November 10, 2006

Mr. Phil Stoffey, Environmental Protection Specialist
Colorado Department of Public Health and Environment
Remediation Program
4300 Cherry Creek Drive, South
Denver, CO 80246-1530

RE: Clay Pits Investigation
Colorado School of Mines Research Institute Site

Dear Mr. Stoffey:

This document summarizes the S.M. Stoller Corporation (Stoller) approach to investigate the Clay Pits Area of the CSMRI Site in Golden, Colorado (Site). The goal of this investigation is to determine the location, nature, and extent of sediment buried in the subsurface at the Clay Pits from the former settling pond located on the Site. To accomplish this goal, the area will be resurveyed by a professional surveyor to identify the location, soil borings will be completed in the area of sediment placement, and samples will be collected for laboratory analysis. A brief history is presented below, followed by Stoller's investigative approach.

Clay Pits History and Prior Investigations

In the late 1800s, clay was mined from the Clay Pits. As the name indicates, the Clay Pits were depleted of clay and presumably remained as open holes (pits) for the first half of the 1900s. The Clay Pits are an extensive area located on the south side of Clear Creek, between Lookout Mountain and South Table Mountain. They extend from an area near Clear Creek up to an area over a mile away close to the Jefferson County courthouse. The location of the portion of the Clay Pits relevant to this investigation is shown on Figure 1.

The relevant and relatively small portion of the Clay Pits that is a part of the CSMRI Site (i.e., the "Clay Pits Area") is a small, rectangular area near the western-most end of 12th Street in Golden, near the entrance of the Fenced Area of the Site. Figure 2 depicts the overlap of areas 3 and 4, which is the area suspected of containing the sediments. The rectangular area has been surveyed as an area 73 feet long, 20 feet wide, with a thickness of 15 to 20 feet deep. For this investigation work plan, the term "Clay Pits Area" means this rectangular area that was surveyed in 1977 by Louis E. Bolis to be approximately 0.034 acres (Attachment A, Bolis Survey).

In May 1973, sediment from the on-site settling pond was placed in one of the open holes of the Clay Pits, which is referred to as the Clay Pits Area (see letter in Attachment B). According to the Krause memo, the sediments were placed at a "depth of burial of 15 to 20 feet" with an additional 15 to 20 feet of "cover material and depth" of 15 to 20 feet. A letter dated January 30, 1985 from CSMRI indicates a total of 500 cu yds of sediment were placed in the Clay Pits (Attachment C).

The goals of this investigation are to locate the correct Clay Pits Area, determine the nature and extent of the pond materials buried there, collect sufficient data to evaluate what risk, if any, this buried material may pose, and collect sufficient data to evaluate alternatives for managing the risk, if any risk is found. The extent of the material is bounded to the east and west by walls formed by sandstone beds on either side of the mined-out clay bed. Extent determination will focus on the extent to the north and south as well as actual thickness of the non-native mining derived material.

Colorado School of Mines (School) had previously retained New Horizons Environmental Consultants, Inc. and URS Corporation to investigate the Clay Pits Area. In 1998, New Horizons prepared the *Conceptual Subsurface Sampling & Analysis Plan, CSMRI Site*. Figure 5 in that plan titled "Schematic of Clay Pits Showing Relative Location of 'Area 4' and Boring CP1" showing "Area 4" as an elongated area. Figure 5 of that plan is attached hereto as Figure 3. The New Horizons' Figure 5 includes a point labeled "CP1" to indicate the planned sampling point near the north edge of "Area 4."

URS implemented the New Horizons Plan in 1999. The URS report, *Analytical Results Report, Colorado School of Mines Research Institute Site* includes Figure 3, "Clay Pits Soil Boring Locations." In that figure, which is attached hereto as Figure 4, the boring points "CP1" and "CP2" are denoted at the northern edge of "Area 4." These points indicate the approximate locations of the borings that were logged as a part of the URS report and included gamma surveys and chemical and radiochemical analyses. The investigation concluded that no elevated concentrations of chemicals of concern were in this area.

In February 2006, CSMRI submitted a request to CDPHE to remove the Clay Pits Area from the CSMRI radioactive materials license for the Site. CDPHE asked for more detailed information proving that the investigation was performed in the correct location. Upon reviewing the historical survey information and the investigative information, it appeared that the actual area surveyed by Bolis as the "Location of Waste Dump, CSM Research Institute" is located at the south end of "Area 4" approximately in the area shown in the New Horizons and URS drawings as the overlap area between Area 3 and Area 4. The original Clay Pits Area where materials dredged from the CSMRI pond had been buried was surveyed by Louis E. Bolis in 1977. The legal description from that survey is provided in Attachment A. In addition, Mr. Bolis provided a stamped drawing ("Bolis Drawing") of the results of the survey, "Location of Waste Dump, CSM Research Institute." Copies of the title box and a detail from that drawing are provided in Attachment D.

On the Bolis drawing, the survey location of the target location is indicated along with an area with the same border highlight as the target location. The additional border highlight is labeled, “APPX. EDGE OF CLAY PIT.” The resulting drawing, at first glance, appears to indicate that the Clay Pits Area is approximately 20 feet wide and several hundred feet long. However, a closer reading of the legal description provided by Mr. Bolis indicates that the Clay Pits Area extends 73.65 feet south from the “true point of beginning” and is 20 feet wide. This much smaller Clay Pits Area is indicated as a closed box at the south end of the area described by the language, “APPX. EDGE OF CLAY PIT.” The URS boring events, therefore, appear to have been located approximately 150 to 200 feet away from the rectangular area surveyed by Bolis.

The following investigative activities focus on determining the location, nature, and extent of the pond sediments, and any environmental impacts they may pose. Historical documents indicate that the extent of the sediments may be 500 cu yd (Attachment C).

Clay Pits Area Investigation

The investigation of the nature, extent, and potential environmental impacts from the sediments placed in the Clay Pits Area will consist of the following elements.

- Prepare Investigation Plan
- Prepare site-specific Health and Safety Plan
- Acquire CDPHE approval to proceed
- Survey suspected sediment location
- Complete up to six soil borings, screen continuous soil cores, and collect soil samples for laboratory analysis
- Analyze data
- Prepare report

Each of these items is detailed in the following sections of this document.

1.0 Investigation Plan

This document is the Investigation Plan detailing our approach to investigating the Clay Pits Area. The details of the nature and extent sampling strategy, laboratory testing, analytical data analysis, and reporting are presented in this document. Now that the survey information has been re-evaluated, the Clay Pits Area needs further investigation.

2.0 Site-Specific Health and Safety Plan

A site-specific Health and Safety Plan is presented in this Investigation Plan as Attachment E. The inherent instability of the Clay Pits Area is a main concern with respect to the safety of this project and is addressed in the Health and Safety Plan.

3.0 Acquire CDPHE Approval to Proceed

This Investigation Plan will be submitted to the CDPHE for its review and written approval. Comments on the work plan by CDPHE will be addressed by Stoller. CDPHE representatives will be notified in advance of the dates for boring completion so that they may observe the work in progress.

