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- **Clearing Grubbing and Mass Grading from ~Elevation 420 to ~Elevation 400**
 - Pan Scrapers (CAT 637), Dozers, Excavators used to remove overburden soils (Residual Soil and Saprolite)
 - Geologic Mapping Performed Before and During This Phase
 - Reconnaissance Mapping
 - Geologic Trenches and Test Pits



EXCAVATION SEQUENCE-MASS GRADING



**Initial Grubbing – Unit 2
August 2009**



EXCAVATION SEQUENCE-MASS GRADING



Intermediate Grading – Unit 2

Unit 2 Area mass grading operations January, 2010
(Elevation Range 400 to 415)



EXCAVATION SEQUENCE-MASS GRADING



**Final Grading – Unit 2
February 2010**

Photograph showing Unit 2 Area mass grading operations. Area is at approximate final rough grade Elevation 400. Note pan scrape in cut area exposing features in Saprolite.



EXCAVATION SEQUENCE UNIT 2 TEMPORARY RETAINING WALL



- **Unit 2 Temporary Retaining Wall – Schnabel Foundation Company**
 1. Installation of Soldier Piles (HP 14x73)
 2. Excavation performed along wall in approximate 6 foot lifts.
Simultaneous excavation by SHAW in central portion of Power Block
 3. Installation of Timber Lagging
 4. Drilling/Installation of Tie Backs
 5. Geologic Mapping Performed During This Phase
 - Retaining Wall Mapping
 - Top of Rock Mapping
 - Reconnaissance Mapping of Interior Excavation



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Unit 2 Power Block Overall Plan



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Driving Initial Piles in Unit 2 Power Block.



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Excavation of 1st Lift Along Retaining Wall



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Installation of Tie-Backs at Unit 2 Power Block



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Unit 2 Power Block View from East Wall



EXCAVATION SEQUENCE

UNIT 2 TEMPORARY RETAINING WALL



Unit 2 Power Block View from SE Corner



GEOLOGIC MAPPING TECHNICAL APPROACH



- 1. “Target of Opportunity” Reconnaissance Mapping**
- 2. Unit 2 and 3 Geologic Trenches and Test Pits**
- 3. Unit 2 Power Block Retaining Wall Mapping**
- 4. Unit 2 Top of Rock Mapping**

GEOLOGIC MAPPING TECHNICAL APPROACH: RECONNAISSANCE MAPPING

- **Collected Geologic Data from Exposures in Excavations Since Beginning of Site Grading (Late 2008)**
- **Types of Exposures:**
 - Pan Scrapes
 - Shear Wall Excavations
 - Utility Trenches
 - Rail and Road Cuts
 - Sedimentation Pond Excavations
 - Erosional Features
 - Natural Outcrops
 - Test Pits
- **Data Collected:**
 - Digital Photographs
 - Geologic Field Notes/Sketches
 - Compass Measurements
 - Samples Collected
- **Review of Background Information**
 - Unit 1 Geologic Investigation
 - Unit 2 and 3 COLA Subsurface Exploration
 - Geologic Literature
 - Aerial Photographs and Light Detection and Ranging (LIDAR) Data

