to Federal Express for overnight shipping.

(iv) parameters analyzed, water quality analysis methods, and quality control and quality assurance methods, Water quality parameters analyzed are listed in the table below.

Metals	**Water Quality**	**Organics**
Al	T. Alk.	Benzene
Sb	BOD5	BrFBenz
As	COD	Et-Benzene
Ba	Cl	m/p Xylene
Be	Cond	o Xylene
B	CNTotal	OTP
Cd	F	Toluene
Ca	Hard	BTEX
Cr	NO3-N	TPH C10-C28
Cr(VI)	NO3-N+NO2-N	2-Fluorobiphenyl
Co	NO2-N	2-Methylnaphthalene
Cu	NH3-N	Acenaphthene
Fe	TKN	Acenaphthylene
Pb	o-P	Anthracene
Li	PTotal	Benzo(a)anthracene
Mg	TDS	Benzo(a)pyrene
Mn	SAR	Benzo(b)fluoranthene
Hg	SO4	Benzo(g,h,i)perylene
Mo	S2-	Benzo(k)fluoranthene
Ni	SCN	Chrysene
K	pH	Dibenzo(a,h)anthracene
Se		Fluoranthene
Silica		Fluorene
Si		Indeno(1,2,3-cd)pyrene
Ag		Naphthalene
Na		Nitrobenzene-d5
Tl		Phenanthrene
U		Pyrene
Zn		Terphenyl-d14
		O&G
		Phenol

The following describes the analysis method used. ACZ Laboratories analyzes all water quality samples. Gas chromatography is used to detect possible presence of BTEX compounds and total petroleum hydrocarbons for all water samples. Inorganic preparation is utilized in the possible detection of total cyanide, total Kjeldahl nitrogen, phenol, and total phosphorus. Metal analysis is used to detect possible presence of a specific metal; however, metal analysis for surface samples produces both dissolved and total recoverable data for a specific metal. Most analyses are completed with EPA-approved methods.

ACZ is an environmental testing laboratory that analyzes samples for compliance with federal laws such as the Resource Conservation Act (RCRA), Safe Drinking Water Act (SDWA), and Clean Water Act (CWA). ACZ has developed a quality assurance plan (QAP) that addresses quality assurance and quality control objectives, policies, and procedures determined to be necessary to meet the requirements of the EPA, federal government entities, state agencies, other regulatory authorities, and clients. The QAP provides necessary guidelines to ensure all ACZ employees have sufficient knowledge and training to perform their job responsibilities in a manner that ensures that data reported is accurate, reliable, technically sound, legally defensible, and impartial. ACZ utilizes six elements as a foundation of the QAP, and they are the following: documents and records, standard operating procedures, training, audits, corrective actions, and management review of the QAP.

We also take the following sampling measures to verify data quality:

- Two samples are collected at the site. The containers are filled bottle for bottle for each sample. Duplicate samples are identified in such a manner that their true site identity is not obvious to the laboratory. The identification of these samples is logged into the field notes to insure that the primary samples and duplicate samples are correctly identified.
- The field blank sample is prepared by filling a set of 40 ml vial bottles with distilled water in the field at a sampling site. The location is recorded in the field notes.

(v) formations, aquifers or strata to be sampled,
All six of these wells would be completed in the B-Groove.

(vi) identify the potential sources of groundwater contamination that will be monitored by each point of compliance monitoring point.
Potential sources of groundwater contamination could occur within the Mahogany zone in the Colony mine pillars adjacent to the ExxonMobil's experiments.

(vii) a time-schedule for implementation; and
The six wells will be drilled as soon as practical after approval. Monitoring will begin when the wells are completed.

(viii) ambient groundwater quality data sufficient to characterize potentially impacted groundwater quality.
Ambient data have been collected monthly since June 2007 at the locations approved under TR 11. Monthly data have been collected since December 2010 at locations approved under TR 13. The analyses demonstrate stable groundwater quality at all locations.

Operational Considerations:

Land Disturbance: There will be no new surface disturbance.

Drilling: The six (6) water monitoring wells would be drilled with water and/or air/mist.