4.0 Survey Suspected Sediment Location

The location of the waste disposal pit was surveyed in 1977 and the metes and bounds have been provided in the surveyor letter in Attachment A. Stoller will direct a licensed land surveyor to locate the licensed area. Based on the metes and bounds from the Bolis survey in 1977, the surveyor will identify to Stoller the area beneath which the sediments are thought to reside. Stoller will verify that the location based on the metes and bounds from the 1977 Bolis survey are in fact located away from the area where URS performed its investigation. If so, then Stoller will begin the subsurface investigation in the center of this new area. Additional borings will be placed radially out from the center of the area.

5.0 Complete up to Six Soil Borings and Collect Continuous Soil Cores

Prior to initiation of field activities, Utility Notification Center of Colorado (UNCC) [1-800-922-1987], a one-call utility location service, will be contacted and provided information as to the location and extent of the proposed field activities. Typically utilities such as gas, electric, cable, telephone, and water are located and flagged by UNCC. In addition, School of Mines Facilities Maintenance and City of Golden Public Works will be contacted as to the proposed field activities. Care will be taken to identify utilities not normally located by UNCC that may exist, such as steam lines, potable water lines, storm sewer, and sanitary sewer. A Stoller representative will be in the field at the time of the utility locates when UNCC, School of Mines, and City of Golden Public Works are present to clear utilities.

The pond sediment was placed in a pit between two bedding planes between which the clay was removed. The lateral extent to the east and west is defined by these walls. A coal mine was also located in an area below where the Clay Pits Area may be located. The coal mine has had subsidence problems in other areas. The deepest burial point of the sediments may be on top of this mine.

Unlike the heterogeneous releases and nature of the materials in the Fenced Area of the Site, and the widely dispersed locations of the impacted materials at the Fenced Area, the Clay Pits Area is known to be a fairly homogenous material of pond sediment with a cover that was deposited in a surveyed rectangular formation during the course of a one-week period in 1973. Moreover, the Clay Pits Area sediment is deeper than much of the materials at the Fenced Area and a significant cover is placed on top of it. With the specified location, the greater depth and the possibility of a mine with subsidence concerns possibly located underneath the pond sediment, it is more reasonable to use borings to identify location, nature, and extent in the Clay Pits Area than it is to use the excavation method of investigation that was used for the Fenced Area soils, which involved the use of heavy equipment at depth and would raise serious safety concerns if used in the Clay Pits Area investigation.

Stoller will advance up to six soil borings using a hollow-stem auger rig to a maximum depth of 40 feet bgs. A large diameter split spoon sampler or continuous corer will be used to collect subsurface soil samples beginning at the ground surface. Fewer borings may be used if the target material is easily identified and the extent to the north and south is easily determined. Due to the uncertainty of sediment location, a map depicting the proposed borings is not included herein; however, the strategy will be to define the eastern and western extent of the sediment as well as characterize not only the sediment, but the overburden as well. The exact nature of the overburden is not certain, and it may contain crushed ore potentially obscuring the contact between the sediment and the overburden.

A split spoon continuous sampler will be driven inside and ahead of the hollow-stem auger bit. Two-inch diameter by 4-foot long plastic sleeves line the inside of the sampler, which is driven into the ground as additional auger sections are added until the desired total depth is reached. Historical information indicates the depth of the sediments is approximately 35 feet bgs. Augers and samplers will be decontaminated between borings to prevent cross contamination.

Indications of contamination, such as odor, discoloration, or elevated activity as indicated by field screening of the open sampler will be noted on the field form. The exposed sample will be scanned using a Geiger Mueller Type 2 or equivalent scintillation meter for initial activity screening. Instrument response values will be recorded in the field and also transcribed to the soil boring log forms. The scintillation meter will be shielded to external background activity. Samples for laboratory analysis will be selected based on field activity, material appearance, or sample depth, with the goal being to sample above, within, and below the settling pond sediments. In each boring, one sample will be collected from overburden material above where field observations/instruments indicate the top of the sediments are located, at least one sample from within the sediments, and one sample at the total depth of the boring from native material below the sediments to bound the lower extent of the sediments. Additional samples may be collected and held pending results of laboratory analysis from the samples submitted to the laboratory. Duplicate samples will be collected at the rate of 10 percent.

The completed field log form will be stored in the field file. At the completion of field activities, the forms will be placed in Stoller projects files and maintained for future reference. Information contained on the field log forms will be transcribed and presented in the final report.

Soil samples will be described for characteristics as listed below:

- Soil classification, based on the Unified Soil Classification System (USCS)
- Color based on the Munsell color chart
- General lithology and specific lithologic features
- Grain size and sorting of unconsolidated material
- Apparent mineral content
- Texture, compaction, and structure (if any)
- Plasticity of clays
- Moisture content
- Recordation of values of field screening (alpha activity)
- Debris/waste type

Samples selected for laboratory analysis will be based on field observations and/or measured activity. Soil samples will be submitted for the following analyses:

- Arsenic, Lead, Molybdenum, and Vanadium (EPA Method 6010)
- Mercury (EPA Method 7471)
- Radium 226 and 228 (EPA Method 901.1M)
- Thorium 228, 230, and 232 (ASTM D 3972-90M)
- Uranium 235 and 238 (ASTM D 3972-90M)

The above-listed analytes have also been identified as compounds of concern (COCs) at the Site. It is anticipated that between three to six soil samples will be submitted for laboratory analyses from each borehole. A total of 10 to 18 samples may be submitted depending on field observations and field-recorded activity.

Each borehole will be abandoned by backfilling the boring with bentonite pellets and hydrating them. Soil cuttings from the auger boreholes will be drummed pending results from soil samples.

6.0 Data Analysis, Report Preparation, and Risk Assessment

A final, comprehensive report documenting the field activities will be generated. Field observations, borehole logs, and field methods will be presented in the final report. Soil analytical data results will be evaluated and compared to background levels established for the Site. If the concentration of metals or radioisotopic activity exceeds previously established DCGLs for the Site, then a risk assessment will be conducted to determine if the sediments pose either an ecological or human health risk.