GEOLOGIC MAPPING TECHNICAL APPROACH: SITE-WIDE RECONNAISSANCE MAPPING



Pan Scrapes

GEOLOGIC MAPPING

TECHNICAL APPROACH: SITE-WIDE RECONNAISSANCE MAPPING

Ditch Excavations



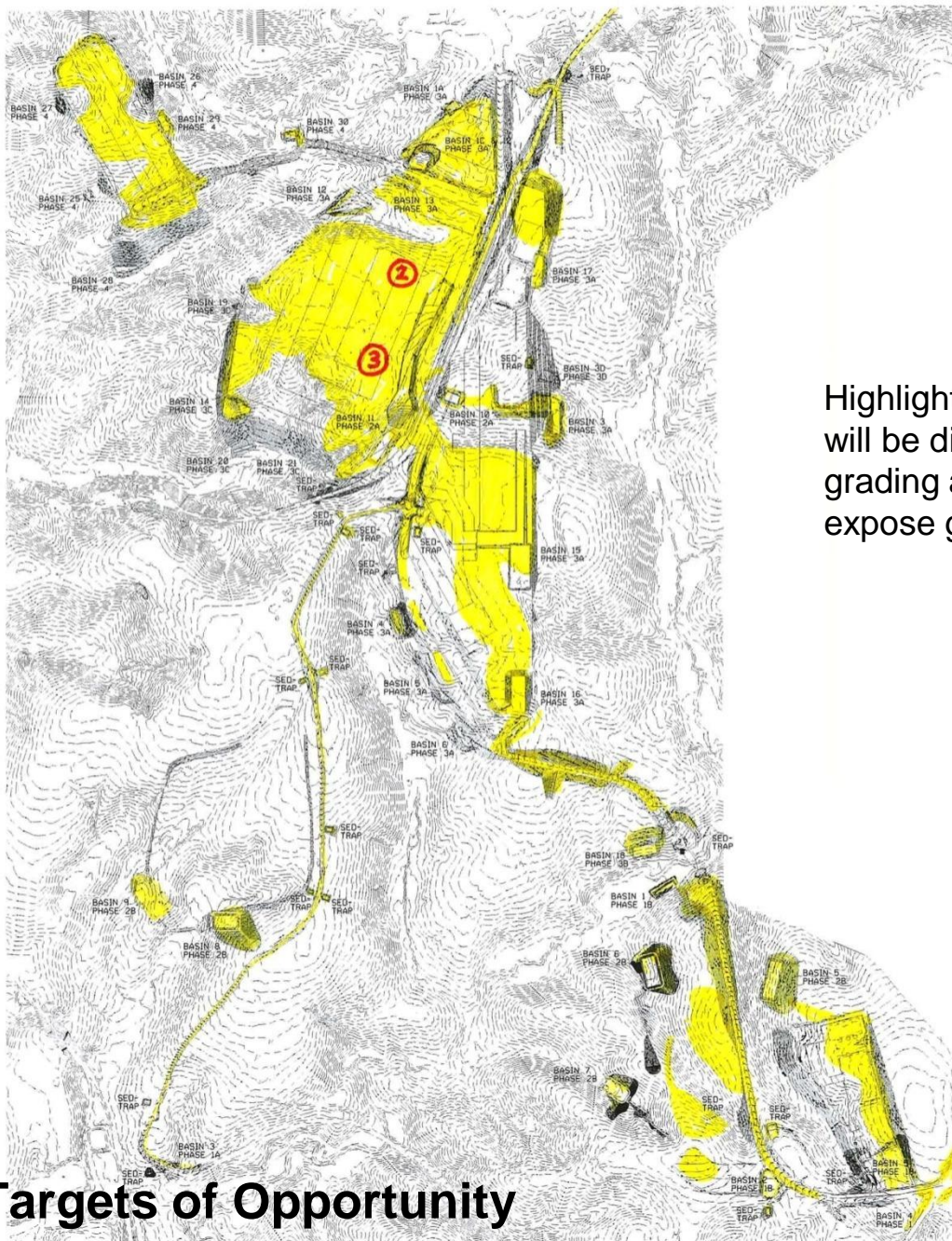
Sediment Pond Excavations



Road and Railroad Cuts

Utility Trench Excavations





Highlighted areas have been or will be disturbed enough by grading activities to potentially expose geologic information

Primary Targets of Opportunity



GEOLOGIC MAPPING

TECHNICAL APPROACH: SITE-WIDE RECONNAISSANCE MAPPING



- Geologic Trenches were excavated across the Unit 2 and Unit 3 Power Block Areas during grading from approximately elevation 420 to 400.
 - Trenches were divided into approximate 10' wide panels, surveyed, photographed, and mapped.
 - Mapping techniques were similar to Power Block Retaining Wall mapping.

Unit 2 Trench



Trench Oriented East-West



Panels on the North Wall

Unit 3 Trench



East-West Cut



North-South Cut



GEOLOGIC MAPPING TECHNICAL APPROACH – UNIT 2 Power Block Retaining Wall and Top of Rock Mapping



- **Wall Mapping During Excavation and Construction of Unit 2 Retaining Wall**
- **Top of Rock Mapping (Pre- and Post-Blasting)**
- **WLA Procedures, Project Planning Document (QA Plan), Project Instructions, Work Instructions:**
 1. Project Planning Document (2091-PPD, Revision 1)
 2. Geologic Map Data Collection Plan (Project Instruction 2091-PI-01, Revision 2)
 3. Laboratory Testing Plan (Project Instruction 2091-PI-02, Revision 1)
 4. Geoscience Evaluation and Analysis Plan (Project Instruction 2091-PI-03, Revision 0)
 5. Field Records (Work Instruction 2091-WI-01-0)
 6. Survey Control (Work Instruction 2091-WI-02-0)
 7. Field Mapping Standards (Work Instruction 2091-WI-03-0)
 8. Sampling Protocol Handling and Storage (Work Instruction 2091-WI-04-0)
 9. Data Compilation and Verification (Work Instruction 2091-WI-05-0)
 10. Units 2 and 3 Wall Photography and Mapping (2091-WI-06-0)
 11. GPS Unit Accuracy Verification (2091-WI-07-1)
 12. Unit 2 Nuclear Island and Circulating Water System Area Preliminary Geologic Mapping (2091-WI-08-0)



GEOLOGIC MAPPING TECHNICAL APPROACH – UNIT 2 Power Block Retaining Wall and Top of Rock Mapping



Geologic mapping in progress along north wall in Unit 2 Power Block.