Water Discharges: The six (6) water monitoring wells would be drilled with water and/or air. Any water used for drilling would be extracted from surface water on the property, using ExxonMobil's existing water rights. No drilling additives will be used, and this water will be returned to the surface water system. No degradation of existing surface water quality is anticipated because drilling water will be exposed only to oil shale rock.

Wellbore Abandonment: Water monitoring wellbores drilled under this Technical Revision would be abandoned by sealing them with standard Portland cement. See Attachment E for reclamation costs.

Timing of Drilling: ExxonMobil plans to begin drilling these water monitoring wells as soon as practical upon DRMS approval.

Financial Warranty:
The Exxon Mobil Corporation financial warranty currently in place would cover this drilling and all reclamation costs.

Verification:
The undersigned, executing this application on behalf of Exxon Mobil Corporation, verifies that the foregoing information is true and accurate and commits to the reclamation of lands disturbed through activities conducted as a result of this technical revision to MLRB Permit No. M-1980-047, as required by the Colorado Mined Land Reclamation Act and the rules as specified in the Hard Rock/Metal Mining Rules and Regulations.

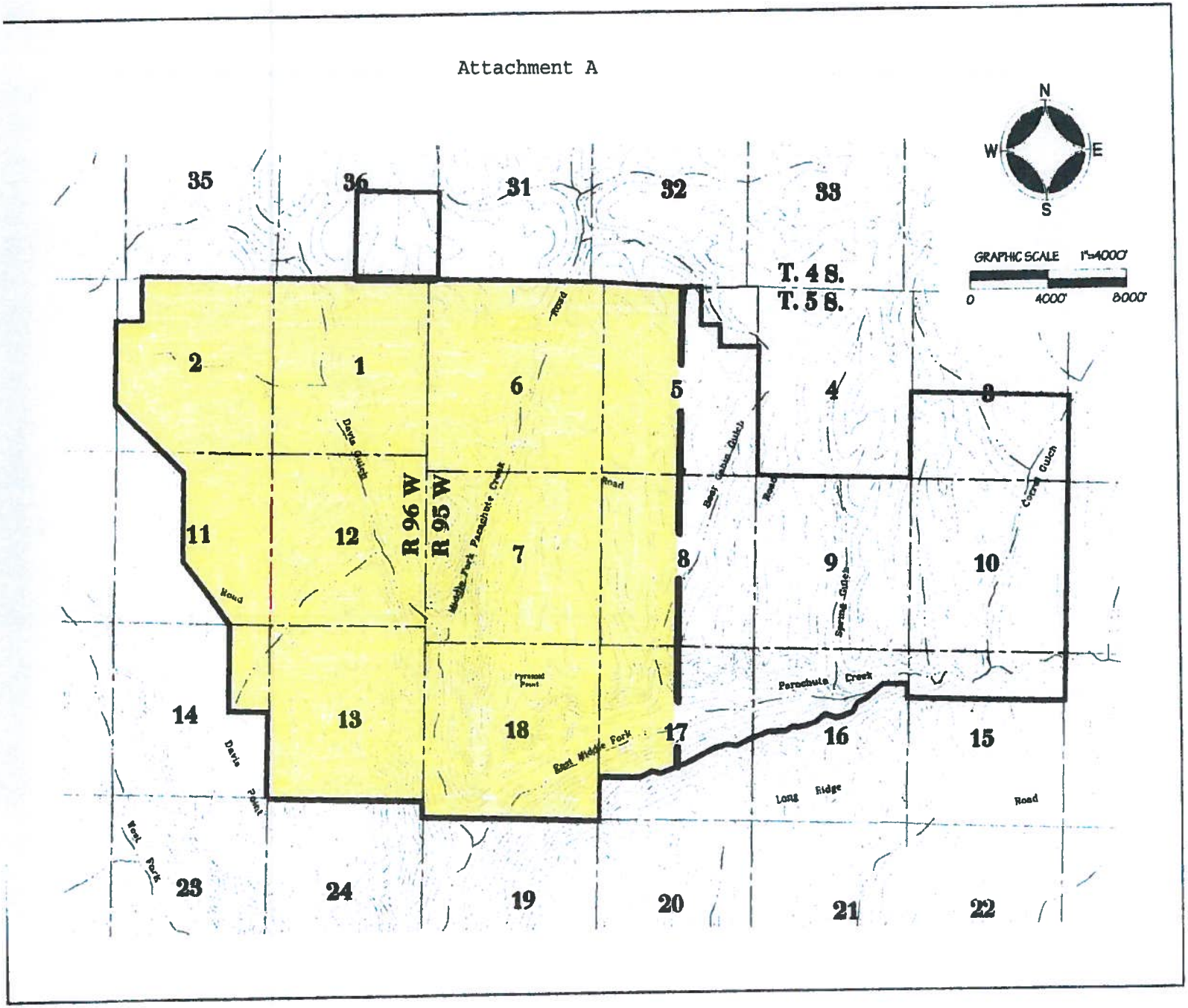
Enclosed is the required permit fee of $175.00.

