

**APPENDIX TO:  
SECTION 5.2-1**

**VOLUME 3 of 4**

**REPORT of INVESTIGATION  
SAGO MINE EXPLOSION**

**JANUARY 2, 2006**



**WEST VIRGINIA OFFICE of MINERS' HEALTH  
SAFETY AND TRAINING  
DECEMBER 11, 2006  
RON WOOTEN, DIRECTOR**

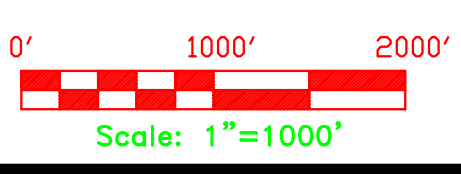
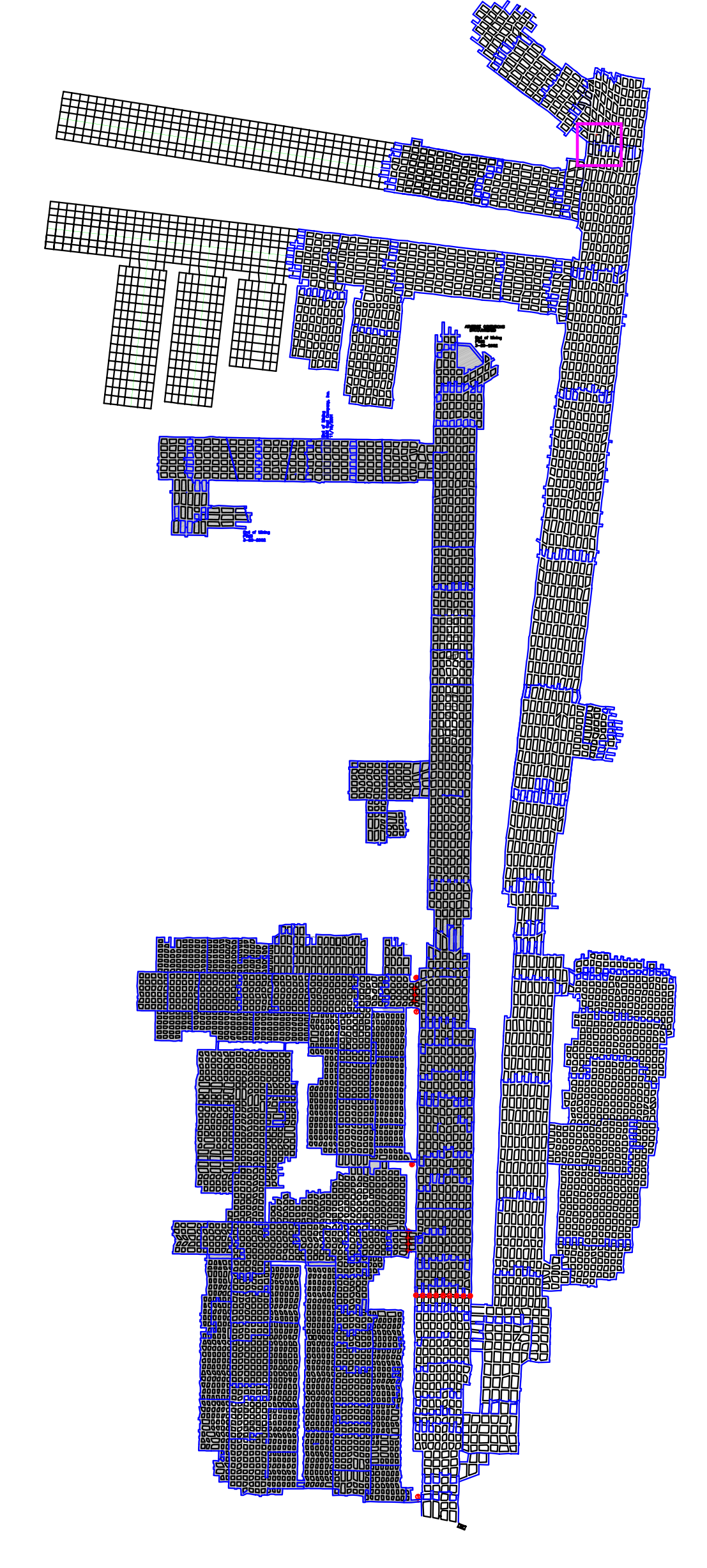
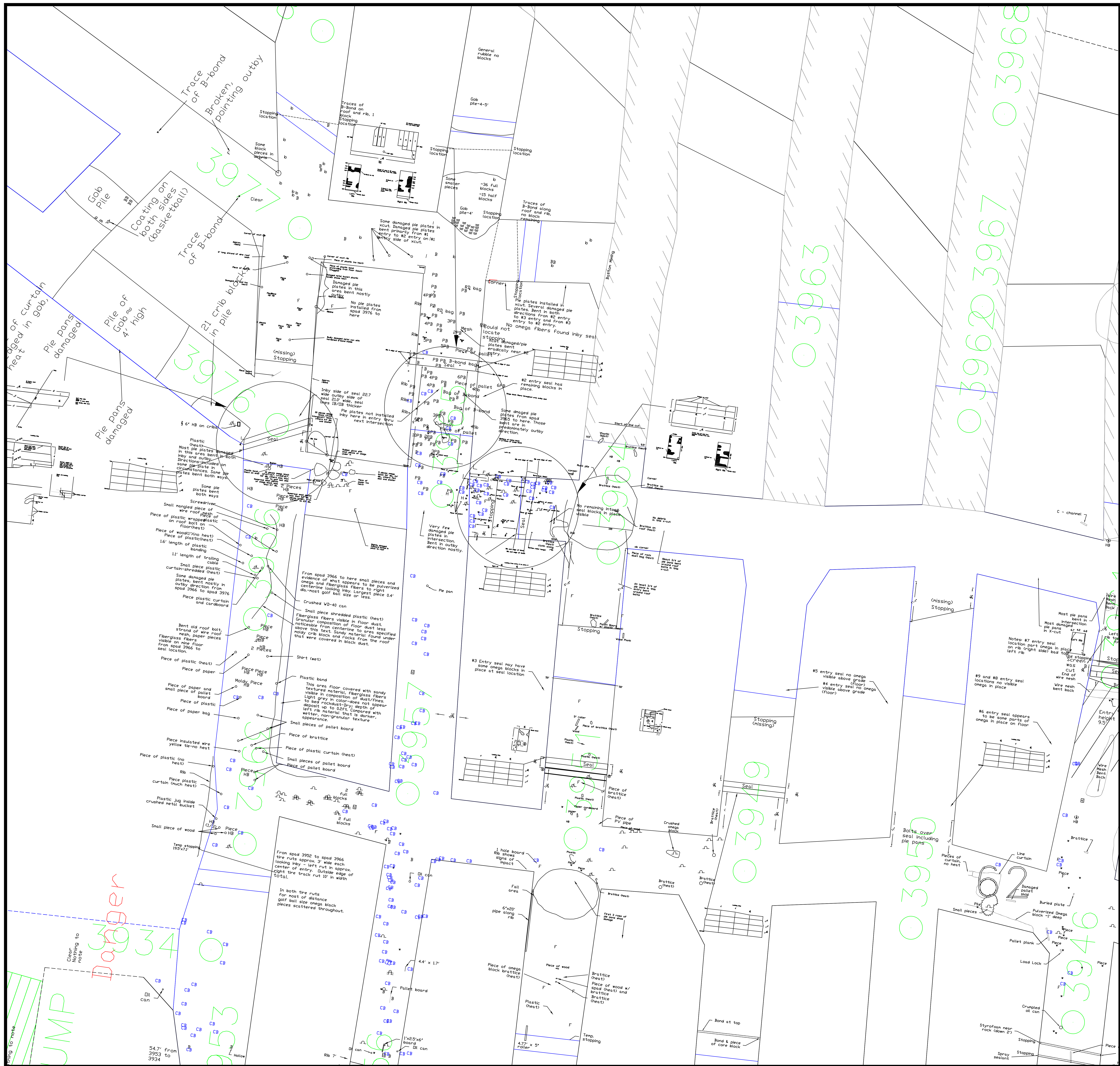
## **APPENDIX 5**