Sincerely,

Steve Brinkman
Project Manager

SB/ak

Enclosures: 5

cc: Linn Havelick,
File 4060 – CSMRI – Clay Pits

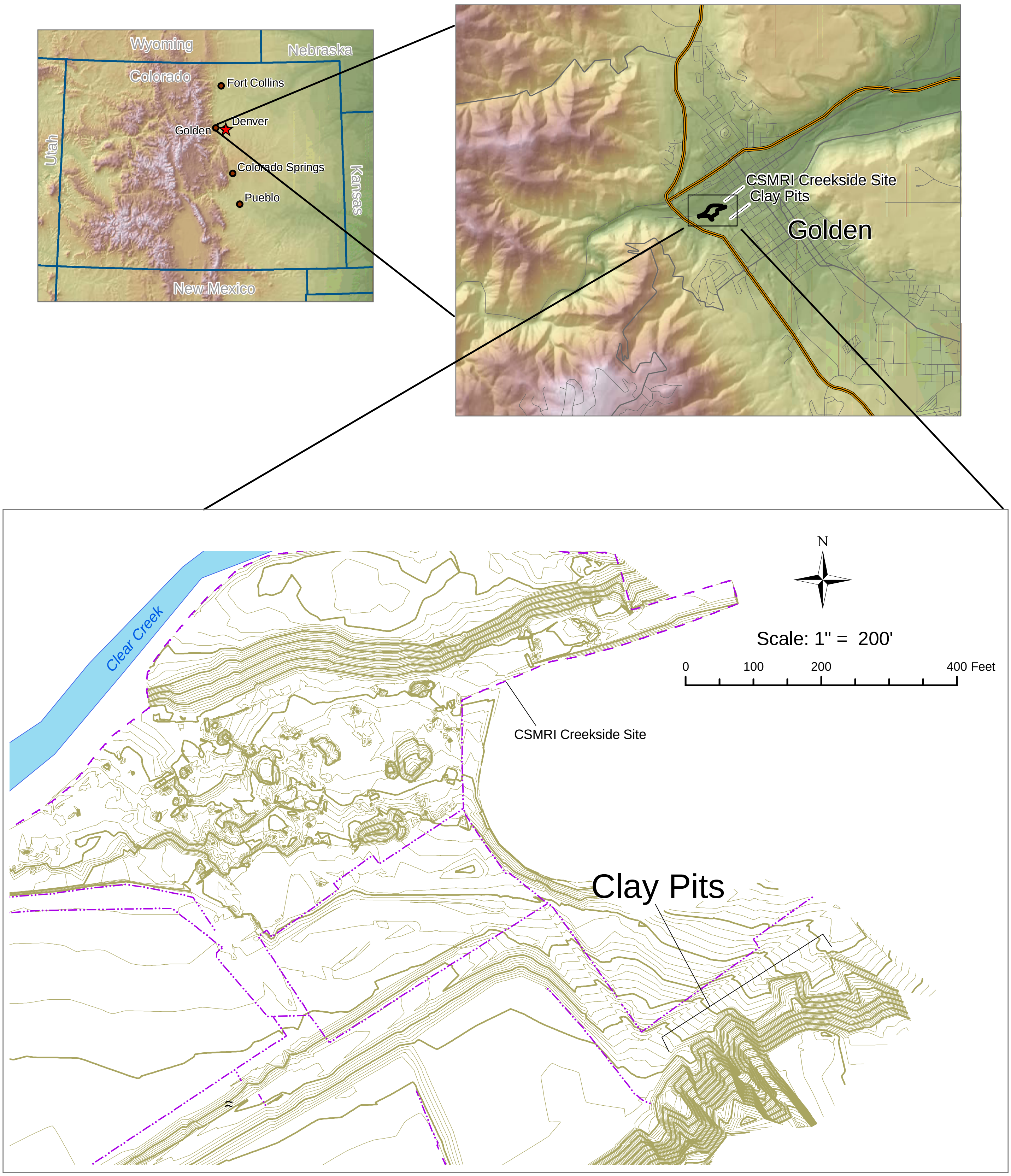

Figure 1

Clay Pits
Site Location Map

Explanation

CSMRI Creekside Site
Fences
Topography (1 ft Intervals)
Topography (5 ft Intervals)

Clay Pits Investigation
Workplan

Stoller

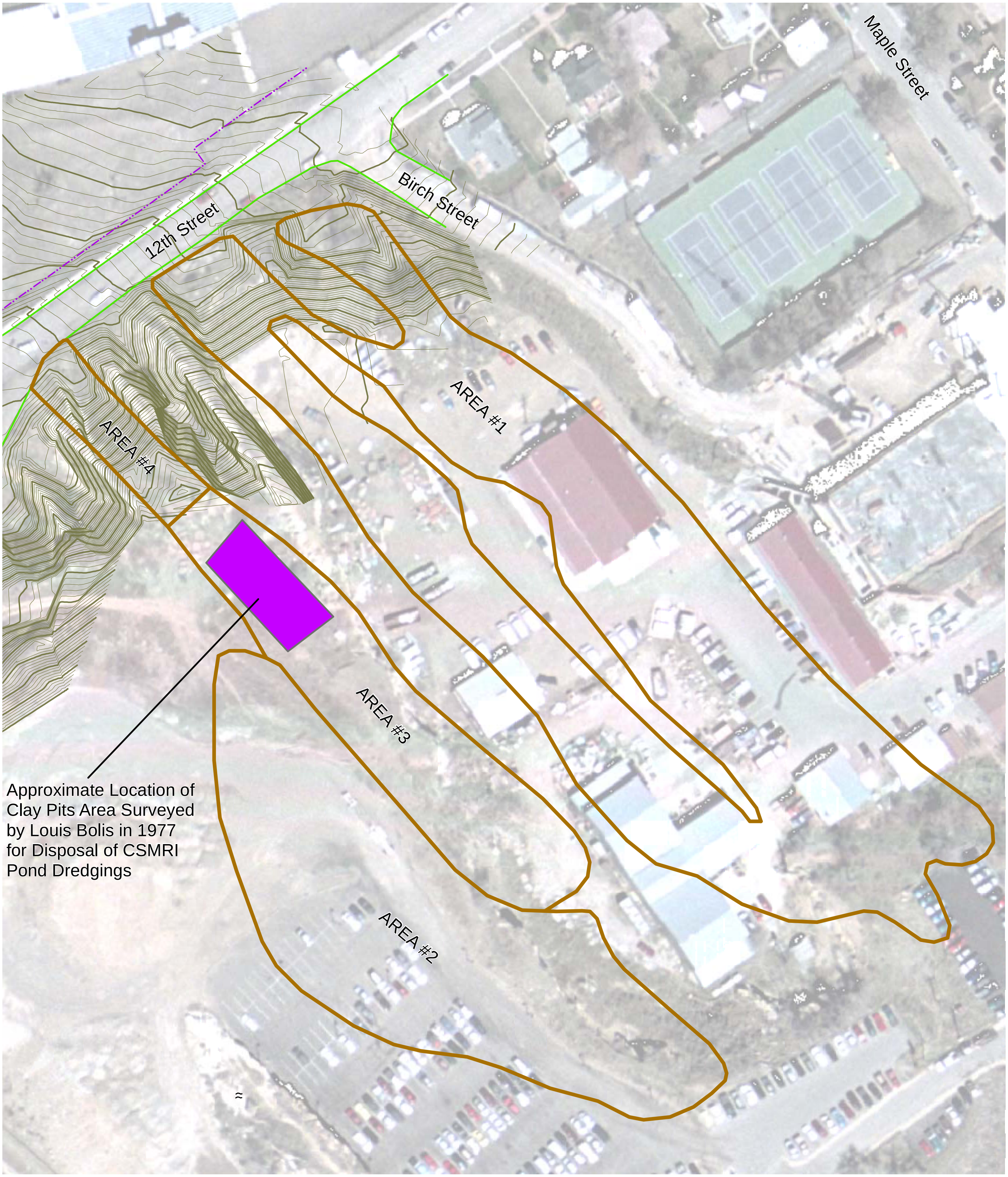

Figure 2

Clay Pits Detail Showing Area 3

Explanation

- Fences
- Topography (1 ft Intervals)
- Topography (5 ft Intervals)
- Roads
- Clay Pits Areas (Approximate Locations)

