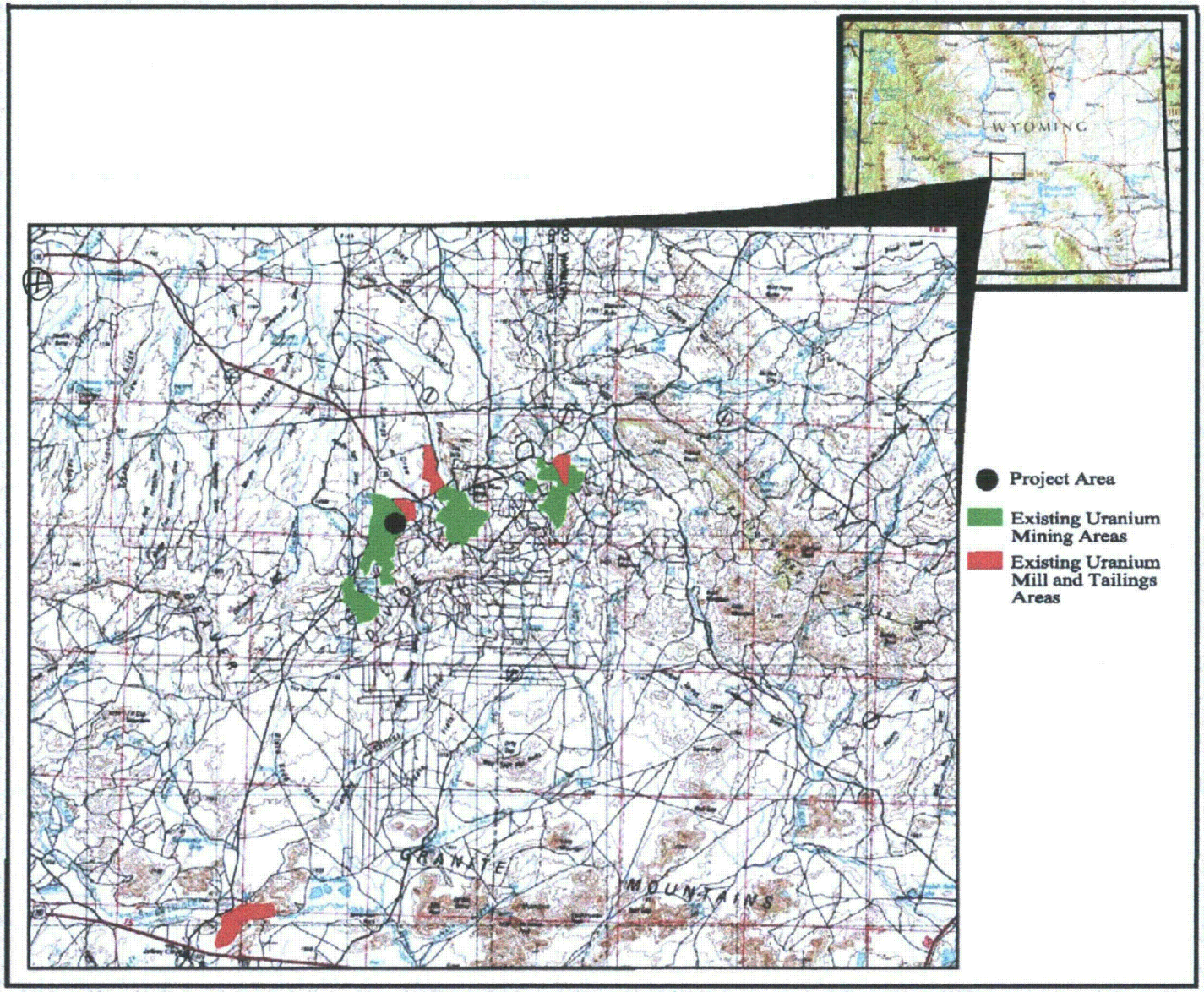
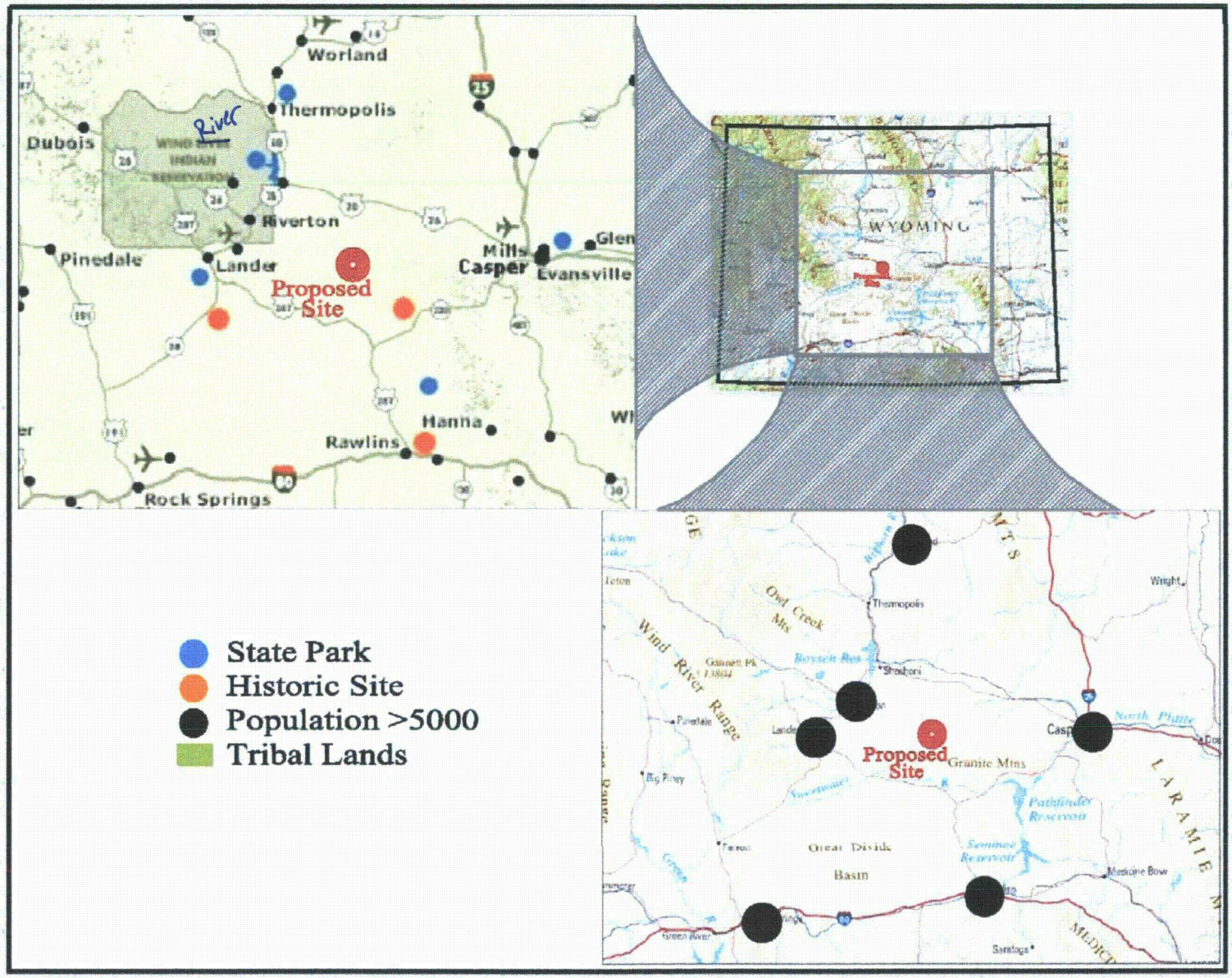
Strathmore Resources Proposed Gas Hills Heap Leach Facility

Favorable Site Characteristics – Centrally Located Within Historic Uranium Mining District



Favorable Site Characteristics – Remote From Population Centers, Federal and State Parks, Tribal Lands etc.



Favorable Site Characteristics

Geologic and Hydrologic Conditions

- Underlying Wind River Formation is regional uranium ore-bearing interval with mining permits in progress
- Massive Cody Shale underlies Wind River Formation
- Wind River aquifer is bounded downgradient of site by outcrop of Cody Shale
- No known active faults
- Depth to ground water is 50 feet or greater
- Surface drainage at proposed site is highly ephemeral