# **The Investigation**

## **(5.2) Evidence Documentation**

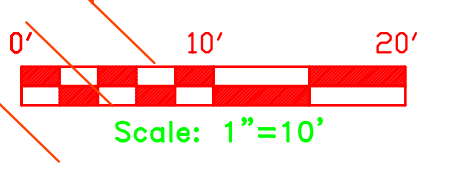
### **Mine Investigation – Team Mapping**

- **Folio Map 13a through 29 of 29**



LEGEND

- HOLLOW BLOCK STOPPING =
- HOLLOW BLOCK STOPPING WITH MANDOOK =
- OMEGA BLOCK STOPPING =
- OMEGA BLOCK STOPPING WITH MANDOOK =
- OVERCAST =
- PERMANENT SEAL =
- REGULATOR =
- AIR LOCK / DOUBLE DOORS =
- FAN =
- FALL =
- CRIBS =
- WATER =
- BELT TRANSFER POINT =
- TRACK =
- OMEGA BLOCK =
- PARTIAL OMEGA BLOCK =
- BLOCK =
- HALF BLOCK =
- HALF BLOCK or HOLLOW BLOCK =
- 1/2 HEADER =
- OVERCAST DECKING =
- WEDGE =
- MISCELLANEOUS ITEMS =
- CRIB BLOCK =
- I-BEAM =
- ELONGATED OBJECT =
- FLYBOARD =
- PIE PANS =
- FIRE EXTINGUISHER =
- KENNEDY PANEL =

