FLORENCE COPPER, INC.
UIC PERMIT APPLICATION
FLORENCE COPPER PROJECT – PRODUCTION TEST FACILITY

ATTACHMENT F – MAPS & CROSS SECTIONS OF GEOLOGIC LITHOLOGY
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F.1 Introduction

This Attachment F has been prepared in support of an Application by Florence Copper, Inc. (Florence Copper) to the United States Environmental Protection Agency (USEPA) for issuance of an Underground Injection Control Class III (Area) Permit (UIC Permit) for the planned Production Test Facility (PTF), to be located at the Florence Copper Project (FCP) property in Pinal County, Arizona. As required for Attachment F of USEPA Form 7520-6, this Attachment includes maps and cross sections depicting the geologic structure in the area of the PTF and the FCP site.

Figure F-1 shows the regional geologic structure in the vicinity of the FCP property. Figures F-2 and F-3 show the locations of regional and site scale cross sections depicted on Figures F-4 through F-10. Figure F-11 is a cross-section location map showing the location of two cross sections that transect the PTF well field. Figures F-12 and F-13 are site scale cross sections that transect the PTF well field.
Legend
- POC WELL
- NON POC WELL
- PTF WELL FIELD
- STATE MINERAL LEASE BOUNDARY
- CURIS PROPERTY BOUNDARY
- AQUIFER EXEMPTION BOUNDARY

Regional Cross Section: Location lines A-A', B-B', C-C', D-D' and E-E'

Typical Groundwater flow direction in USDW within the area of Review

Figure F-3

Florence Copper Site
Cross Section
Location Map
**GENERALIZED REGIONAL GEOLOGIC CROSS SECTION A-A'**

- **SCALE**: AS SHOWN

**LEGEND**
- UPPER BASIN FILL ALLUVIAL UNIT
- MIDDLE FINE-GRAINED UNIT
- LOWER BASIN FILL ALLUVIAL UNIT
- BEDROCK

**NOTES:**
- BEDROCK SURFACE TOPOGRAPHY COMPILED BY BROWN AND CALDWELL FROM EXISTING WATER WELL LOGS, EXPLORATORY COREHOLE LOGS AND REGIONAL GRAVITY SURVEYS (BHP COPPER INC. APP APPLICATION, VOLUME II FIGURES 3.4-2 (II) AND 3.4-3 (II), 1996).
- * WELLS BIA-9 AND BIA-10B WILL BE PLUGGED AND RELOCATED PRIOR TO COMMERCIAL OPERATIONS.
- UNIT CONTACTS DASHED WHERE INFERRED.
- ADAPTED FROM BROWN AND CALDWELL 2012.

**PROPOSED PTF INJECTION AND RECOVERY AREA**

- **PROPOSED PTF WELL FIELD**

- **FLORENCE COPPER PROPERTY BOUNDARY**

- **GILA RIVER**

- **ANTHEM AT MERRILL RANCH**

- **HUNT HIGHWAY**

- **HIGHWAY 79**

- **FLORENCE COPPER PROPERTY**

- **FLORENCE**

- **GARDENS**

- **PTF WELL FIELD**

**TOTAL DEPTH OF BOREHOLE**

**APPROXIMATE WELL LOCATION (GENERALLY PROJECTED ONTO CROSS SECTION)**

**SCREENED INTERVAL (WHERE DATA IS AVAILABLE)**

**VERTICAL SCALE**: 1" = 1,000'

**HORIZONTAL SCALE**: 1" = 4,000'

**VERTICAL EXAGGERATION**: 4X
**Generalized Regional Geologic Cross Section B-B’**

**Legend**
- Upper Basin Fill Alluvial Unit
- Middle Fine-Grained Unit
- Lower Basin Fill Alluvial Unit
- Bedrock

**Notes:**
- Bedrock surface topography compiled by Brown and Caldwell from existing water well logs, exploratory corehole logs, and regional gravity surveys (BHP Copper Inc. APP application, Volume II, Figures 3.4-2 (II) and 3.4-3 (II), 1996).
- *WELL BIA-10B WILL BE PLUGGED AND RELOCATED PRIOR TO COMMERCIAL OPERATIONS.*
- Middle fine-grained unit shown at wells (5-9)10BB and (5-9)32CDA estimated from ADWR well reports.
- Unit contacts dashed where inferred.
- Adapted from Brown and Caldwell 2012.