5

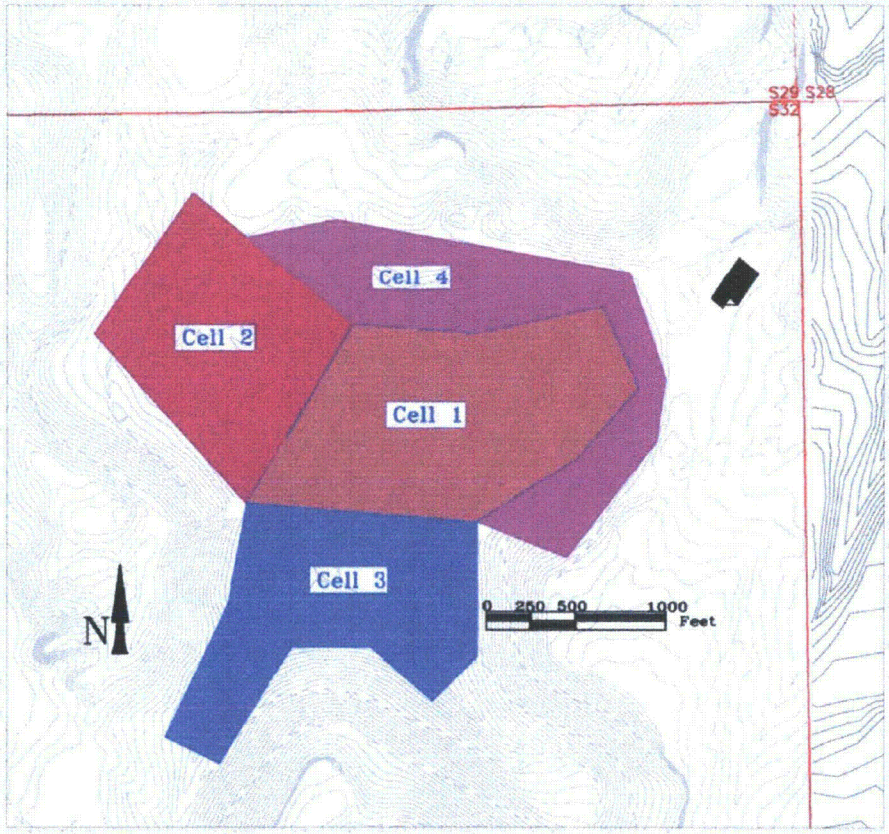
Favorable Site Characteristics

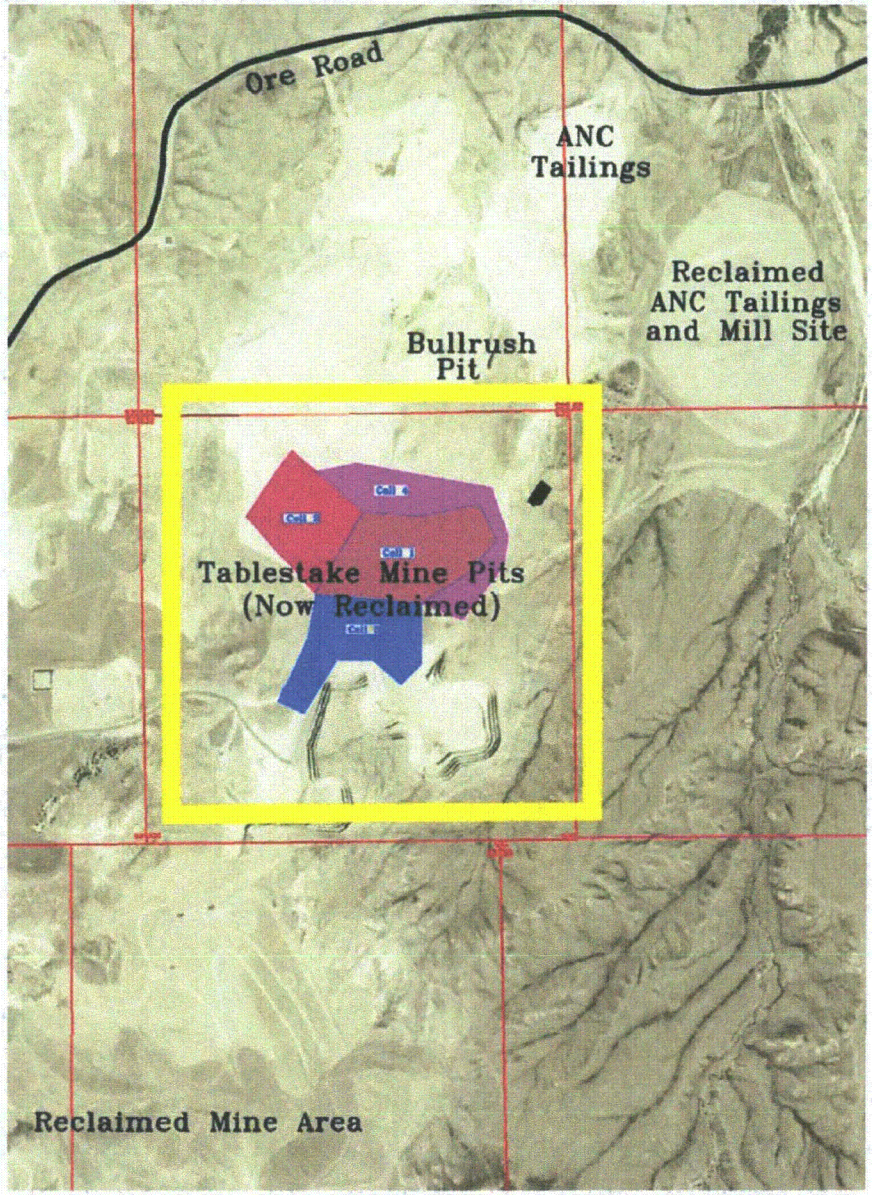
Topography, Climate and Land Use

- Proposed heap leach facility is within reclaimed closed-basin uranium open pit mine
- Proposed site is immediately surrounded by former and reclaimed uranium mining and milling areas
- Very limited external contributing drainage area for heap leach cells
- Suitable topography for processing plant site
- Limited capacity for support of wildlife and livestock
- Limited annual precipitation

6

Conceptual Heap Leach Facility





Heap Leach Facilities

Major Heap Leach Components

- Ore Storage/Staging/Processing Area
- Heap Leach Cell(s)
- Plant (required facilities)
  - Lixiviant/Leaching Solution Preparation and Processing
  - Leachate Processing (filtration, chemical treatment etc.)
  - Ion Exchange
  - Resin Handling
- Plant (optional facilities)
  - Resin Elution
  - Dryer and Yellowcake Handling
- Fluid Handling
  - Evaporation Pond and/or Disposal Well
- Support Facilities

Heap Leach Advantages/Disadvantages

Advantages

- Potentially contiguous ore handling and heap leaching within lined containment
- Heap materials are more structurally stable than materials that have been processed through a mill
- Reduced facilities requirement
- Can justify leaching of lower grade ores

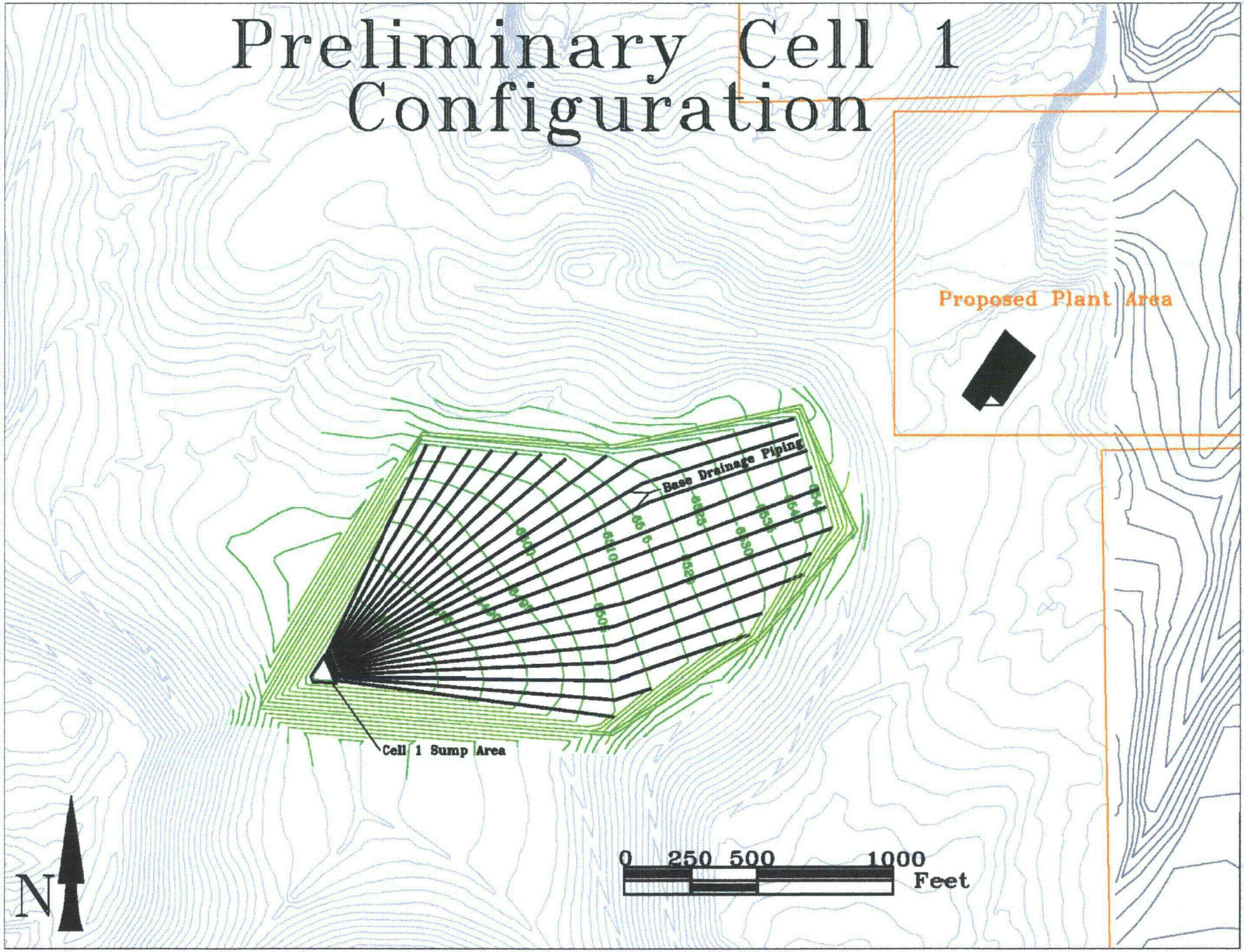
Disadvantages

- Leachability concerns (e.g. permeability, pad compaction, acid consumption etc.)
- Increased fluids handling requirements
- Requires offsite resin stripping without dryer

Heap Leach Cells

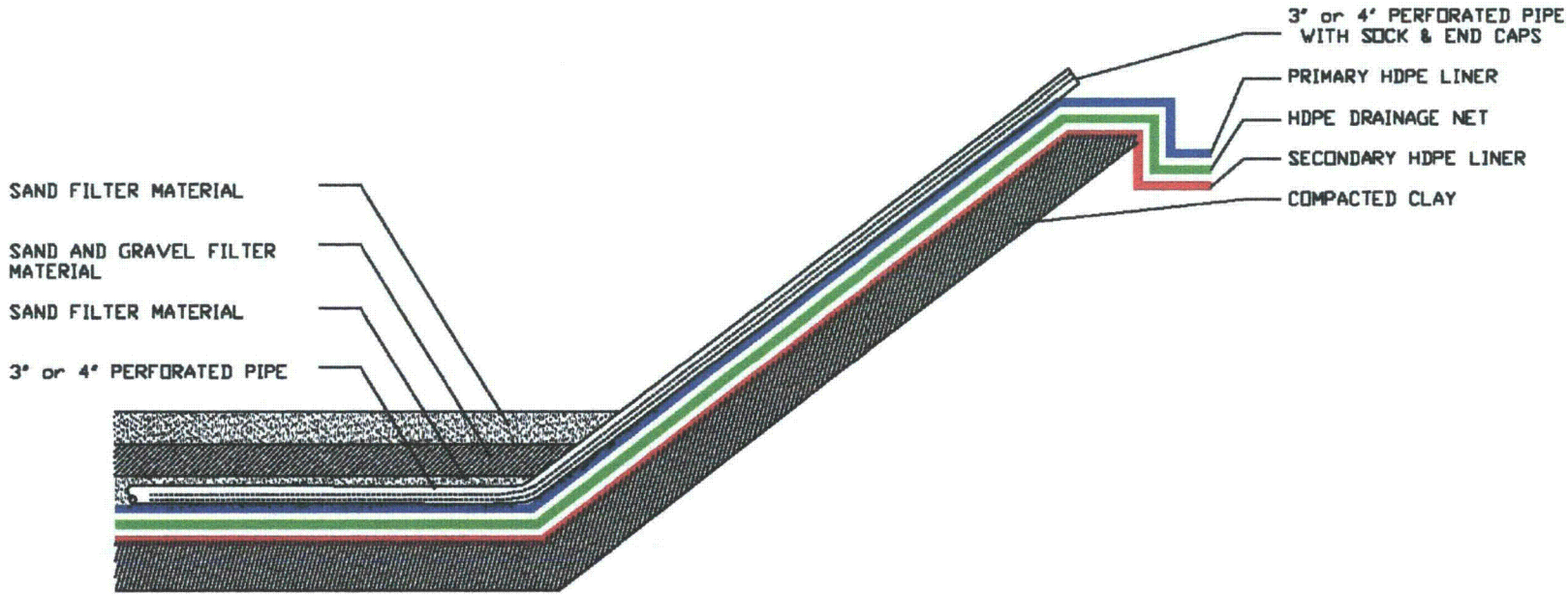
- Cell(s) will be double synthetic lined or synthetic/GCL with Leak Detection System
- Drainage systems will be installed to deliver fluids to sump(s)
- Cells will exploit existing topography to create robust internal drainage systems
- Cells will be reclaimed in place
- Four or more contiguous cells allows progressive expansion of capacity
- Multiple contiguous cells also allows reclamation scenarios that accommodate various cell combinations and partial or full utilization