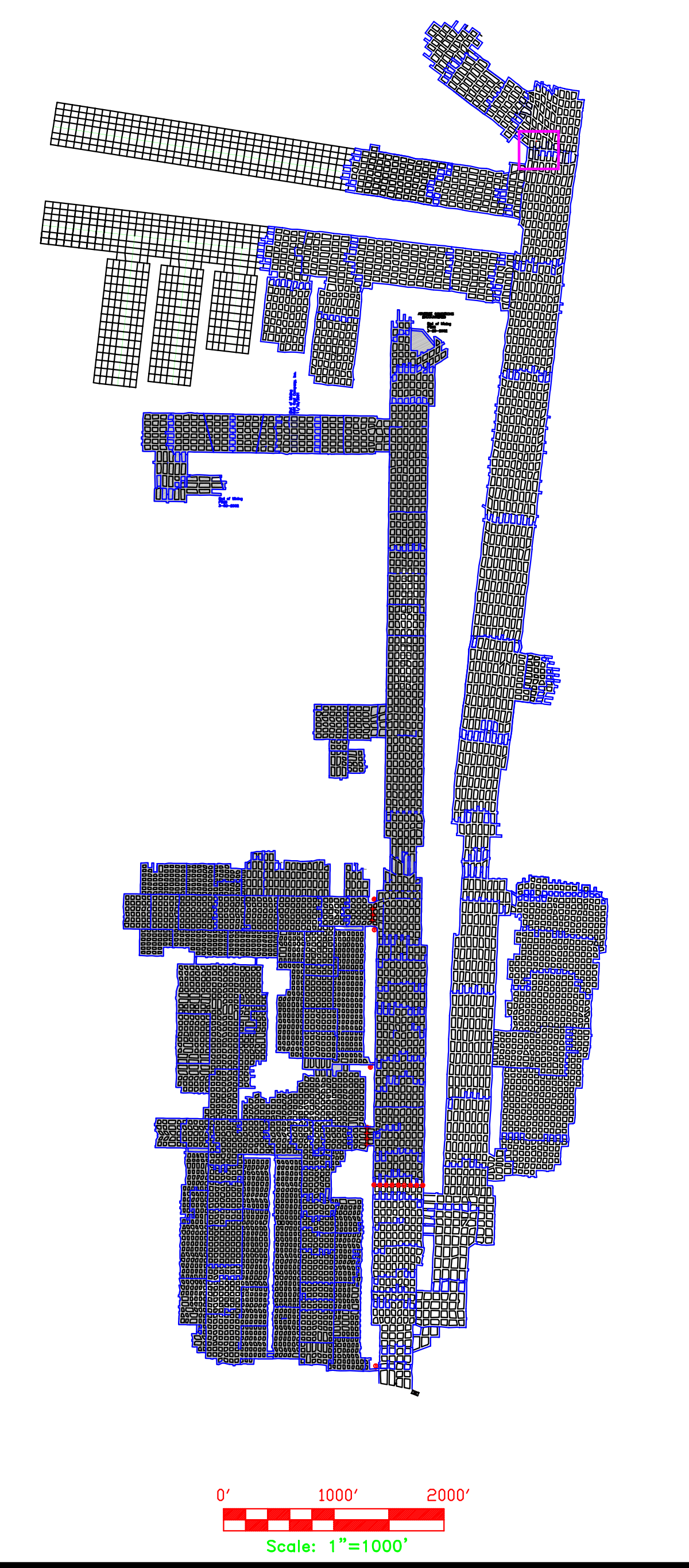
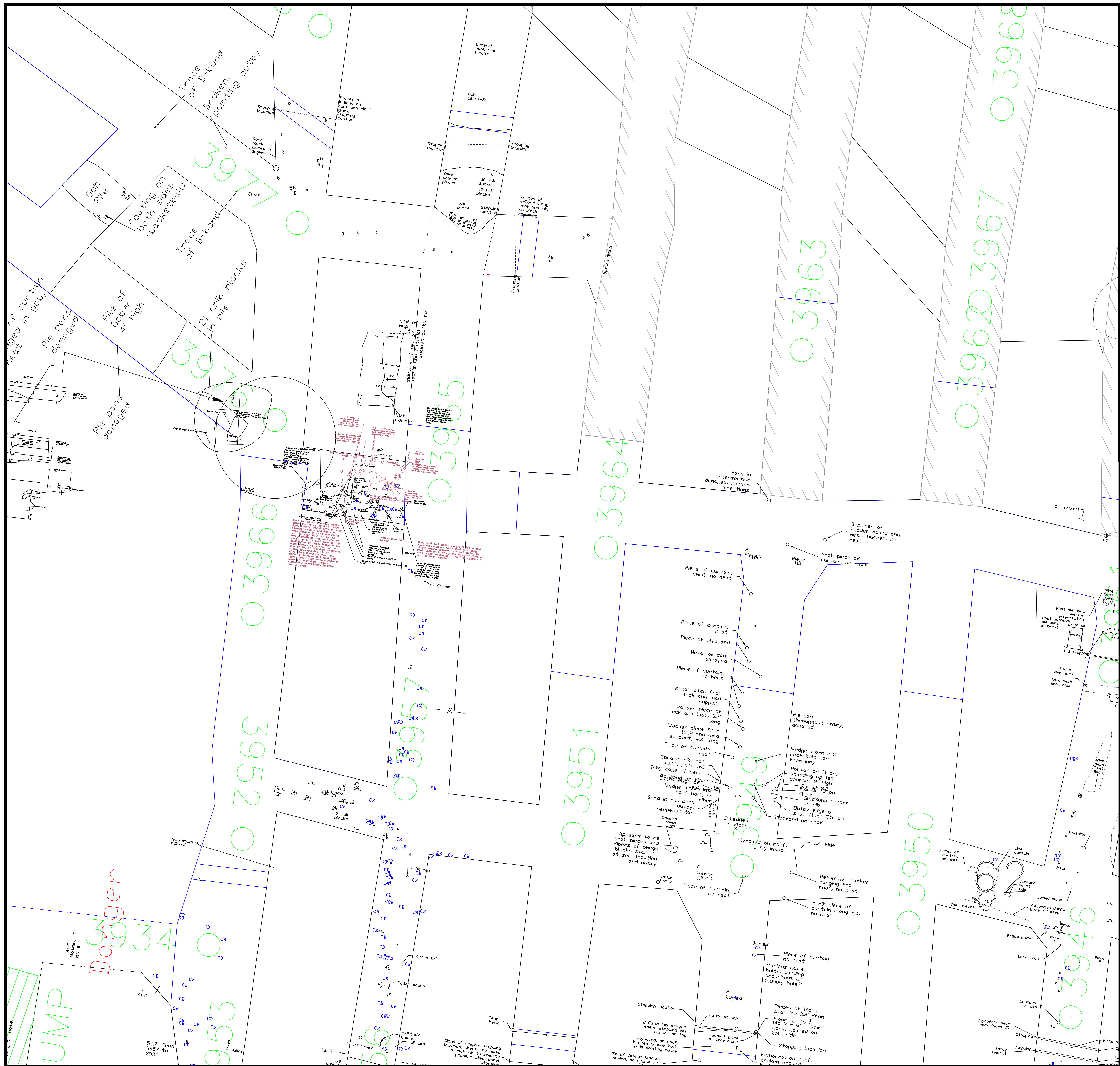