(Aerial Photography: 2002)

N

Scale: 1" = 100'

0 25 50 100 Feet

Clay Pits Investigation Workplan

Stoller

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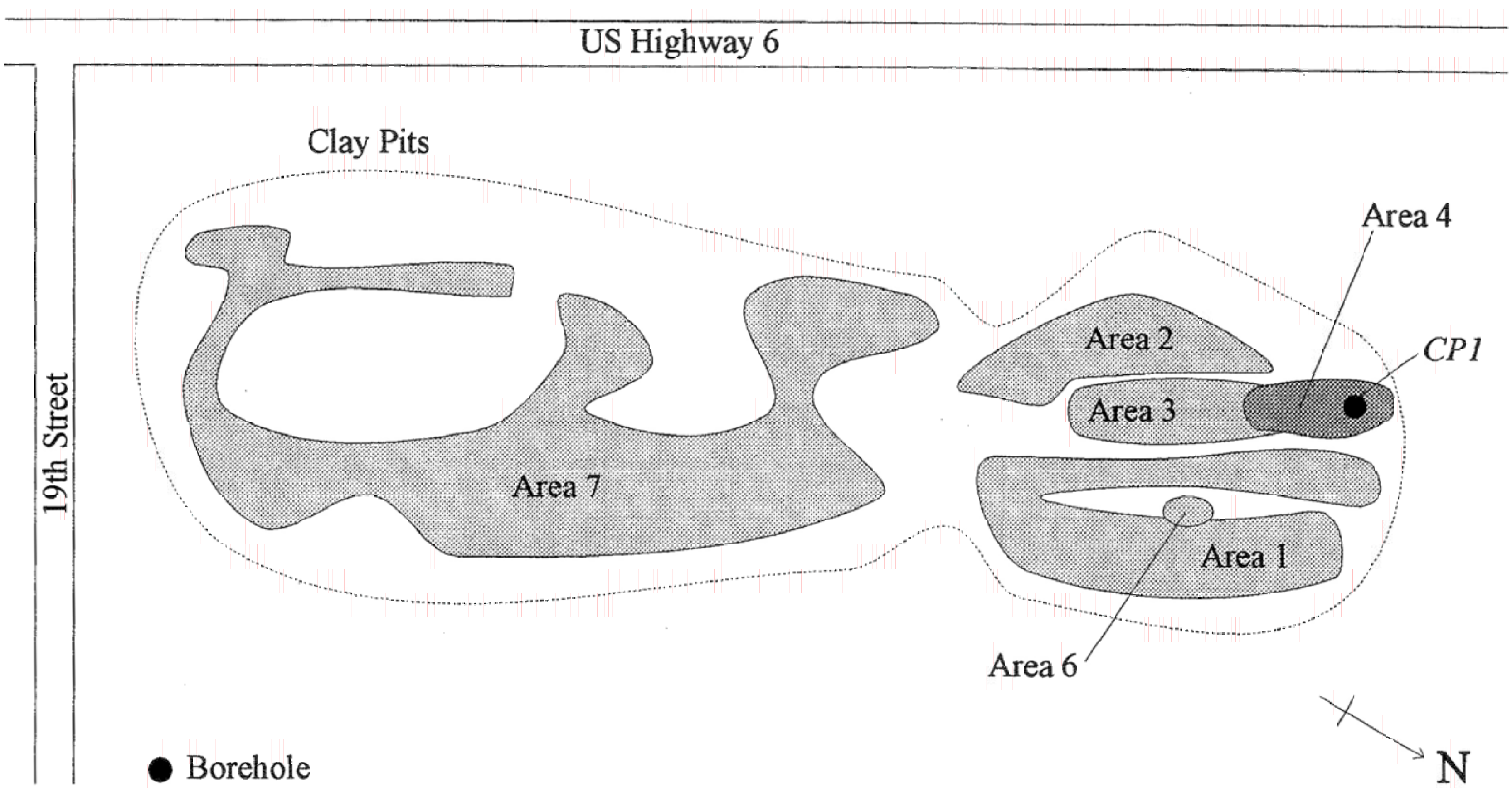

Schematic of Clay Pits Showing Relative Location of "Area 4" and Boring *CP1*

NEW HORIZONS ENVIRONMENTAL CONSULTANTS, INC. 6585 S. WRIGHT STREET LITTLETON, CO 80127-4806	NHEC Project 1089	Figure 5
	February 1998	Revision 0

Figure 3 New Horizons Figure 5		Clay Pits Investigation Workplan Stoller

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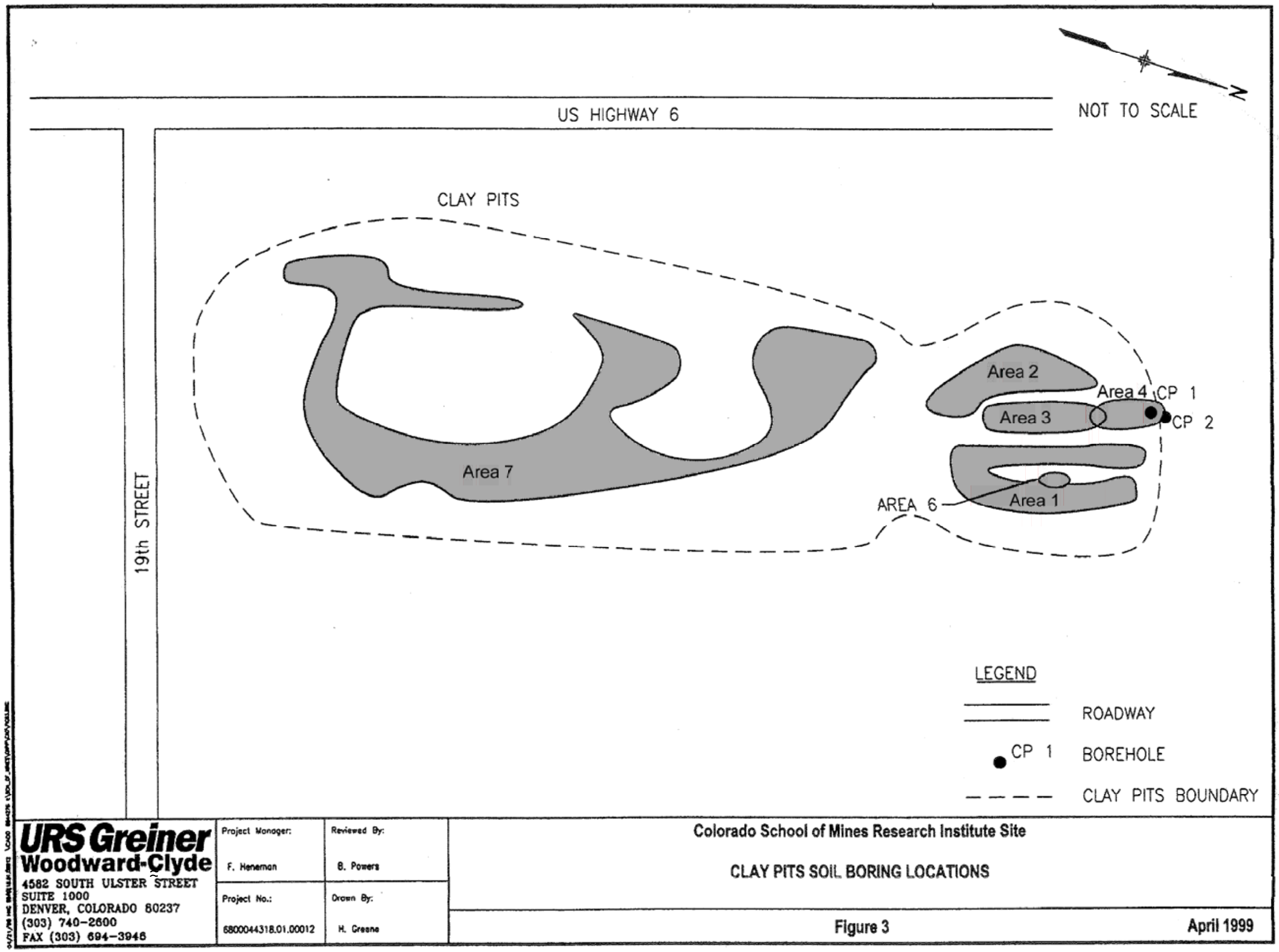