Preliminary Cell 1 Configuration



11

Conceptual Liner Installation



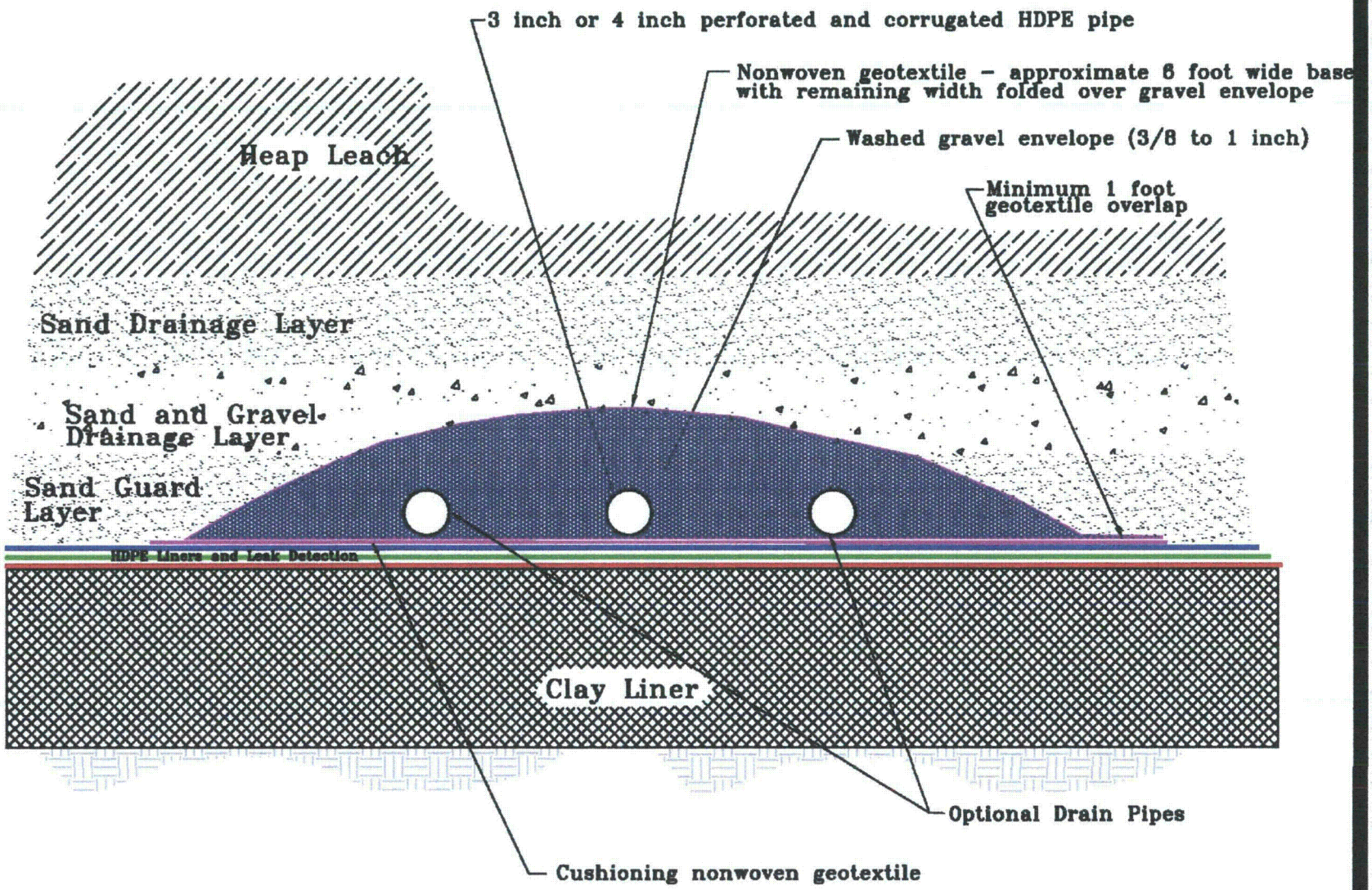
TYPICAL SECTION FOR SEVEN PART LINER SYSTEM
NOT TO SCALE

ALL INTERIOR SLOPES WILL NOT EXCEED A MAXIMUM OF 3H:1V.

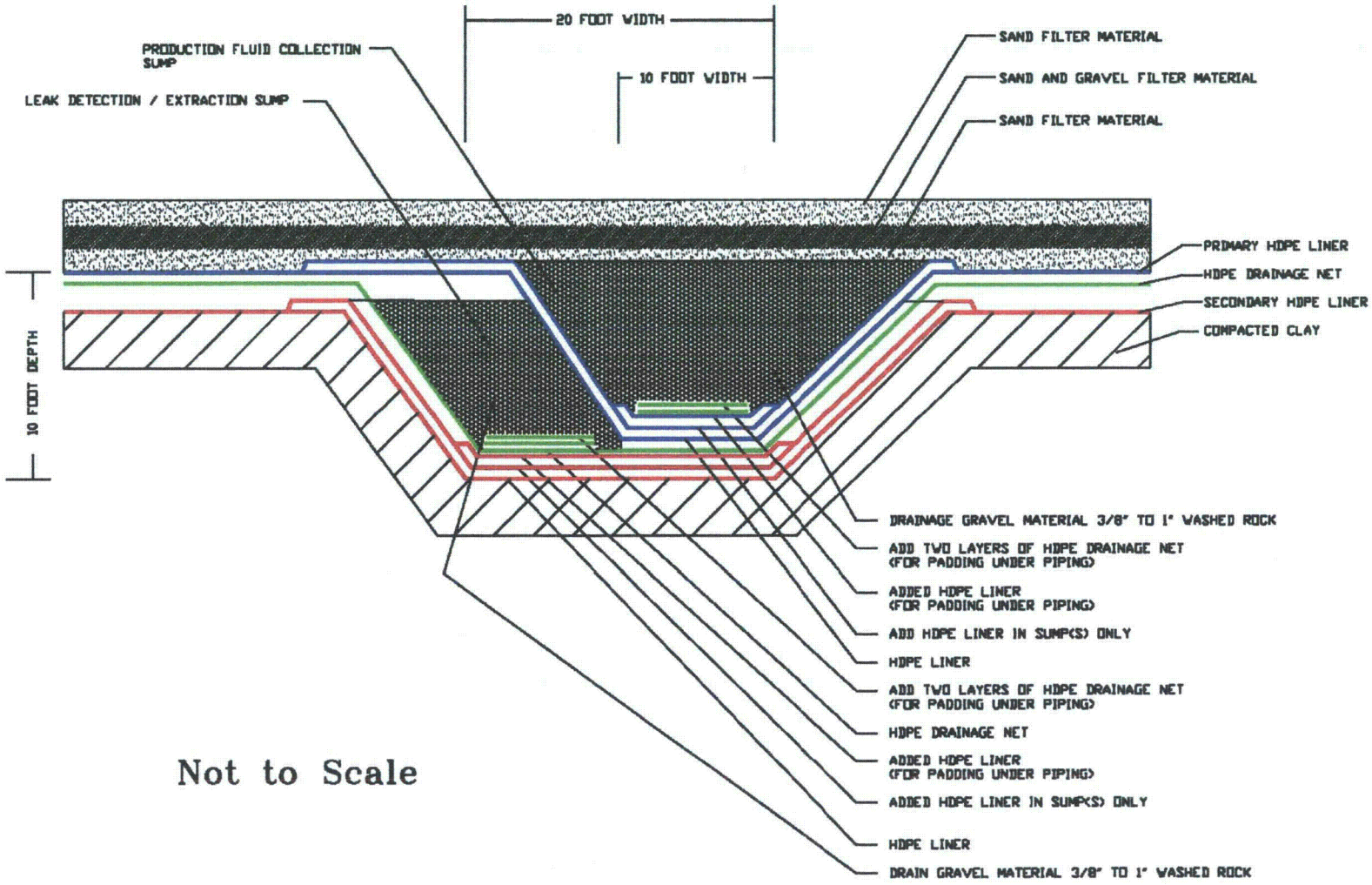
SAND AND GRAVEL FILTER PLACED IN BOTTOM OF CELLS ONLY.

LINER ANCHOR SYSTEM PER MANUFACTURER'S RECOMMENDATIONS.