Signed and dated this 3rd day of May 2012.

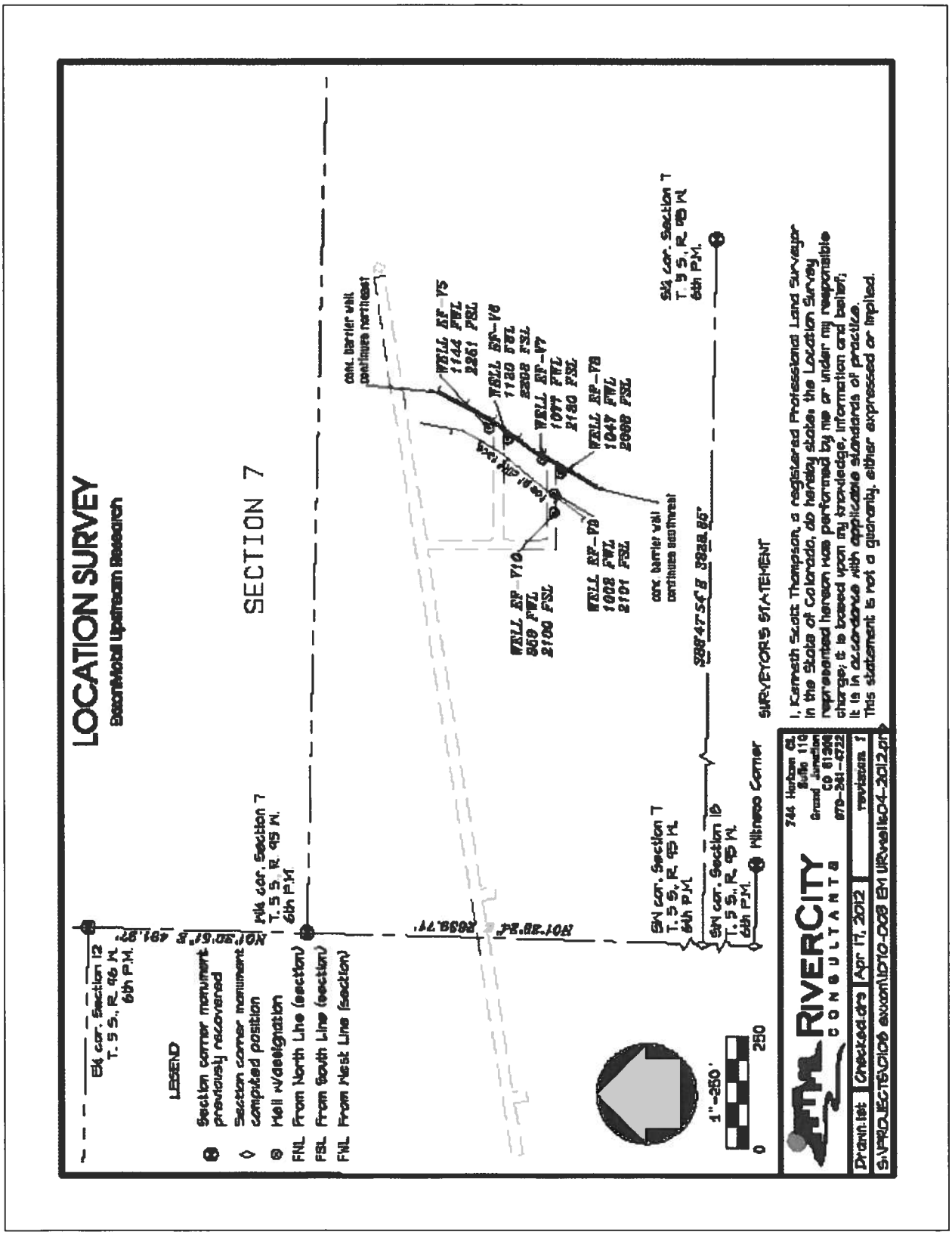
EXXON MOBIL CORPORATION
By ExxonMobil Global Services Co.
Acting for and on behalf of Exxon Mobil Corporation