Figure 4

URS Figure 3

Clay Pits Investigation Workplan

Stoller

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LOUIS E. BOLIS
REGISTERED LAND SURVEYOR
BOX 637
GOLDEN, COLORADO 80401
279-3486

Colo.School of Mines Research Institute

Waste Disposal Pit

A parcel of land in former Block 20, Mineral Land Company's Add to the City of Golden, Colo. Jeff. County. more particularly described as beginning at the inter section of 12th & Maple Sts. said City of Golden, thence S 54° 33' 55" W along the centerline of said 12th St. 696.06 ft. to a point, thence S 44° 29' 54" E 223.47 Ft. to the true point of beginning, thence N 60° 08' 35" E 10.0 ft. to a point, thence S 29° 51' 25" E 73.65 ft. to a point, thence S 60° 08' 35" W 20.0 ft. to a point, thence N 29° 51' 25" W 73.65 ft. to a point, thence N 60° 08' 35" E 10.0 ft. to the true point of beginning, containing 0.034 acres M/L.

MEMORANDUM

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
P.O. Box 112
GOLDEN, COLORADO 80401

TO Jerry Krause

DATE June 11, 1976

FROM Jack E. Coulson JEC

PROJECT NO.

SUBJECT Golden Tailings Pond

The information which you requested relative to the sludge disposal from the subject pond is as follows:

1. Date of removal and burial.
   5-14 - 5-19-73.

2. Location of burial.
   Clay pits on CSM campus.

3. Depth of burial.
   Estimated 15 to 20 feet.

4. Cover material and depth.
   Crushed ore and earth estimated 15 to 20 feet.

5. Future use and potential hazard of area.
   Future use - green belt, no known hazards.

6. Any monitoring.
   No.

Colorado School of Mines Research Institute

5920 McINTYRE STREET • GOLDEN, COLORADO 80403
PHONE (303) 279-2581 • TELEX 754211 • CSM Res Gldn
CSMRI

January 30, 1985

Mr. Larry Doerr, Health Physicist
Colorado Department of Health
4210 E. 11th Avenue
Denver, CO 80220

Dear Larry:

This letter is in response to our telephone conversation of January 17, 1985 regarding CSMRI's deposition of buried waste materials which are of concern to your department.

Golden Facility

Approximately 500 yd^3 of dredged pond sediments were buried prior to 1972 in old clay pits located just south of the main entrance to the Research Institute. According to our records, burial was conducted between vertical sandstone walls, well above the existing water table.

Evidently, the activity of the sludge was never determined but it is assumed to be at or near background levels. This statement is supported through previous correspondence submitted to your office by the Colorado School of Mines. Further, numerous surveys conducted by your department have not offered any evidence to the contrary.

Table Mountain Research Center

In January of 1966 approximately 300 yd^3 of low level yttrium waste were disposed of in segregated burial pits at what was then the northern section of the TMRC facility. The trench was bisected by the property line shared with AMAX, Inc.

Subsequently, the contents of the pit were relocated to the south under the access road and are now totally on CSMRI property. Trench dimensions have remained constant. Depths run approximately 10 feet with 4 to 4.5 feet of compacted overburden. The road has since been surfaced with 4 in. to 6 in. of asphalt.

CSMRI believes that it is in compliance with all applicable regulations regarding monitoring and posting of this site.

Hopefully, transmittal of this information will expedite efforts regarding the receipt of our license. Should you have any additional questions, please contact me.

Sincerely,

John P. Schmeerber

/laj

I, LOUIS E. BOLIS, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THE SURVEY OF THAT PORTION OF THE WASTE DUMP SHOWN HEREON BEING IN THE FORMER BLOCK 20, MINERAL LAND COMPANY'S ADDITION TO THE CITY OF GOLDEN, JEFFERSON COUNTY, COLORADO, TO BE TRUE AND ACCURATE TO MY OWN KNOWLEDGE AND BELIEF.