Conceptual Drainage Pipe Envelope

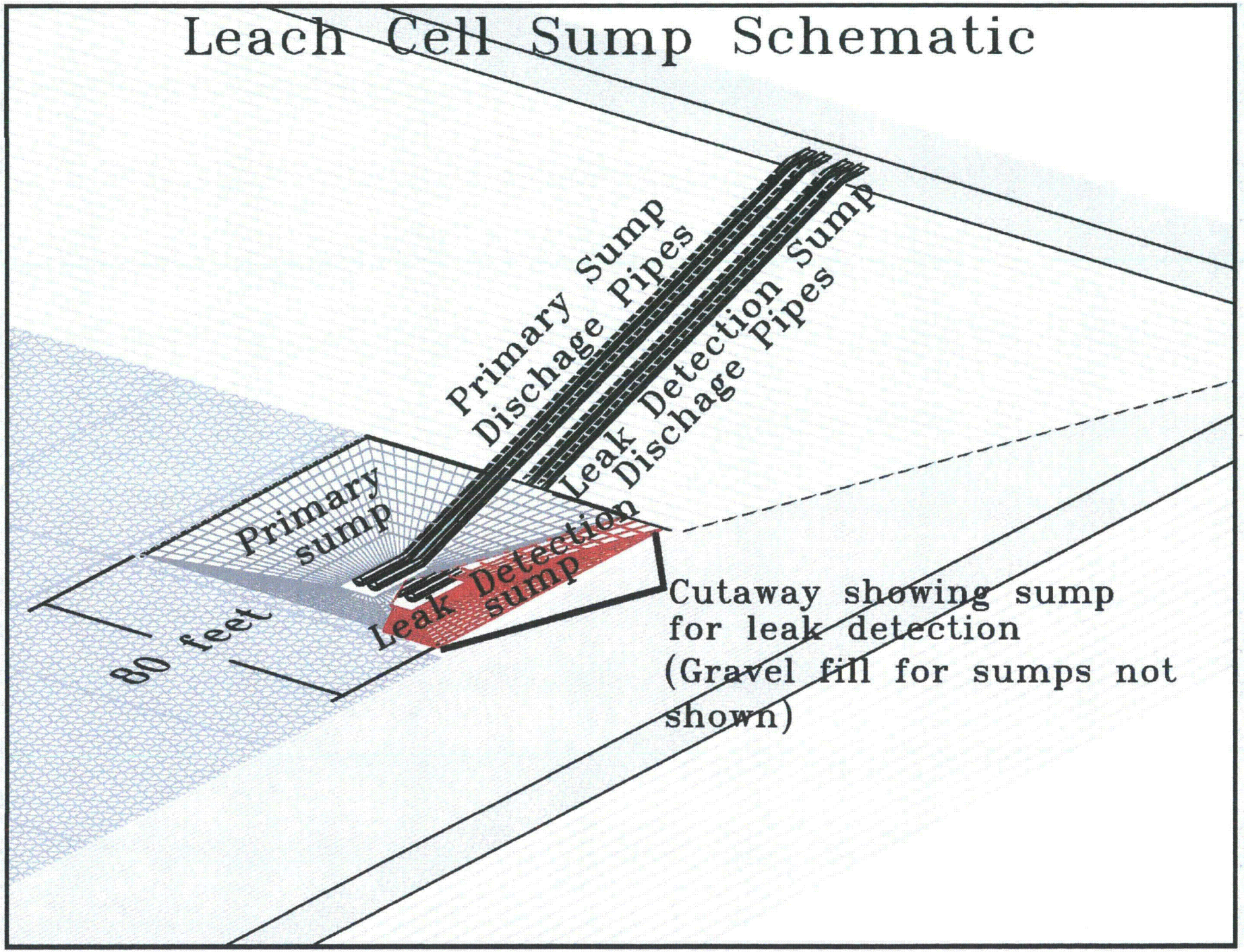


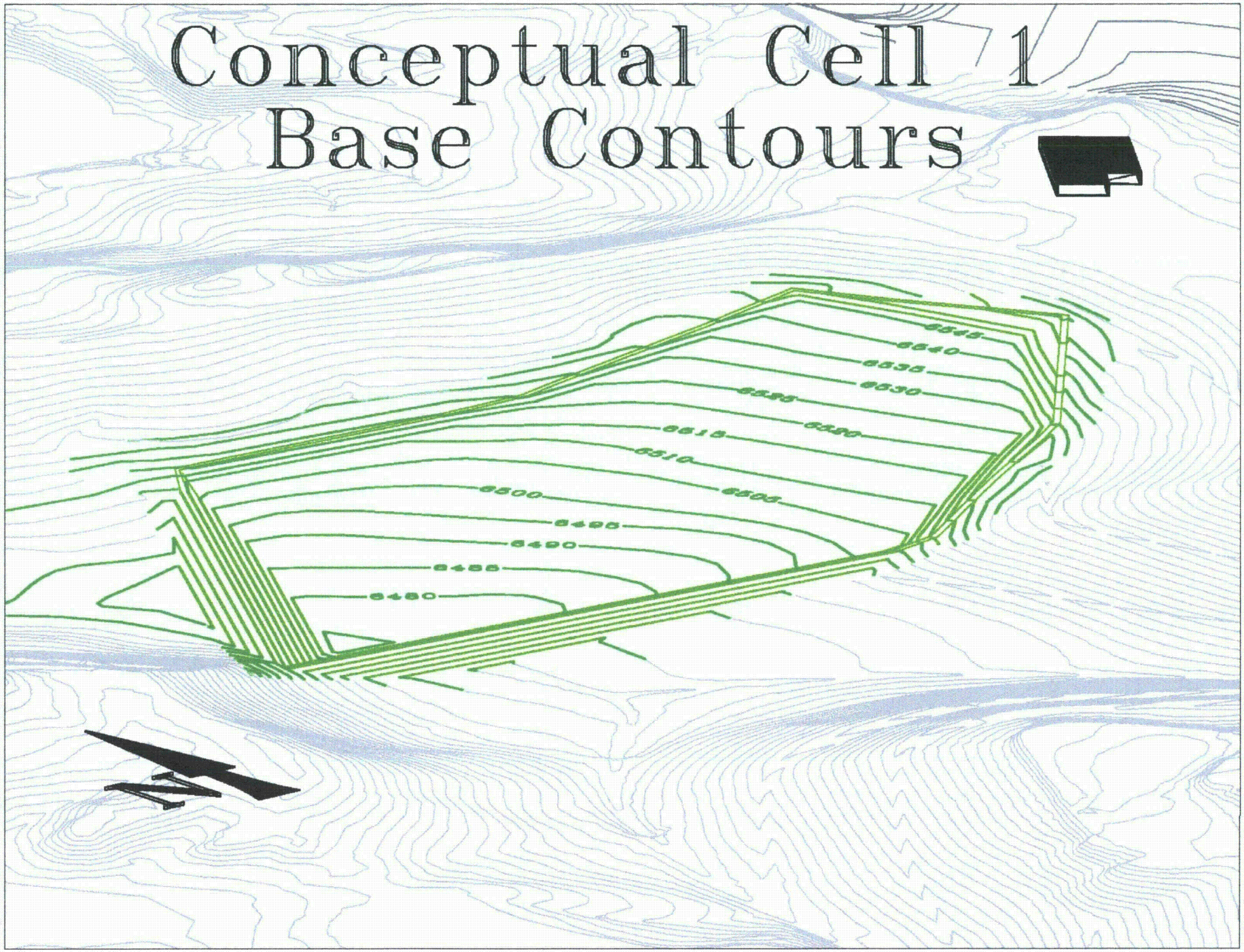
Proposed Sump Configuration



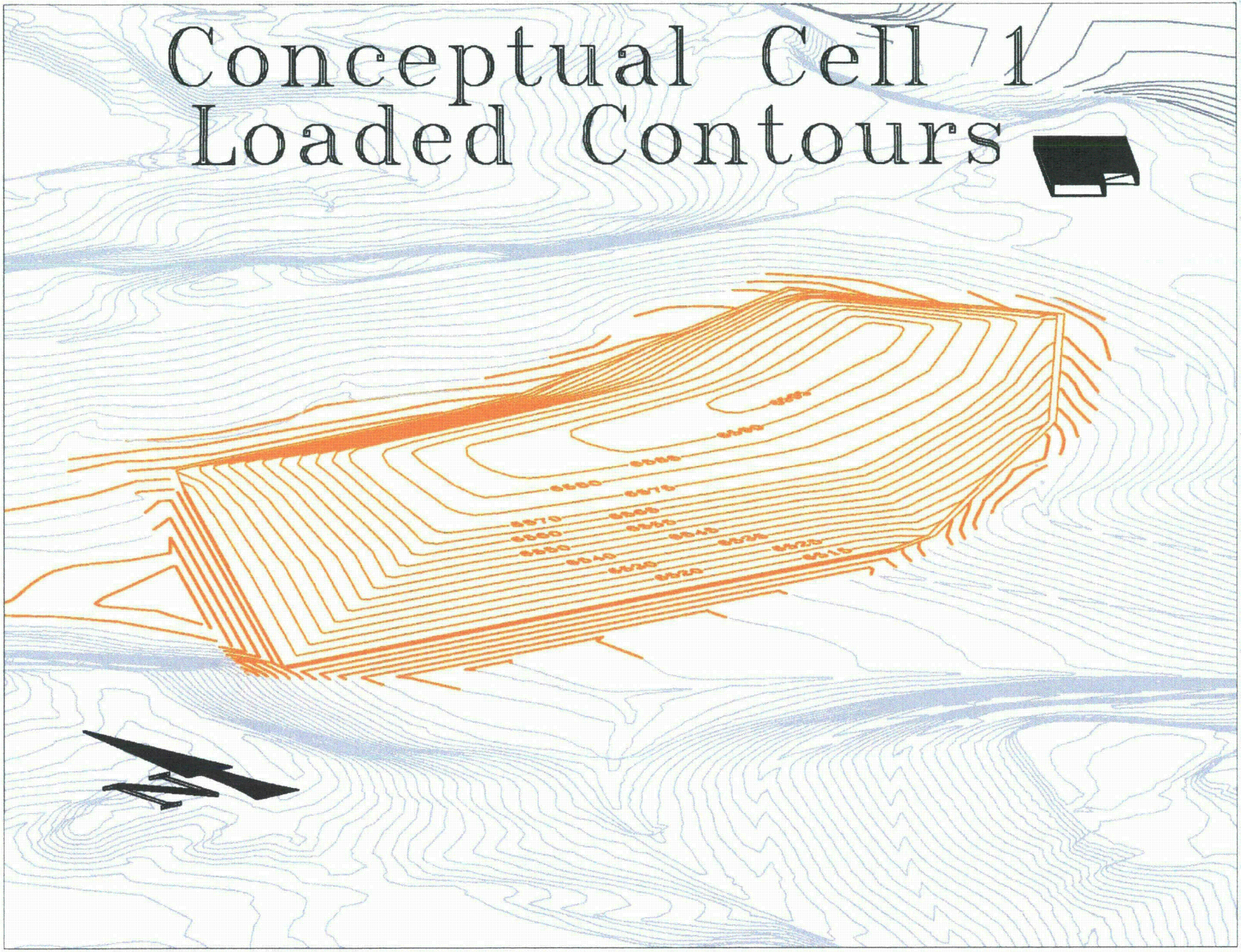
Not to Scale

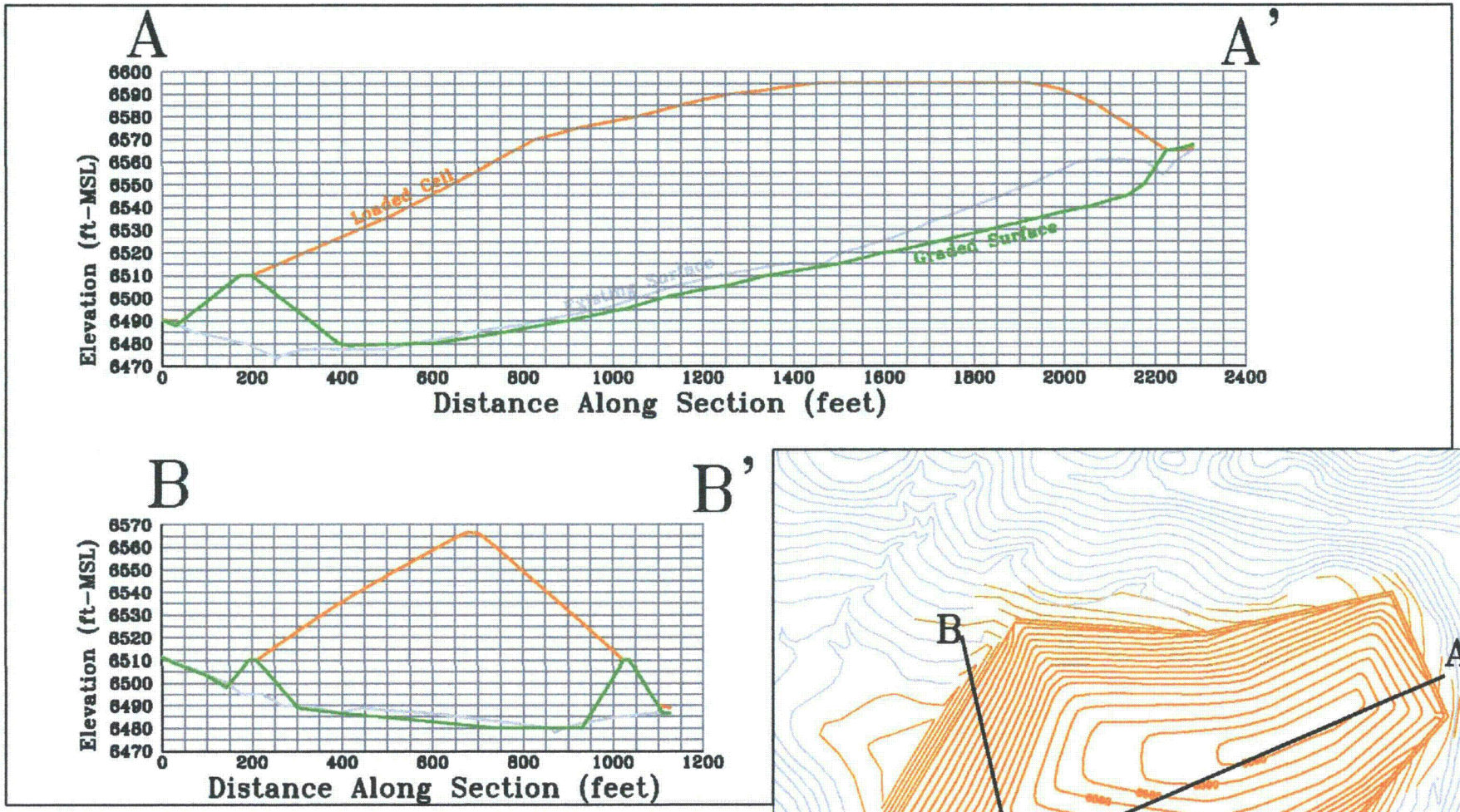
Leach Cell Sump Schematic

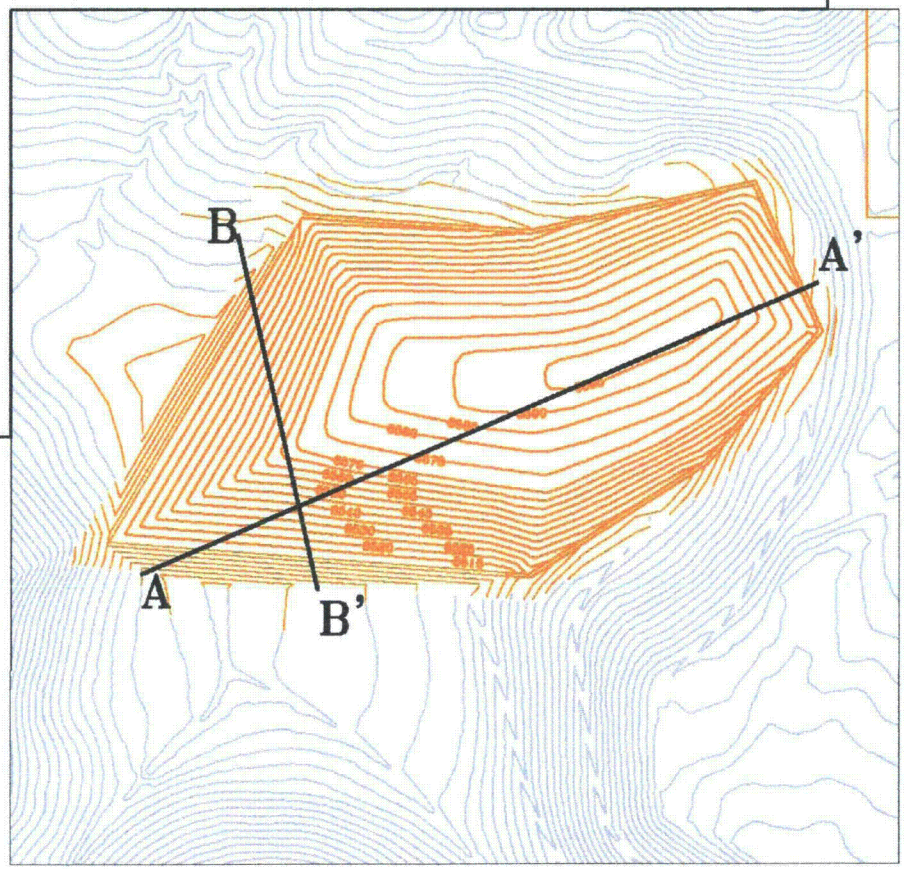



Conceptual Cell 1
Base Contours
6645
6640
6635
6630
6625
6620
6615
6610
6605
6500
6495
6490
6485
6480
N

Conceptual Cell 1 Loaded Contours







Cross Sections for Proposed Cell

Unique Heap Leach Characteristics

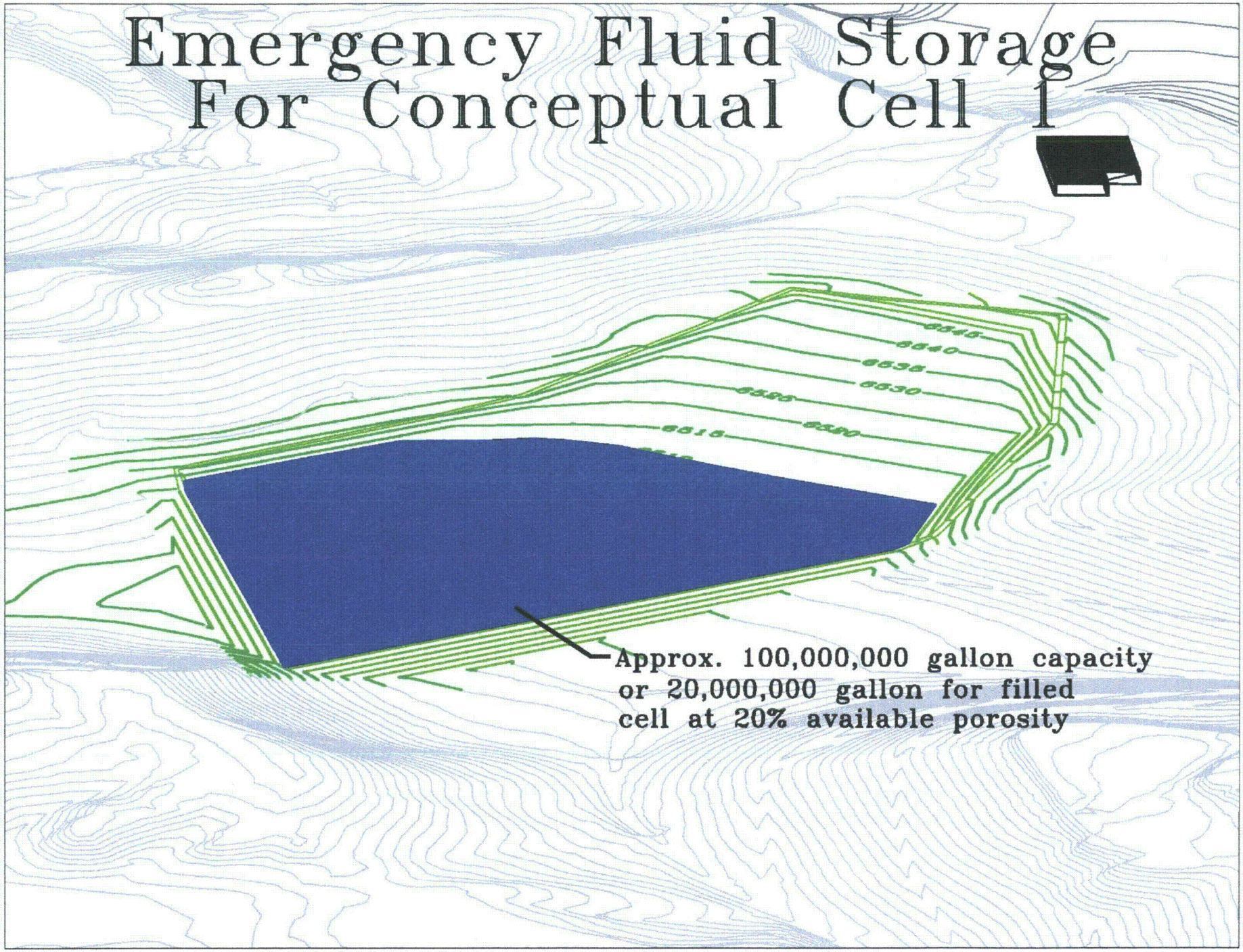
Heap is located at base of drainage basin

- Proposed heap leach cells have natural drainage to collection sump area within lined cell.
- Substantial emergency fluid storage maintained in base of cell below crest of berm.
- Requires pumping to deliver fluids for leaching or processing.

Typical heap leach – cells above processing plant

- Heap leach sites generally have the heap(s) located at a higher elevation than processing facilities with natural drainage to holding ponds.
- Fluid storage capacity is generally limited to that in constructed holding ponds.