Sago Mine  
 Middle Kittanning Seam  
 MSHA ID # 46-08791  
 WV STATE ID # U-2016-988  
 Revised: 04/25/06

MAP FOLIO Map 13a of 29

Mine Investigation  
 Team Mapping

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**LEGEND**

HOLLOW BLOCK STOPPING	▬
HOLLOW BLOCK STOPPING WITH MANDOOK	▬
OMEGA BLOCK STOPPING	▬
OMEGA BLOCK STOPPING WITH MANDOOK	▬
OVERCAST	⊕
PERMANENT SEAL	⊕
REGULATOR	R
AIR LOCK / DOUBLE DOORS	DD
FAN	⊗
FALL	⊗
CRIBS	⊗
WATER	~
BELT TRANSFER POINT	▲
TRACK	⊕
OMEGA BLOCK	Ω
PARTIAL OMEGA BLOCK	Ω
BLOCK	B
HALF BLOCK	b
HALF BLOCK or HOLLOW BLOCK	HB
1/2 HEADER	H
OVERCAST DECKING	Q
WEDGE	w
MISCELLANEOUS ITEMS	o
CRIB BLOCK	CB
I-BEAM	I
ELONGATED OBJECT	—
FLYBOARD	F
PIE PANS	P
FIRE EXTINGUISHER	FE
KENNEDY PANEL	K