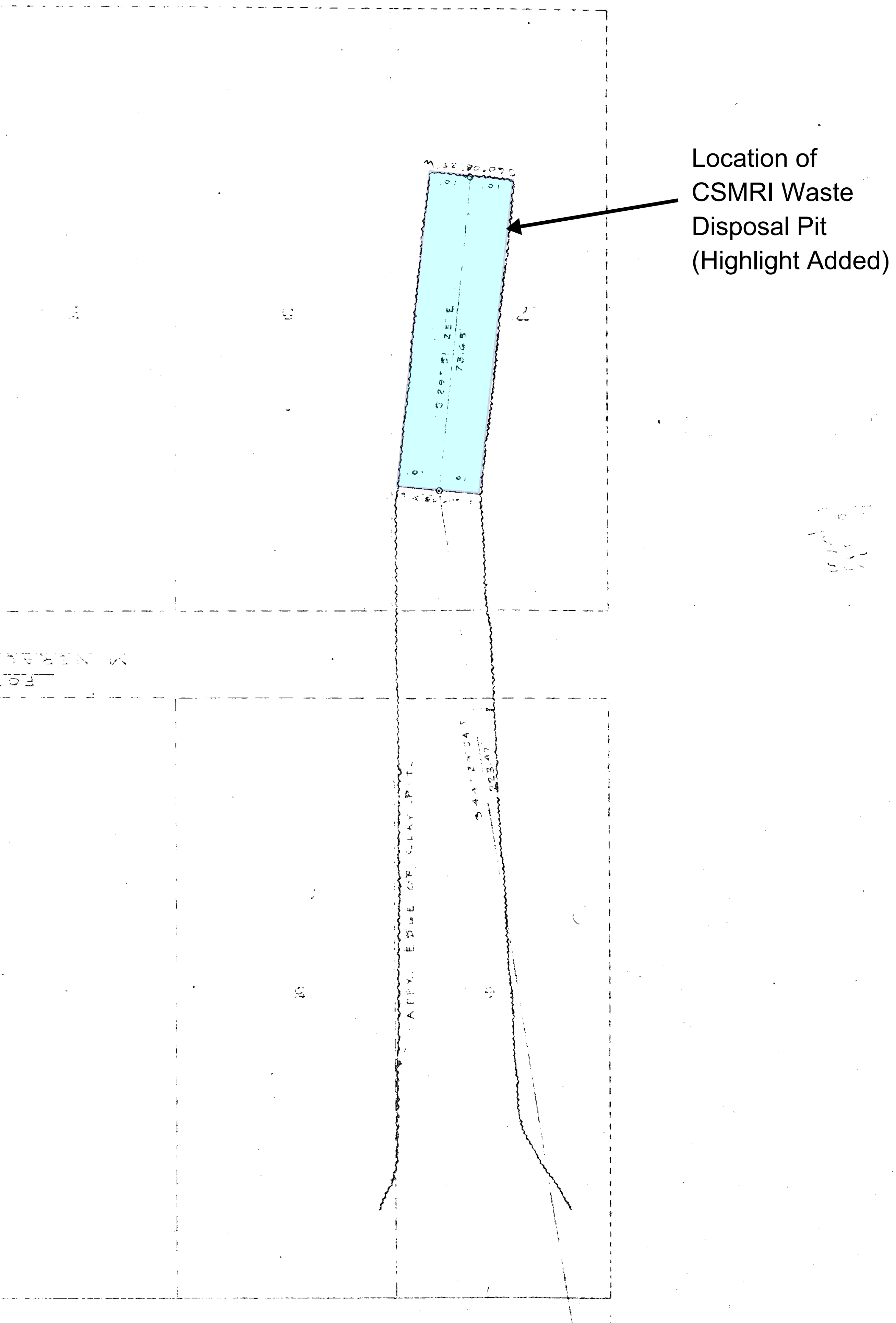
Louis E. Bolis

LOUIS E. BOLIS
REG. LAND SURVEYOR
No. 1210

LOUIS E. BOLIS
STATE OF
SEAL
REGISTERED LAND SURVEYOR

LOCATION OF WASTE DUMP
CSM RESEARCH INSTITUTE

SCALE: 1 IN = 20 FT	APPROVED BY:	DRAWN BY JLB
DATE: JAN. 3, 1977		REVISED
		DRAWING NUMBER


Location of
CSMRI Waste
Disposal Pit
(Highlight Added)
APPX. EDGE OF CLAY PIT

S.M. Stoller Corporation
Clay Pits Health and Safety Plan

Project Location:	CSMRI Clay Pits
Task Name:	Investigation of subsurface soil
Duration of Activities:	Duration of contract. This HASP will be modified, as necessary, if new tasks are added.

Approvals

Title/Organization:	Printed name:	Signature:	Date:
Project Manager	Steve Brinkman		
Health and Safety Supervisor	Harry Bolton		
Health and Safety Manager	Darrin Dobbins		

Scope of Work

Breakdown and description of work activities:

1. Conduct utilities locate
2. Mobilize drill rig to Clay Pits
3. Conduct surface and subsurface investigation; maximum depth of 40 feet bgs
4. Screen core samples for activity in the field
5. Collect soil samples for laboratory analysis
6. Demobilize equipment from Clay Pits
7. Perform a rad survey of all equipment and materials leaving the site

Should any off-normal event occur, work will immediately stop and will not commence unless the hazards have been addressed and the necessary THA, procedure or HASP modification completed. Particular attention will be paid to ensuring the stability of the ground for the drill rig. Because the site is potentially unconsolidated fill on top of an area potentially containing open voids, special care will be given to the placement of the drill rig.

The HASPs on this template are to be used in conjunction with the Stoller EHS Policy Manual.

Personnel

Assigned Responsibility:	Name and Organization:	Phone Number:
Project Manager	Steve Brinkman	303-546-4388
Assistant Project Manager	Harry Bolton	303-546-4351
Health and Safety Supervisor	Harry Bolton	303-546-4351

Task Hazard Analysis

Task-specific hazard control measures are specified in each Task Hazard Analysis (THA). THAs have been developed for the following activities and are included as attachments. Activities with procedures have hazard abatement incorporated into the procedure and do not have THAs.

Activities with a THA:	
General Maintenance	
General Site/Visitor	

Permits

Required permits must be signed before work commences.

Permit:	No	Yes	Notes and Comments:
Hot Work	X		Hot work is not anticipated. Any hot work will be conducted by the client or their designee.
Rad Worker	X		Conditions identified on site do not warrant this permit.
Confined Space	X		This type of work is not anticipated. If confined space work is to be conducted, a permit system will be utilized and the Health and Safety Manager notified.
Lockout/Tagout	X		Most of the activities anticipated can be controlled by unplugging the cord. Any other electrical activities will be undertaken by a licensed electrician.
Excavation/Intrusive Soil Activity		X	Intrusive soil activity through the use of a Geoprobe is required. Call for utility locates. Work will not commence until utilities are cleared.
Other:			

Personal Protective Equipment

The following personal protective equipment (PPE) will be used for the identified activities.

Activity	Head/Face	Foot	Hands	Respiratory	Clothing
Surface and subsurface soil sampling with Geoprobe	Hard hat, safety glasses, hearing protection	Sturdy, over the ankle, steel-toe boots. Tyvek boot covers or Latex boot covers if muddy conditions exist	Dedicated leather gloves		Long pants and long-sleeve shirt
Radio-Isotope Monitoring	Hard hat, safety glasses	Sturdy, over the ankle, steel-toe boots. Tyvec or latex boot covers or nuke booties if muddy conditions exist	Synthetic gloves (nitrile)		Long pants and long-sleeve shirt

General Maintenance	Hard hat and safety glasses, minimum	Sturdy, over the ankle, steel-toe boots. Latex boot covers if muddy conditions exist	Dedicated leather gloves, nitrile gloves if working with liquids		Long pants and long sleeve shirt. Tyvek for dirt work
Visitor	Hard hat and safety glasses	Sturdy, over the ankle, steel-toe leather boots. Tyvec or latex boot covers or boots if muddy conditions exist	NA unless touching equipment		Long pants and long sleeve shirt
Note: Any non-disposable items must be frisked and shown to be clean before allowed off site.					
The following competent person certifies that a hazard assessment for the identified activities has been performed and the selection of PPE is based on best available information.					

Printed Name:	Signature:	Date:
Darrin Dobbins		

Task Hazard(s) Summary

Potential health and safety hazards of these tasks are listed below. The potential for encountering these hazards is ranked high, medium, or low based on the work to be performed and the hazard control measures to be used.