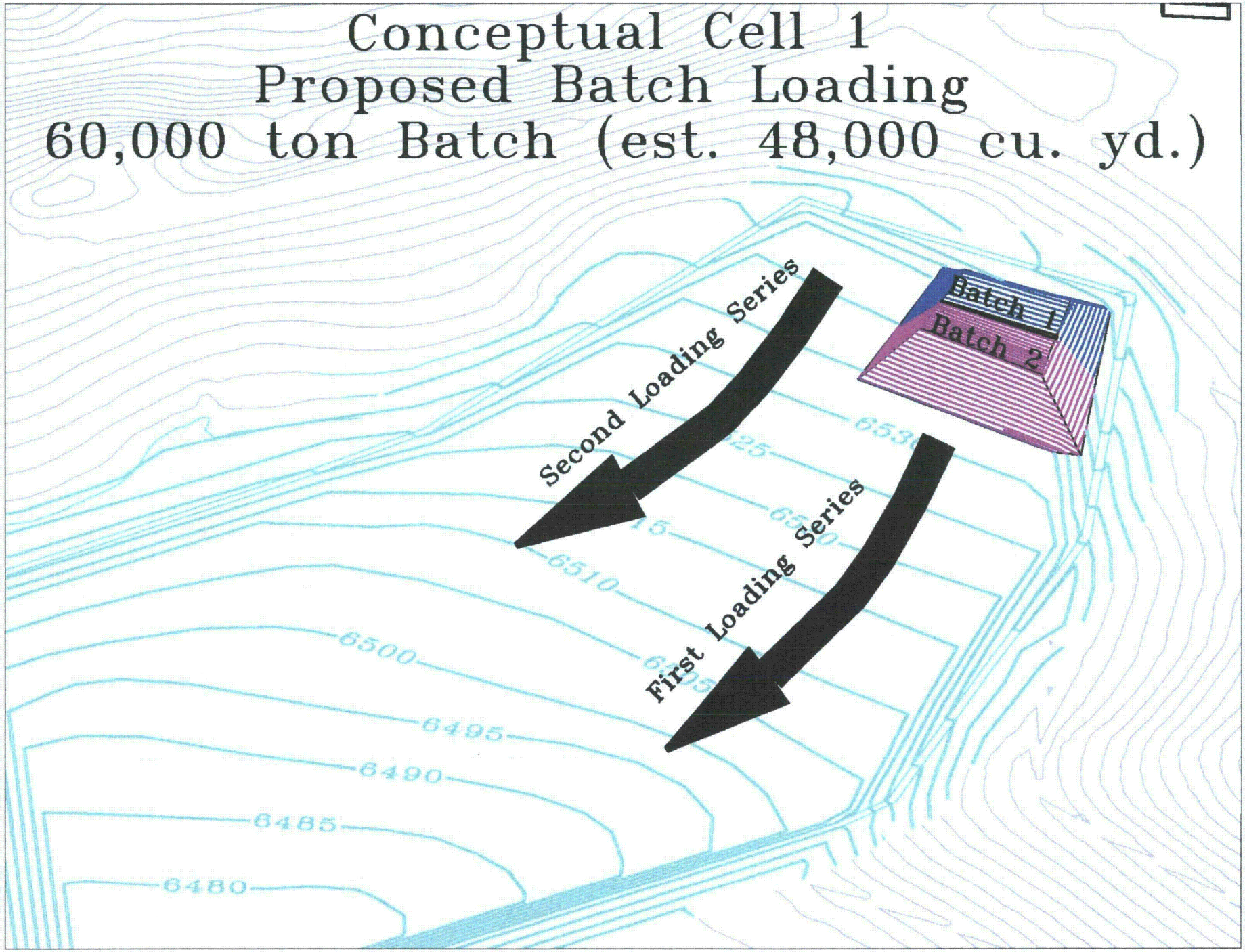
Emergency Fluid Storage For Conceptual Cell 1

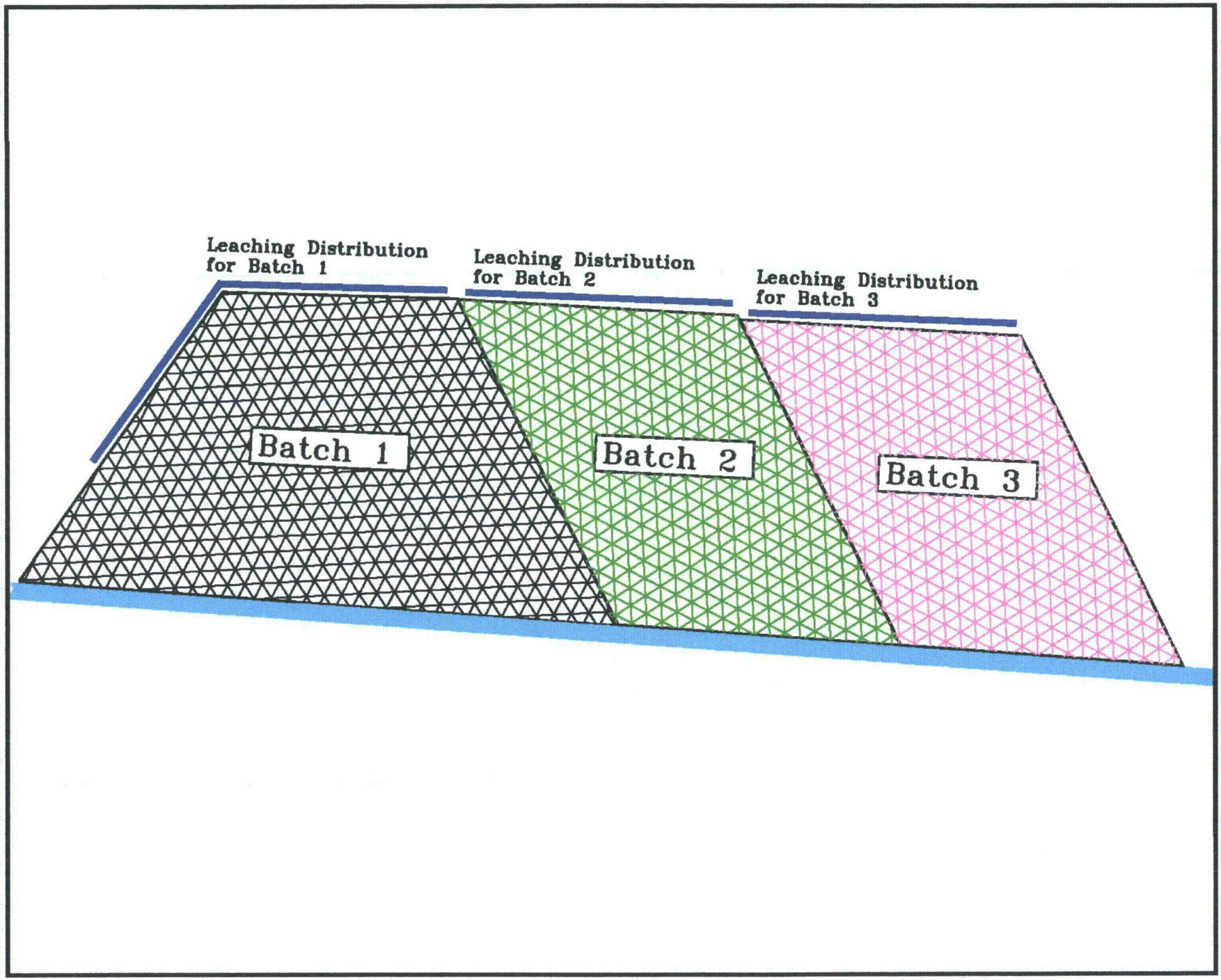


Design Operational Considerations

- Maintain moderate slopes (2 to 6%) on cell base to facilitate complete and rapid drainage to collection sump(s)
- Planned pad loading rate of 1,000 ton/day
- Ore processing and staging area can be adjacent to cell(s) and within common lined containment
- Mechanical ore processing can be performed in ore staging area
- Options for hydraulic isolation of ore lifts are being evaluated
- Large volume of process fluids will require lined storage and disposal capacity
- Leach pad cell could be utilized as process fluid storage prior to ore loading

Conceptual Cell 1
Proposed Batch Loading
60,000 ton Batch (est. 48,000 cu. yd.)




Leaching Distribution for Batch 1
Leaching Distribution for Batch 2
Leaching Distribution for Batch 3
Batch 1
Batch 2
Batch 3

Site Characteristics of Concern

Heap Leach Location is over significant thickness of fill

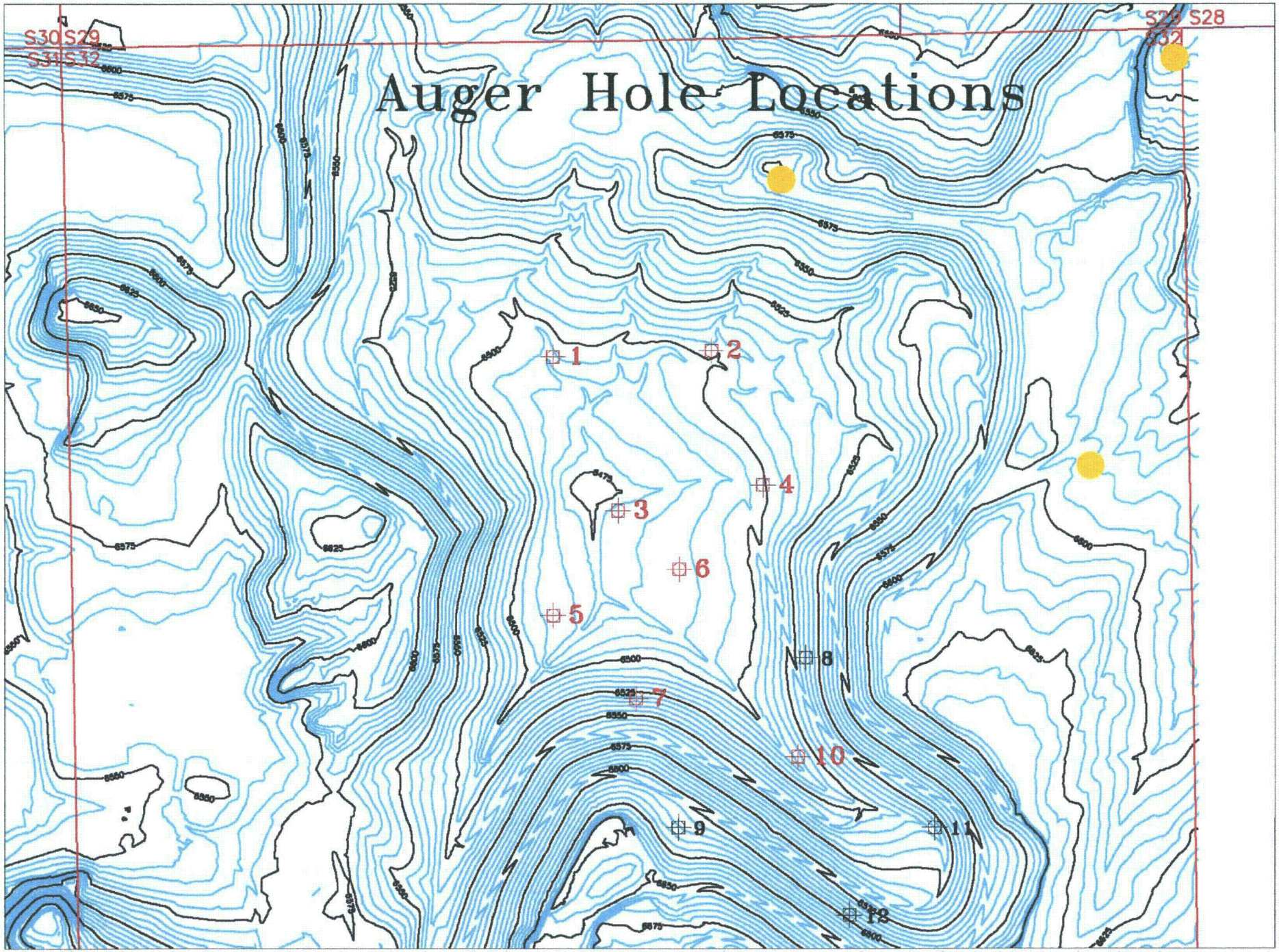
Sagebrush Fault – no indications of activity