GEOLOGIC MAPPING TECHNICAL APPROACH – UNIT 2 Power Block Retaining Wall and Top of Rock Mapping



Retaining Wall Panel Before Mapping

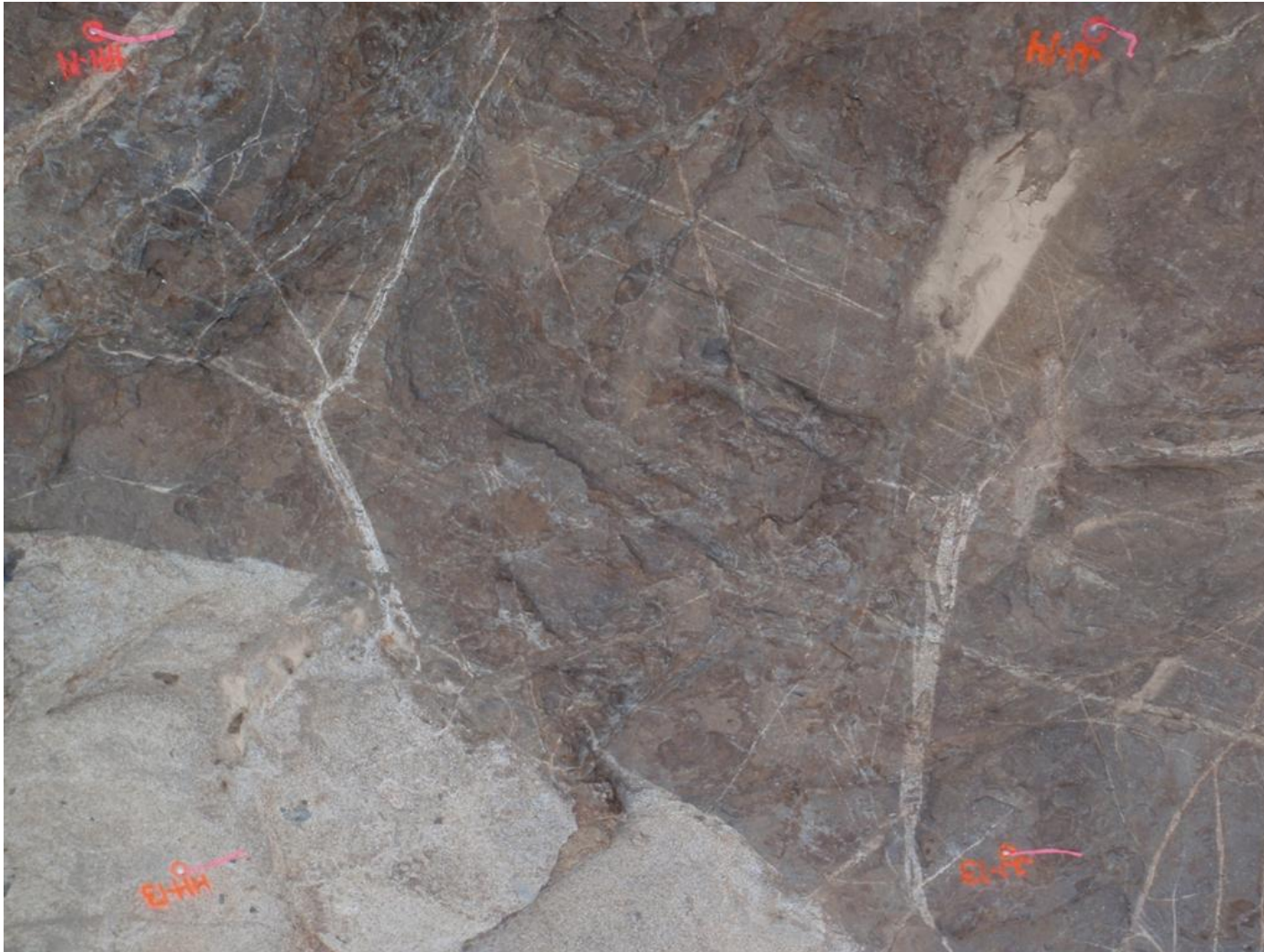


GEOLOGIC MAPPING TECHNICAL APPROACH – UNIT 2 Power Block Retaining Wall and Top of Rock Mapping



Retaining Wall Panel After Mapping

GEOLOGIC MAPPING TECHNICAL APPROACH – UNIT 2 Power Block Retaining Wall and Top of Rock Mapping



Top of Rock Before Mapping



Top of Rock After Mapping

Site Lithologic Units

(in approximate order of increasing age)

SOIL UNITS

Man-made Fill

Alluvium

Possible Terrace Deposits

Colluvium

Residual Soil (FSAR LAYER I)

Saprolite (FSAR LAYER II)

ROCK UNITS

(FSAR LAYERS III, IV, V)

Pegmatite and Aplite Veins/Dikes

Winnsboro Complex

Charlotte Terrane

- FIELD RECORDS
 - Field Books and Notes
 - Base Maps
 - Annotated Data (Base Photos and Maps)
 - Digital Data
- Geologic Mapping Data Collection Plan, Field Records Work Instruction
- On-site Storage Facility (WLA Trailer) Fire Proof File Cabinet
- Field Books and Notes Scanned Each Day
- Data Transmitted to Home Office Each Day
- Scanned Field Books, Notes, Digital Data also backed up each day on external hard drive.
- Data Also Provided to Shaw Daily



QUESTIONS