Summary	Hazard Potential (High, medium, or low)	Description of potential hazards (List each potential hazard)
Safety: Walking and working surfaces, falls, power and hand tools, materials handling	Medium	Slips, trips, or falls due to uneven walking surface or wet/snow/icy conditions, hand tool usage
Utilities: Buried, overhead, or in general work area	Medium	Utility locates will be conducted prior to any Geoprobe activities. Coordinate utilities with CSM Facilities Maintenance
Chemical: Identify chemicals of concern here, and attach MSDSs	Low	Possibly chemicals procured for maintenance or sample preparation
Physical: Heat, cold, noise, radiological	Medium	Radiological contamination from inhalation or skin contact. Data results indicate that rad concentrations in soil and air are sufficiently low that the PPE described for each task will eliminate exposure potential.
Biological: Plants, animals, insects, spiders, infectious waste	Medium	Spiders/insects, possibly animals such as raccoons, foxes, coyotes, and squirrels
Site Instability	Medium	Located on top of former mine site may result in stability issues for the drill rig. The site will be inspected prior to drill rig placement and close monitoring for drill rig stability will be completed during drilling activity.

Site Monitoring

Task-specific monitoring requirements are identified below.

Direct Reading Exposure Monitoring (to monitor potential worker exposure)			
Activity(s)	**Instrument**	**Action Level(s) and Actions**	**Frequency**
Scanning each soil core prior to sample collection	Geiger-Mueller Model 2 gamma detector	Record meter response in counts per minute(cpm) to compare with laboratory analytical results	Each soil core sample will be scanned
Frisking sample containers prior to leaving site	Geiger-Mueller Model 2 gamma detector	Record results	Each sample container
Integrated Personal Air Monitoring (full-shift worker exposure sampling and/or analysis)			
Activity(s)	**Contaminant**	**Method**	**Frequency**
NA			
Comments or special instructions: NA			
Perimeter or Work Area Monitoring (ambient work area or fence line monitoring)			
Activity(s) /Location	**Contaminant(s)**	**Method**	**Frequency**
Comments or special instructions: Operations will not be conducted when wind speeds exceed 20 mph.			

Site Control

Task-specific site control measures are specified below.

Site Control for General Work Area(s)	
Location	**Site Control Procedure (discuss important elements such as signs, barricades, fencing, briefings, sign-in/out logs, etc.)**
	Individual time in the work area will be documented in log books or a sign-in log. Barricade tape on sawhorse barricades will be used as temporary fencing to establish site control. A tailgate meeting will be completed for activities conducted at the site on a daily basis.
Site Control for Potentially Contaminated Area(s)	
Location	**Site Control Procedure (discuss important elements such as signs, barricades, briefings, qualifications, required supplies and equipment, sign-in/out logs, etc.)**
Support Zone	NA
Contamination Reduction Zone	NA
Exclusion Zone	NA

Decontamination

Required decontamination procedures are described below.

Type of decontamination	Identify activity(s) requiring decontamination, and describe decontamination steps, location, required equipment, and collection and disposal of potentially contaminated liquids and solids.
Personnel decontamination	Proper doffing and disposal of booties as sanitary waste.
Equipment decontamination	Equipment and samples will be scanned before packaging, and then before placing in the vehicles. Dry decontamination will be performed until samples are clean and sampling utensils have been bagged for disposal. Soil sampling equipment will be steam cleaned upon arrival at the job site, during each new borehole, and prior to leaving the job site.
Other:	

Communications

A primary and back-up means of communications for field crews have been established as described below.

Type of communication	Primary means	Back-up means
Communications with home base	Cell phones 303-546-4300, Stoller Office	
Communications among field crew members	Hand signals or voice communications	
Communications with client	Cell phones 303-273 3998	

Medical Surveillance and Qualification

The following medical surveillance is required for on-site personnel working in the field.

Required medical surveillance:	No	Yes	Job-specific medical testing:
Hazardous Waste			Describe: NA
Respirator Use			
Hearing Conservation			
Other:			

Hazardous Chemicals

Hazardous chemicals (as defined in 29 CFR 1910.1200) to be brought or used on-site are identified below. This chemical inventory will be maintained and Material Safety Data Sheet(s) shall be maintained on the site.

Chemical Name	Amount	Location	Purpose
Gasoline	30-gallon tank	Geoprobe	Fuel

Required Facilities and Equipment

The following facilities and equipment are required for safe completion of work.

Facility	Yes/No	Type:	Location:
Worker Showers/Lockers			
Restrooms			Public or at the school/close proximity
Supplementary Illumination			
Emergency eyewash/shower			
First Aid Supplies		Eyewash bottle will be included in first aid kit	Vehicle
Fire Extinguishers			Vehicle
Hazardous Materials Storage			
Spill Containment/Clean-up			Vehicle
Other:			

Training

The following training is required for on-site personnel working in the field. Copies of training certificates and training records will be kept on-site.

Training Required	Yes/No	Description
40-hour General Site Worker		
8-hour Supervisor		
3-day On the Job		
8-hour Refresher		
HASP Orientation		
Hazard Communication		
Hearing conservation		
Site-specific, including rad issues		

Emergency Action and Response

Personnel responsible for coordinating emergency situations during site activity are identified below. A site map showing assembly points and directions to the authorized medical facility is attached. Documented rehearsal and critique of this plan is required at least once during the task, or more often as necessary.

Responsibility	Name	Phone Number(s)
Task Emergency Coordinator	Steve Brinkman	303-546-4388
Client Interface	Linn Havelick	303-273-3998
Type/Frequency of Rehearsal	NA	

If an emergency situation develops that requires evacuation of the work area, the following steps shall be implemented.

Evacuation Step	Methods and comments:
Notify affected workers	Cell phones, hand signals, or voice communications
Evacuate to safe location	Parking area, immediately off-site
Assemble and account for workers	At parking area
Notify emergency services	Call 911
Complete incident report	Affected worker and/or supervisor

Potential emergency situations and response actions are identified below:

In case of:	Response actions:
Fire	911

Attachments

Applicable attachments to the task-specific health and safety plan are identified below:

Attachment Number:	Title:
1 - Map and directions to hospital 2 - Tailgate safety meeting form	• Map and directions to hospital • Tailgate Safety Meeting Form

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TASK HAZARD ANALYSIS FORM

Project & Location **CSMRI** **Golden, CO**	**Health and Safety Manager/Supervisor Approval**	**Date** **8/18/2005**
Description of Job Maintenance of Facility	Page 1 of 2	THA # CSMRI 2
	Title of Person Who Does Job: Technician	
	Required PPE: Standard work clothing, safety glasses, leather gloves, sturdy over the ankle leather boots, safety vest when heavy equipment is onsite	
	THA Completed By Dalene Nickelson	

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
Complete Tailgate Meeting Document and necessary Procedure review before work		
1. Trash pick up and removal	Slips, trips and falls on uneven terrain	1. Wear appropriate sturdy over the ankle leather boots
	Cuts	1. Ensure any glass or sharp metal is placed in a separate trash receptacle to reduce possibility of cuts 2. Wear leather gloves
	Wind	1. Wear appropriate clothing and safety glasses, as needed, to reduce the possibility of eye injury 2. Refrain from this duty on windy days, if possible
	Potential cross-contamination	1. Wear disposable boot covers or chemical resistant boots when wet/muddy
2. Fence integrity	Cuts	1. Fence repair will be conducted by contracted Company