Preliminary Investigations

An auger hole drilling and logging program was conducted to evaluate the suitability of the basin area as a foundation for heap leach cells.

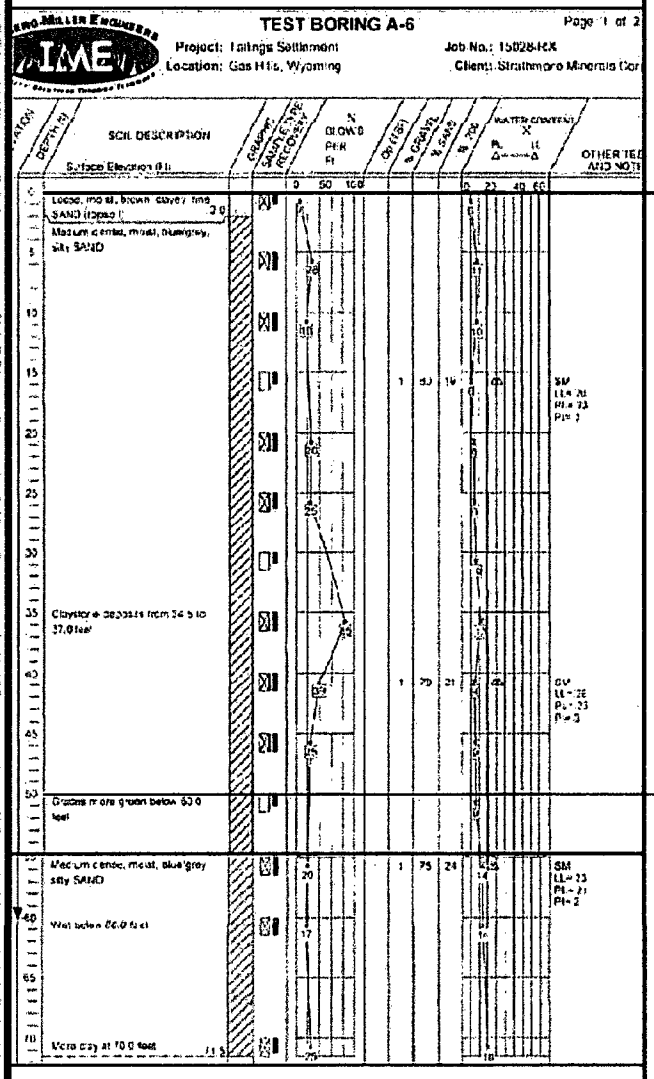
Preliminary analysis of the results of the drilling and logging program indicates that the condition of the fill is such that tailings or heap leach cells can be constructed in the reclaimed mine basin with reasonable construction and compaction effort.

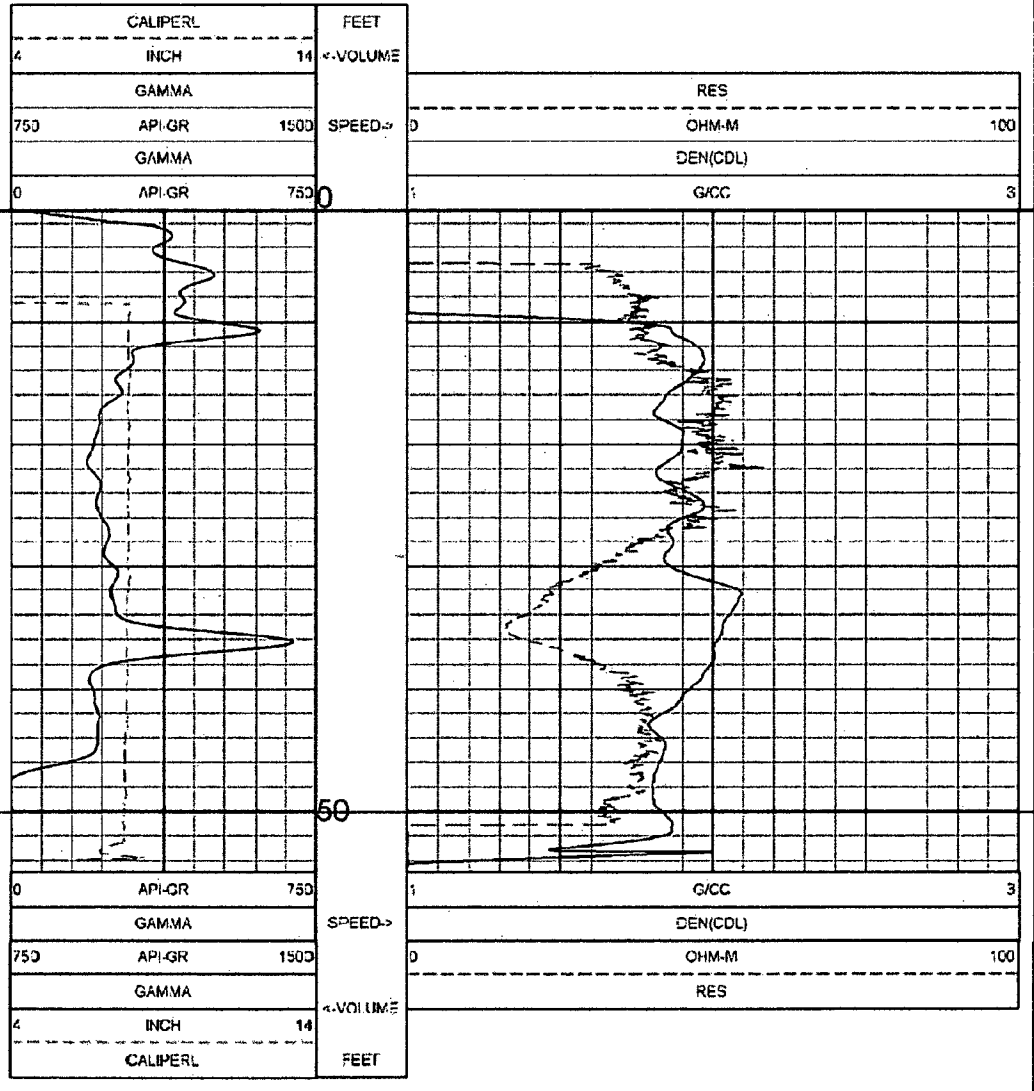
Site preparation and compaction techniques are available to increase the density of the backfill and reduce settlement.