**Approximate Well Location**
- Generally projected onto cross section

**Total Depth of Borehole**
- Generally projected onto cross section

**Screened Interval (Where Data Is Available)**

**Viewpoint:**
- North (B’ North)
- South (B South)

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**Figure F-5**

**Curis Resources (Arizona) Inc.**
**Florence, AZ**

**Generalized Regional Geologic Cross Section B-B’**

**Scale:** As Shown
**Geologic Cross Section C-C'**

### Key Map

- **C**
- **C'**
- **D**
- **E**
- **E'**
- **F**

### Legend

- **Sand, Silt and Clay**
- **Silt and Clay**
- **Basalt**
- **Alluvium**
- **Sand and Gravel**
- **Sand, Silt and Clay**
- **Water Level Elevation** (Measured September 2011)
- **Oxide/Sulfide Contact** (Dashed where inferred)
- **INTERPRETED UNCONFORMITY**
- **DIABASE / DIORITE**
- **QUARTZ MONZONITE PORPHYRY**
- **GRANODIORITE PORPHYRY**
- **EXISTING COREHOLES**
- **LBFU/OXIDE CONTACT**
- **POC WELL SCREENED IN THE OBFU**
- **POC WELL SCREENED IN THE LBFU**
- **POC WELL SCREENED IN THE OXIDE UNIT**
- **SCREENED INTERVAL**
- **TOTAL DEPTH OF BOREHOLE**
- **APPARENTLY UNCONFORMABLE LAYER**

### Note

Unit contact and geology was developed by BHP Copper (1995) and is based on corehole data. Adapted from Brown and Caldwell 2012.

**Scale:** As shown

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**Florence Copper, Inc.**
**Florence, Arizona**

**Geologic Cross Section C-C'**

**Scale:** As shown

**Figure F-7**
Drawing Name: FIGURE F-8

Adapted from Brown and Caldwell 2012 Scale: As shown rather than actual depths. Inferred actual structure intersections are shown on figures D-2 and D-3.

Due to projection effects intersections of structures with PTF wells occur at apparent depths unit contact and geology was developed by BHP Copper (1995) and is based on corehole data.

Notes:

Candreva, Lauren ES-STD (24x36)

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The oxide unit in the LBFU in the UBFU

Geologic screened

Florence, Arizona

M24-O

M25-UBF

Florence Copper, Inc.

Proposed injection zone

E' E

F' F

LBFU

UBFU

Middle fine-grained unit

Sand and gravel

Sand, gravel and clay

Alluvium

Monzgonite

Quartz

Granodiorite porphyry

Anidesite

Diabase / Diorite

DACITE

Basalt

Existing coreholes

Pock well

Workings

Conoco underground party

Keymap

Legend

Lesotho Elevation (feet AMSL)

Keymap
GEOLOGIC CROSS SECTION F-F'

LEGEND

- UPPER BASIN FILL UNIT
- MIDDLE FINE-GRAINED UNIT
- LOWER BASIN FILL UNIT
- OXIDE/SULFIDE CONTACT
- MONZONITE QUARTZ PORPHYRY
- GRANODIORITE PORPHYRY
- EXISTING COREHOLES
- LBFU/OXIDE CONTACT
- OBSERVATION WELL RECOVERY WELLS
- SCREENED INTERVAL OF WELL
- TOTAL DEPTH OF BOREHOLE
- COREHOLE ID
- DASHED WHERE INFERRED

NOTE: UNIT CONTACT AND GEOLOGY WAS DEVELOPED BY BHP COPPER (1995) AND IS BASED ON COREHOLE DATA.

ADAPTED FROM BROWN AND CALDWELL 2012
Explanation
- Cross-section lines
- Property line
- State mineral lease
- PTF wellfield

General Notes
1. For illustrative purposes only. Not to scale
2. Coordinates shown are Arizona Central State Plane (ft.)

References
1. Cross-Section locations by SRK
**REFERENCES**


**EXPLANATION**
- Quaternary Alluvium - UBFU
- Upper loose conglomerate - UBFU
- Upper Cemented conglomerate - UBFU
- Clay - MFGU
- Lower Cemented conglomerate - LBFFU
- Tertiary dacite and Tertiary dacite porphyry (Td) (Tdp)
- Tertiary andesite (Ta)
- Tertiary basalt (Tb)
- Tertiary granodiorite porphyry, Type 1 (Tgdp1)
- Tertiary granodiorite porphyry, Type 2 (Tgdp2)
- Tertiary granodiorite porphyry, Type 3 (Tgdp3)
- Precambrian diabase and diorite (Ydb,Yd)
- Mixed Precambrian quartz monzonite and Tertiary granodiorite porphyry (Yqm), (Tgdp)
- Precambrian quartz monzonite (Yqm)
- Oxide-Sulfide Line
- Injection Wells
- Recovery Wells
- Westbay Wells
- D on downthrown block
- Proposed Injection and Recovery Zone

**PTF Well Field**

**REFERENCES**

References