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
3. Electrical maintenance	Electrical shock	1. Electrical repair will be conducted by contracted Company
4. Onsite visual survey	Slips, trips and falls	1. Wear appropriate sturdy over the ankle leather boots
	Potential cross contamination	1. Wear disposable boot covers or chemical resistant boots when wet/muddy

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TASK HAZARD ANALYSIS FORM

Project & Location **Colorado School of Mines Research Institute** **Visitor THA**	**Health and Safety Manager/Supervisor Approval**	**Date** **8/18/2005**
Description of Job This THA encompasses activities a visitor would conduct on the site (just walking through. No contact with work surfaces)	Page __1__ of __2__	THA # CSMRI 1
	Title of Person Who Does: Various	
	Required PPE Minimum - Safety glasses, sturdy over the ankle leather boots, safety vest when heavy equipment is onsite	
	THA Completed By Dalene Nickelson	

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
1. Receive THA orientation, sign THA and sign visitor log	Loss of site control	Use buddy system Adhere to requirements of THA
2. Park/walk in designated areas	Loss of site control creating potential spread of contaminants	Stoller will provide direction as to where to walk and/or park
3. Training	Uninformed visitors	Site-specific THA training required No other training No medical surveillance requirements

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
4. No contact rule	Potential for contamination	Do not sample soil Do not touch bags Walk around standing water Do not sit on the ground Wear disposable boot covers as directed
5. Booty disposal	Potential cross contamination	Wear disposable booties when ground is wet/muddy Follow proper doffing techniques Place booties in receptacles provided and as directed
6. Emergency procedures	Visitors not accounted for	Meet in designated assembly area Follow directions provided by Stoller project manager on site

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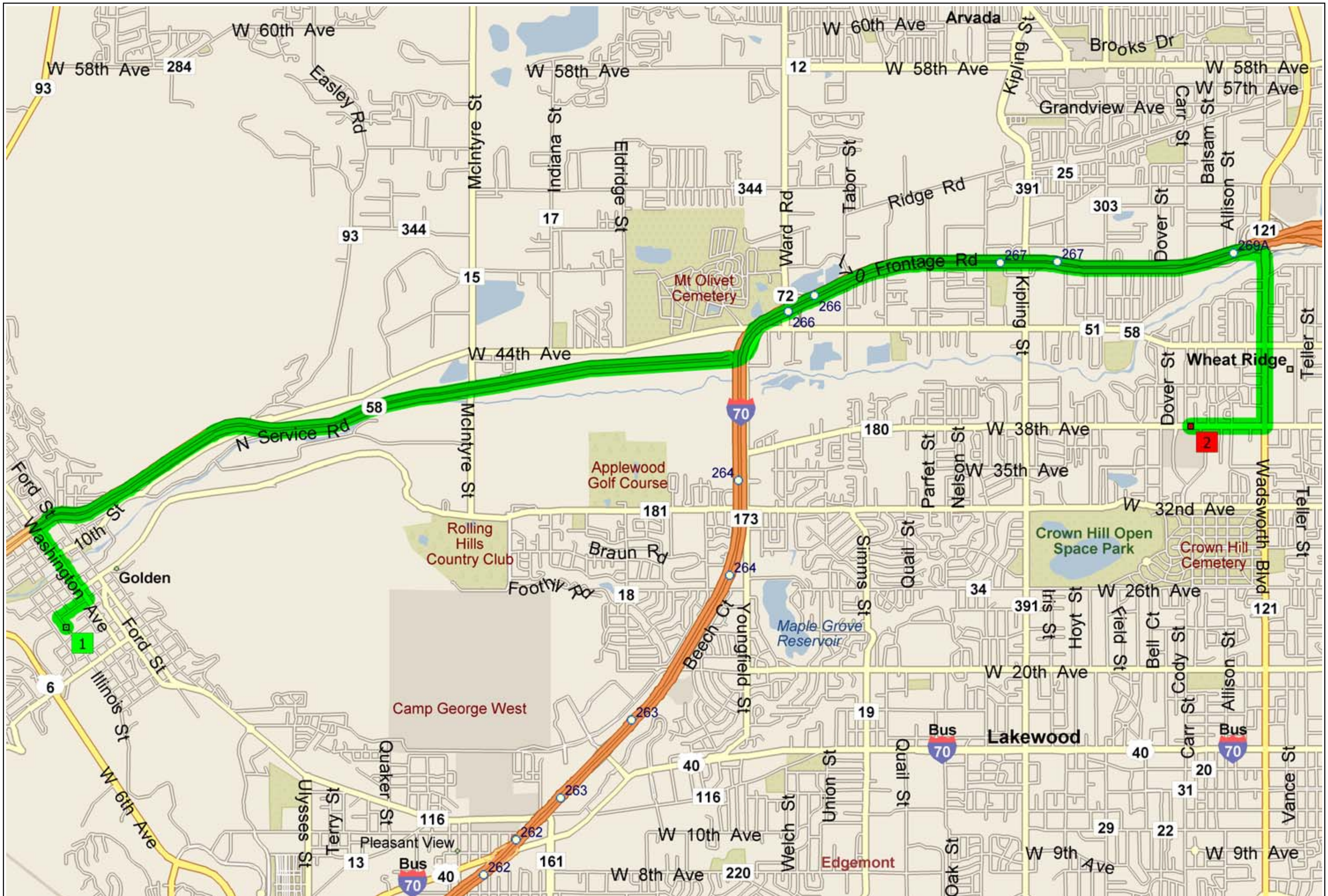

0 mi 1 2 3

SchoolofMines_LuthMedCenter

10.4 miles; 15 minutes

9:00 AM	0.0 mi	1 Depart 1500 Illinois St, Golden, CO 80401 on Illinois St (North-West) for 120 yds
9:00 AM	0.1 mi	Turn RIGHT (North-East) onto 14th St for 0.2 mi
9:01 AM	0.3 mi	Turn LEFT (North-West) onto Washington Ave for 0.5 mi
9:02 AM	0.8 mi	Take Ramp (RIGHT) onto SR-58 for 4.6 mi towards CO-58
9:08 AM	5.4 mi	Take Ramp onto I-70 for 3.4 mi towards I-70
9:11 AM	8.7 mi	At exit 269A, turn RIGHT onto Ramp for 0.2 mi towards CO-121 / Wadsworth Blvd
9:11 AM	8.9 mi	Take Ramp (RIGHT) onto SR-121 [Wadsworth Blvd] for 1.1 mi towards Wheat Ridge / Lakewood
9:14 AM	10.0 mi	Turn RIGHT (West) onto W 38th Ave for 0.5 mi
9:15 AM	10.4 mi	2 Arrive 8300 W 38th Ave, Wheat Ridge, CO 80033

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TAILGATE MEETING DOCUMENTATION

Tailgate Discussion Topic

Date of Meeting ___________________________

Meeting Conducted by:

Printed Name ____________________________ **Signature** _________________________

Meeting Attendees: Attach Any Handouts and File in Project Files

DATE	PRINTED NAME	SIGNATURE