Auger Hole Locations
S30 S29
S31 S32
S29 S28
S32
1
2
3
4
5
6
7
8
9
10
11
12

2c

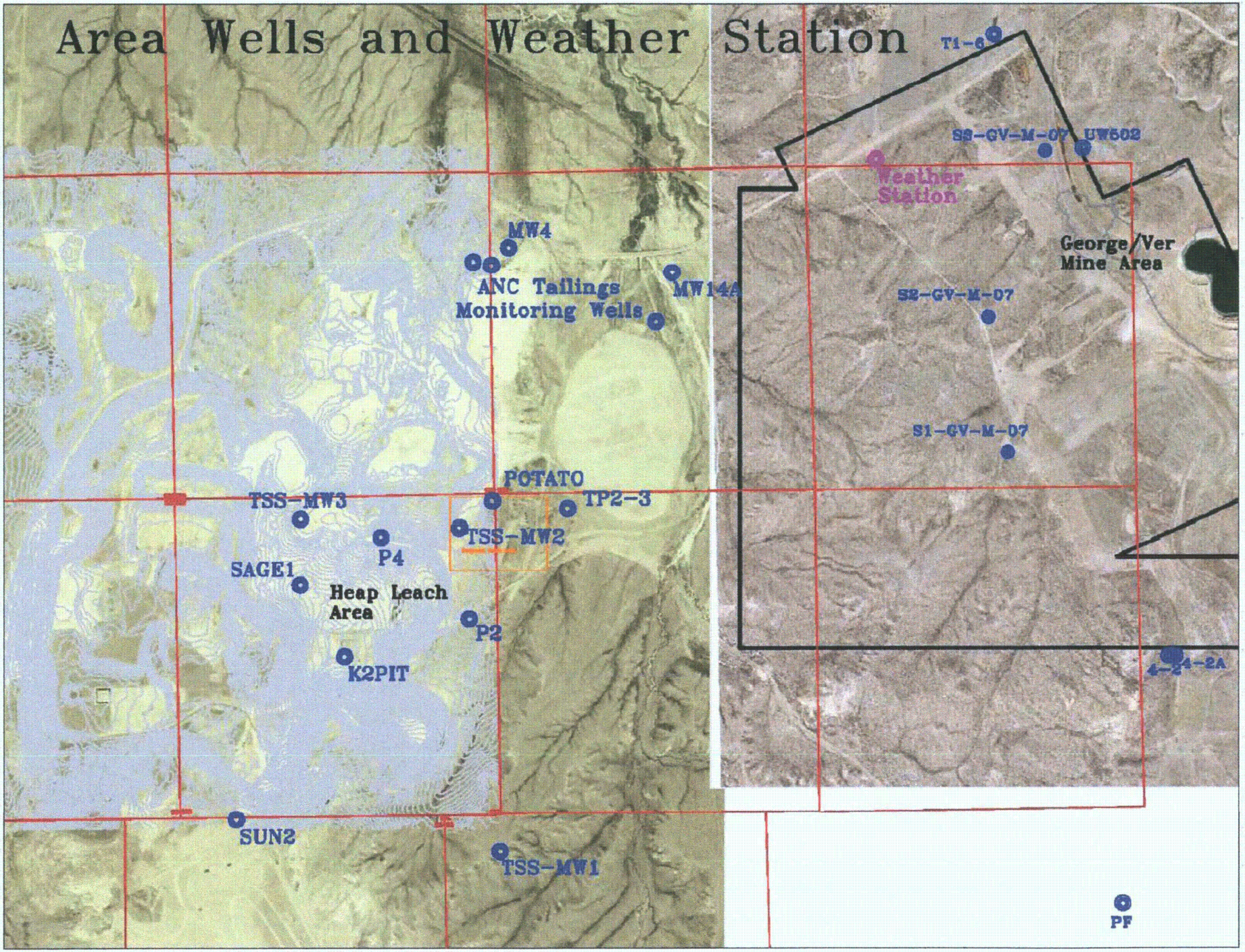
Typical Auger Hole Logging Results

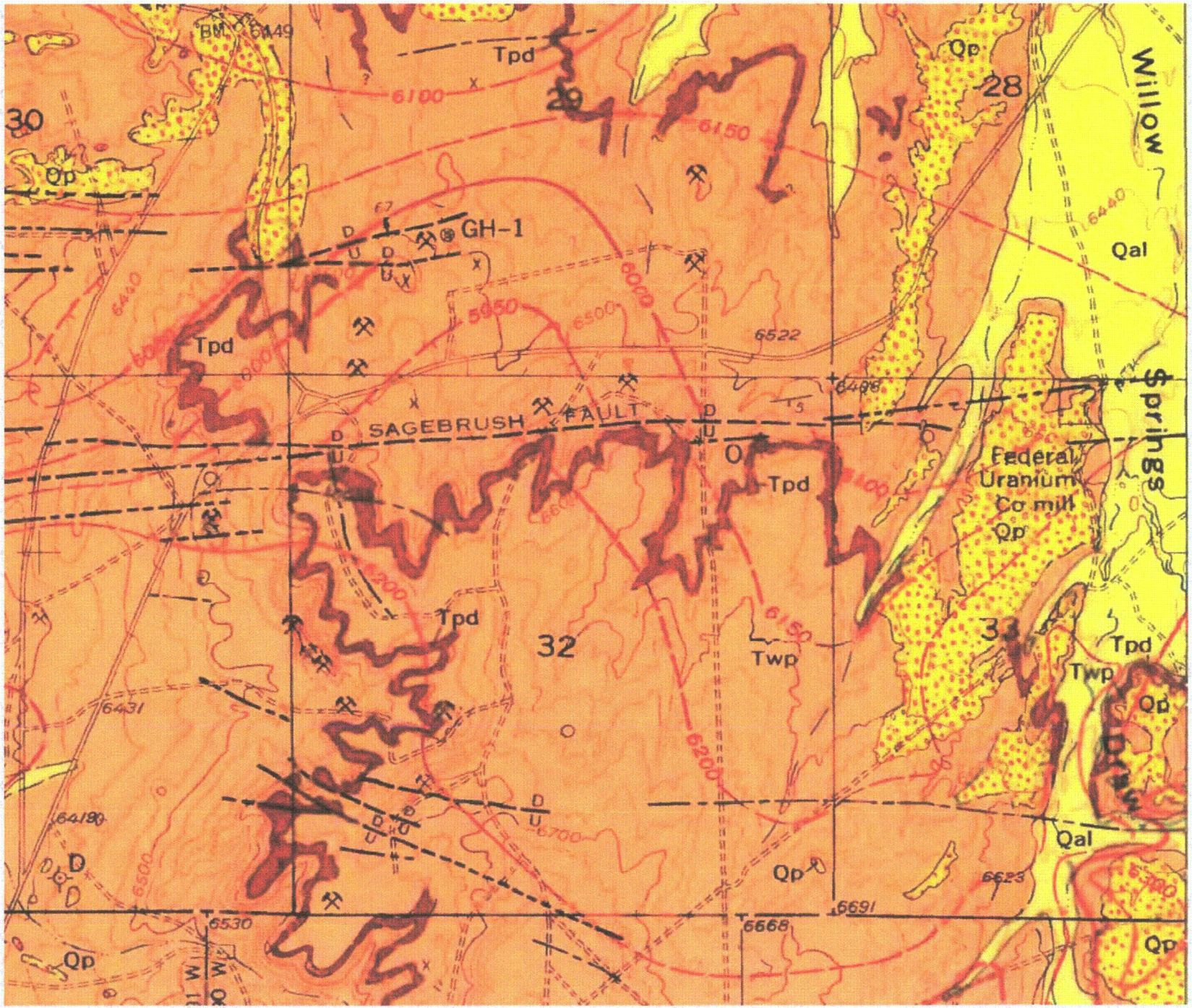




Preliminary Investigations (cont.)

- Three additional wells were installed in the Tablestake area to supplement existing wells
- Wells were installed on opposite sides of the Sagebrush fault to reveal any significant hydrologic impacts of the fault
- Water samples from the new and existing wells will be used to evaluate baseline conditions
- Some very preliminary gamma surveying has indicated elevated gamma levels in the proposed facilities locations


Area Wells and Weather Station
T1-6
S3-GV-M-07
UW502
Weather Station
George/Ver Mine Area
S2-GV-M-07
S1-GV-M-07
MW4
ANC Tailings Monitoring Wells
MW14A
POTATO
TP2-3
TSS-MW3
TSS-MW2
P4
SAGE1
Heap Leach Area
P2
K2PIT
4-2
4-2A
SUN2
TSS-MW1
PF


BM 6449
Tpd
6100
29
6150
30
Qp
28
Willow
Springs
GH-1
Qal
6440
6500
6522
Tpd
SAGEBRUSH FAULT
Federal Uranium Co mill
Qp
Tpd
Tpd
32
Twp
33
Tpd
Twp
Qp
Qal
6431
6418
6700
Qp
6623
6691
6530
6668
Qp
Qp

Permit Application Development

Regulatory Guide 3024 – Used for General Permit Outline

Section 1 – Proposed Activities

Planned activities include construction and operation of uranium heap leach facility consisting of one or more heap leach cells and a solution processing facility.

Section 2 – Site Characteristics

Sec 2.1 - Geography and demography

Site is remote and is roughly 40 miles from nearest significant population. Land use of the surrounding area is limited to former and planned uranium mining, livestock grazing, and some oil and gas production.

Sec 2.2 - Meteorology

A meteorological station is located on the adjacent George/Ver mine property and some records are available from past mining operations. Precipitation is typical of arid to semi-arid climates. Additional meteorological data will be collected.

Sec 2.3 - Hydrology

Ground water data for the Wind River Formation aquifer(s) will be acquired from existing and proposed wells. The heap leach will be located on top of backfill. Surface water considerations are related primarily to runoff and stormwater concerns.

Sec 2.4 – Geology and seismology

Geologic and seismic conditions will be evaluated using historic data and drilling records from past and planned drilling.

Permit Application Development (cont.)

Section 3 – Mill Process and Equipment

- The heap leach processes and equipment that parallel those of a mill will be presented according to the DG-3024 format.

Sec 3.1 – Mill (Heap Leach) Process

The planned heap leach process includes circulation of acid leach solution through the ore with subsequent processing of pregnant solution through relatively conventional uranium ion exchange. Resin elution and yellowcake precipitation and drying processes will be initially be offsite at an existing facility.

Sec 3.2 – Mill (Solution Processing Plant) Building and Equipment

The scale and type of buildings and equipment for the solution processing plant will be relatively similar to those of an ISR plant. The majority of the equipment will be fluids and chemical handling, storage, piping and pumping. Provisions for resin transfer to an offsite elution facility will be incorporated in plant design.

Sec 3.2a – Tailings (Leached Ore) Repository Design

The heap leach cell(s) will be lined facilities with internal drainage systems. Multiple cells will be contiguous with connecting cell lining to reduce the potential for liquid or solids discharge outside of containment. Maximum individual cell size will be 40 acres.

Sec 3.3 – Instrumentation

Instrumentation systems will accommodate required fluids and process management.

Permit Application Development (cont.)

Section 4 – Radioactive Waste Management

Virtually all of the radioactive waste will reside or be deposited in the heap leach cell(s).

Sec 4.1 – Gaseous and Airborne Particulate Systems

Solution plant processes will generally maintain pressurized fluid containment and management . Open vessel fluid storage within the plant will be minimized. A variety of alternatives for control of dust and radon emissions from the heap leach cell(s) will be evaluated.

Sec 4.2 – Liquids and Solids

The heap leach cell(s) and/or evaporation ponds will be the eventual repository for liquid and solid wastes.

Sec 4.3 – Contaminated Equipment

Eventual disposal of contaminated equipment will be in the leach pad cell(s). Interim storage of significant volumes of contaminated equipment is not anticipated. The structural stability of leached ore is expected to be adequate to allow deep burial of contaminated equipment within the cells during or after operation.

Permit Application Development (cont.)

- Section 5 – Operations
  - Plans for administration and management of the heap leach operation will be developed and presented within the permit application
- Section 6 – Accidents
  - Accident, safety and emergency response programs will be developed for all aspects of the planned heap leach facility.
- Section 7 – Quality Assurance
  - Quality control and assurance programs will be developed for the planned facility and operation of the heap leaching.

Permit Application Development (cont.)

Section 8 – Decommissioning and Reclamation

Sec 8.1 – Mill (Solution Processing Plant) Decommissioning

The solution processing plant decommissioning will include demolition of plant facilities and burial/encapsulation of equipment within a heap leach cell.

The immediate processing plant area will be adjacent to a heap leach cell and can be included within the restricted area and DOE transfer boundary given reclamation to meet NRC requirements.

It is possible that the solution processing plant area could be excluded from transfer to DOE and returned to pre-mining land use following demolition of facilities.

Sec 8.2 – Site and Tailings (Heap Leach) Reclamation

The heap leach cell(s) reclamation design will be according to NUREG-1620 and other relevant reclamation design guidance. The leached ore will be encapsulated with a cover system that functions as a barrier to infiltration and radon emission. An erosion protection cover will be designed to prevent exposure of the leached ore for the foreseeable future. The location of the heap leach cells within a closed basin minimizes potential for offsite post-reclamation discharges.

Sec 8.3 – Financial Assurance

An estimate of the required financial assurance will be developed. This will include projected decommissioning and reclamation costs for all facilities associated with the heap leach cells and solution processing.