By _____
Tom L. Adams
Colony Supervisor

Attachment A

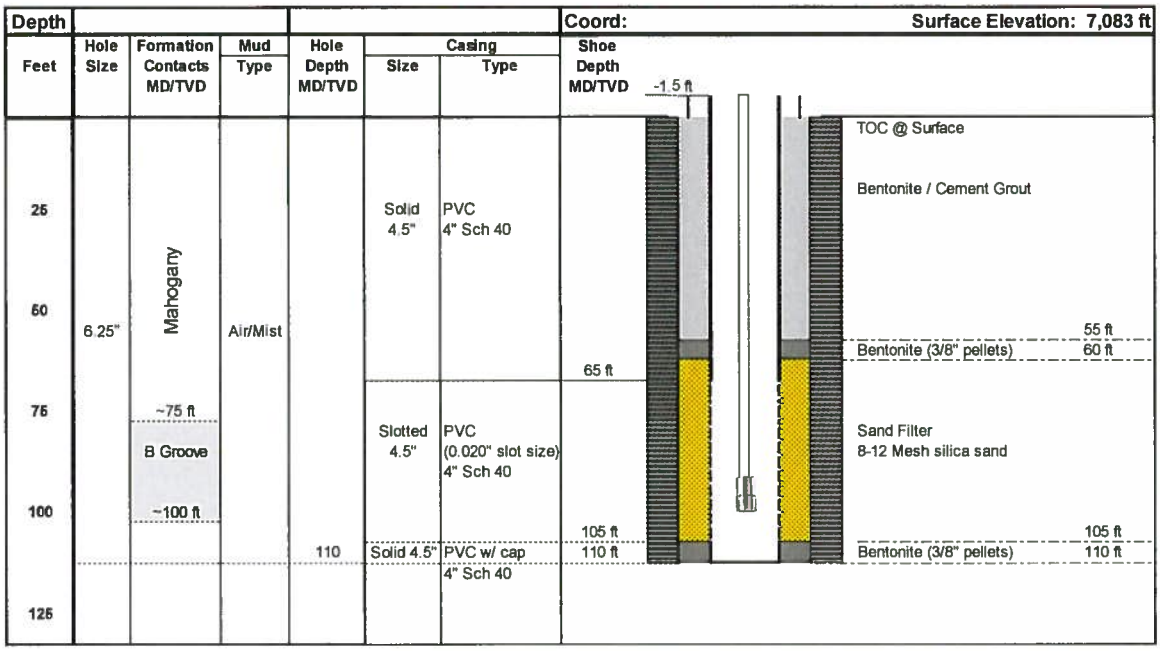


Attachment B



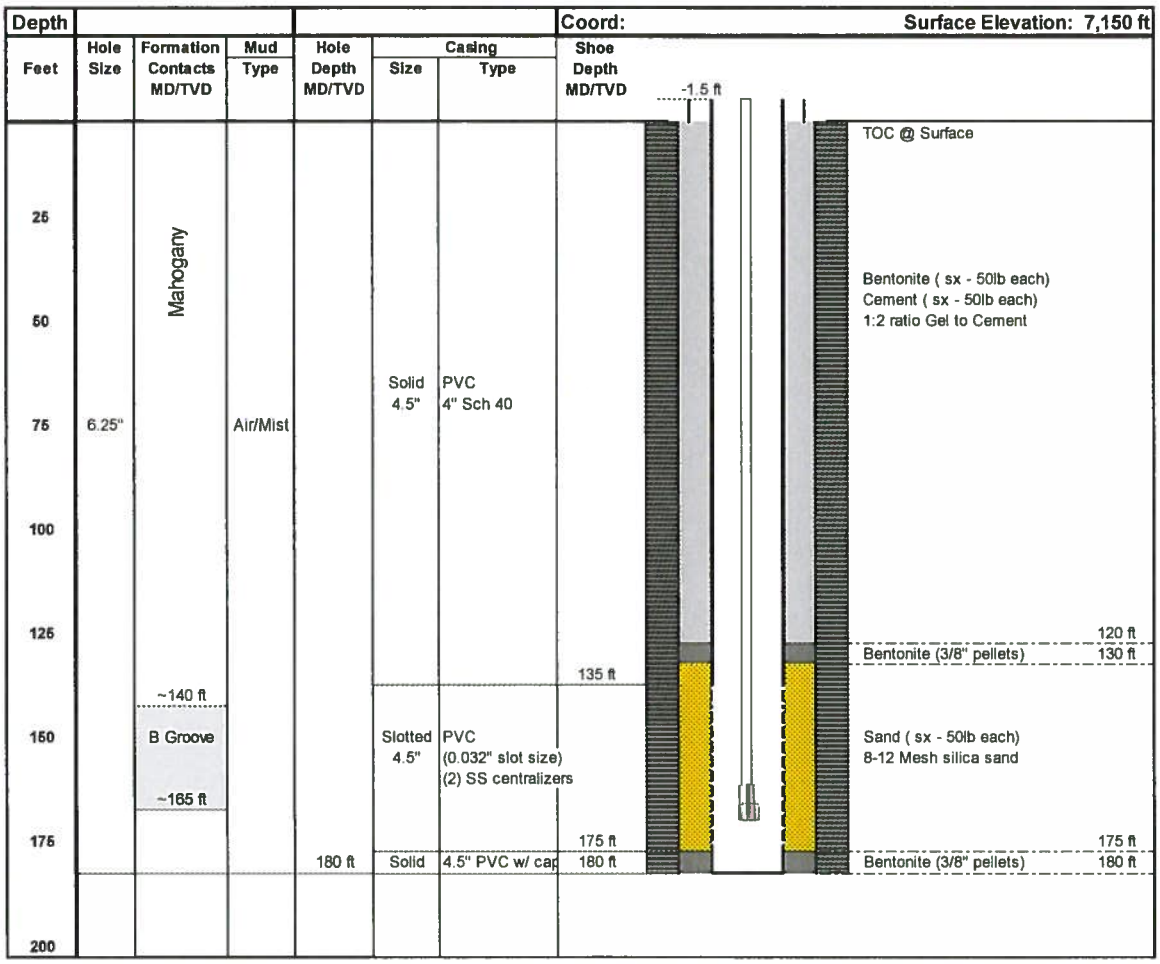
Attachment C

Colony Water Monitoring Wells (In Mine: EF-V9, EF-V10)



Attachment D

Colony Water Monitoring Wells (Old Road: EF-V5 through EF-V8)



Attachment E

Reclamation Cost Estimate for Six Water Monitoring Wells

Having 4-inch ID casing and depths of 110 feet (EF-V9, EF-V10) and 180 feet (EF-V5, EF-V6, EF-V7, EF-V8) respectively, the total volume to fill with cement is 84 cubic feet. Each 110 foot well has a capacity of 10 cu ft. Each 180 foot well has a capacity of 16 cu ft.

- Typically a 94-lb sack of cement (Type I/II) fills a volume of 1.28 cubic feet (six gallons of water mixed with one sack of cement). Therefore, 66 sacks of cement are required to cement all six wellbores to surface.
- A typical pallet of cement contains 40 sacks. At $10/sack two pallets will be $800.00.
- Labor cost for two days at 10hrs/day (two people), ($100/hr) will be $4000.00.
- Rental of a cement mixer/pump (two days minimum @ $100/day) will be $200.00
- Rental of an air compressor (two days minimum @ $100/day) will be $200.00.
- Rental of a Pickup Truck (one day @ $100/day) will be $200.00.
- Hotel and food for the crew will be $600.00.

Total reclamation cost for six wells is estimated to be $6000.00. With 50% contingency, the total cost is $9000.00.