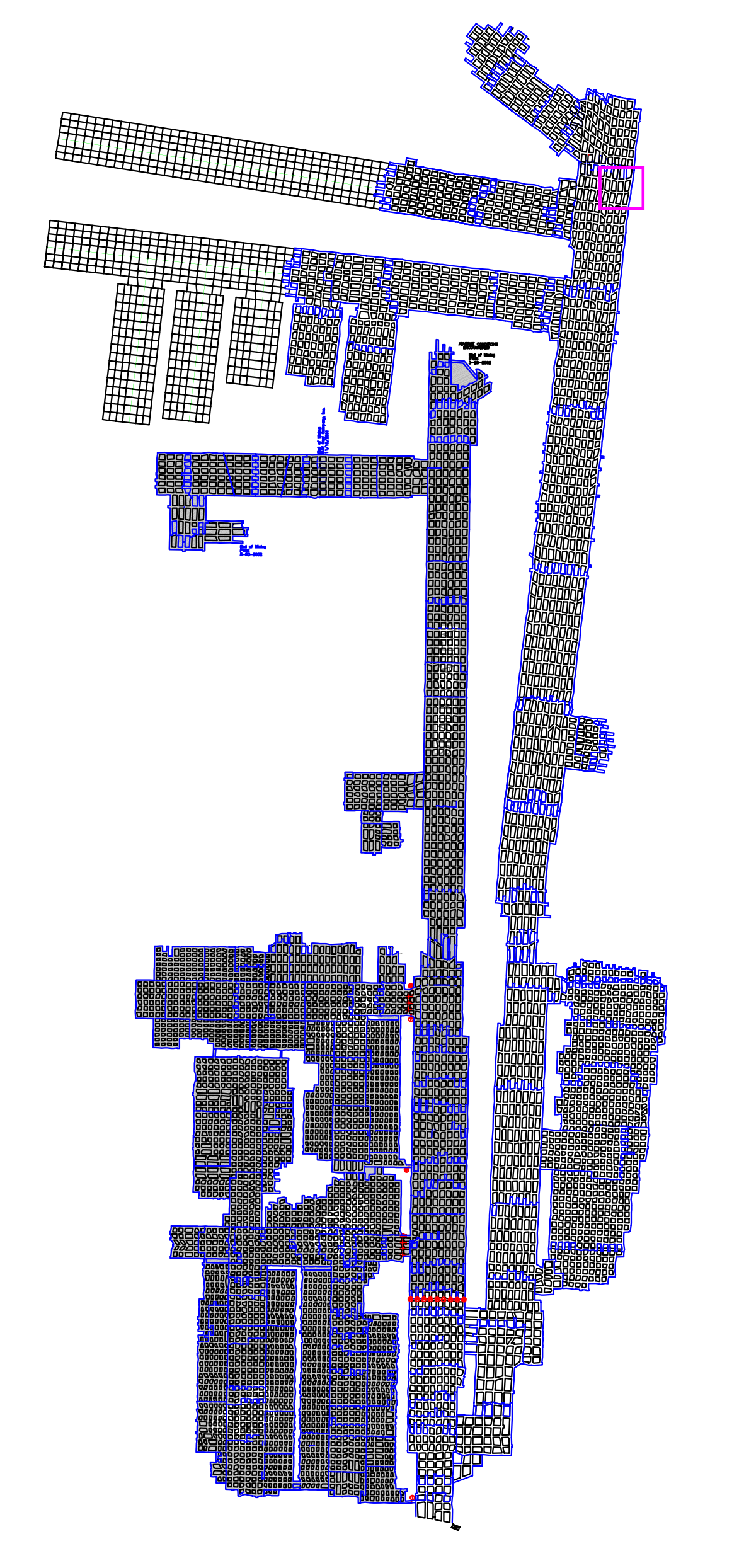
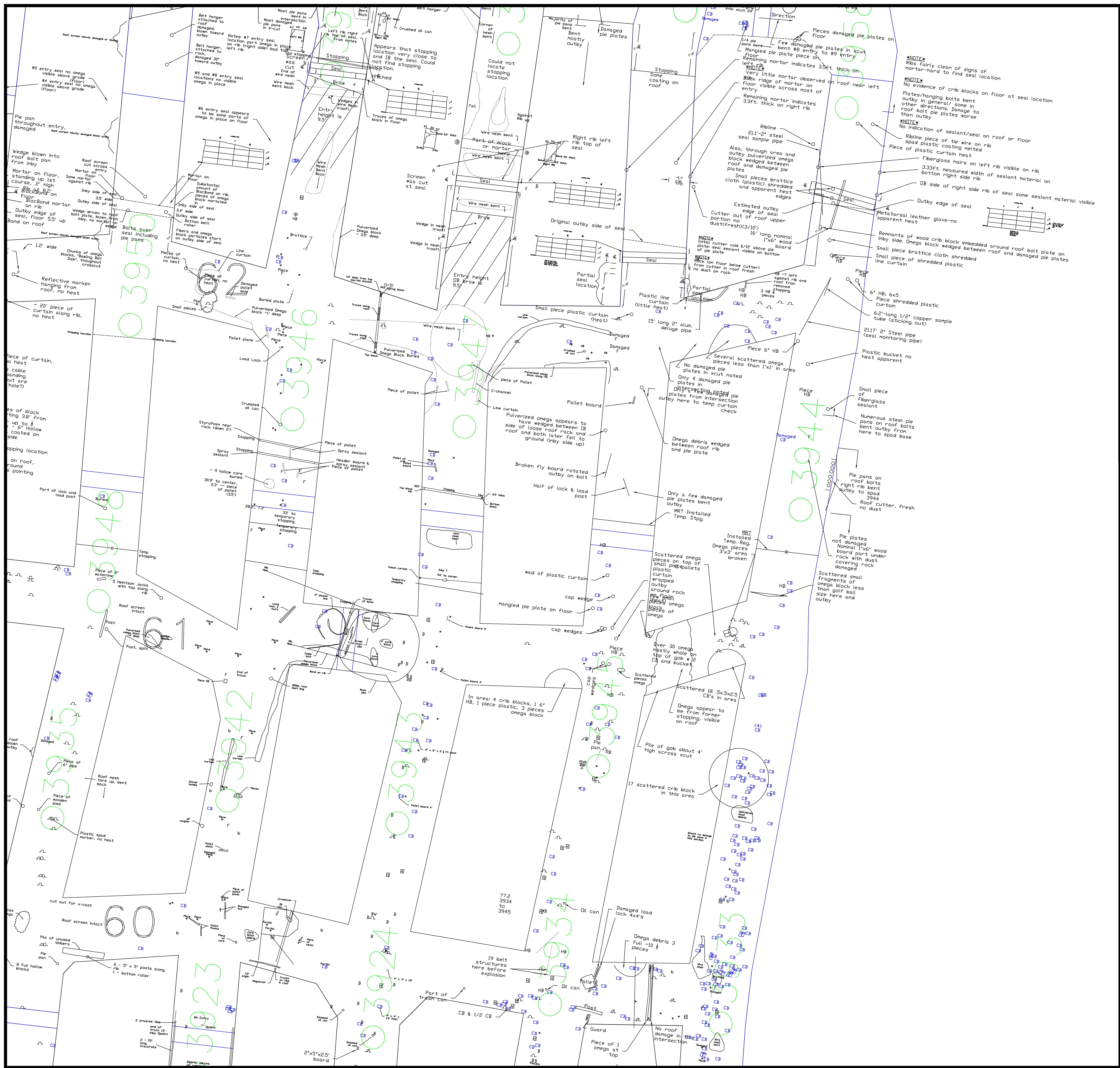
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Sago Mine  
Middle Kittanning Seam  
MSHA ID # 46-08791  
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MAP FOLIO Map 13b of 29

Mine Investigation  
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0' 1000' 2000'  
Scale: 1"=1000'

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- HOLLOW BLOCK STOPPING WITH MANDOOK =
- OMEGA BLOCK STOPPING =
- OMEGA BLOCK STOPPING WITH MANDOOK =
- OVERCAST =
- PERMANENT SEAL =
- REGULATOR =
- AIR LOCK / DOUBLE DOORS =
- FAN =
- FALL =
- CRIBS =
- WATER =
- BELT TRANSFER POINT =
- TRACK =
- OMEGA BLOCK =
- PARTIAL OMEGA BLOCK =
- BLOCK =
- HALF BLOCK =
- HALF HEADER or HOLLOW BLOCK =
- 1/2 HEADER =
- OVERCAST DECKING =
- WEDGE =
- MISCELLANEOUS ITEMS =
- CRIB BLOCK =
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- ELONGATED OBJECT =
- FLYBOARD =
- PIE PANS =
- FIRE EXTINGUISHER =
- KENNEDY PANEL =

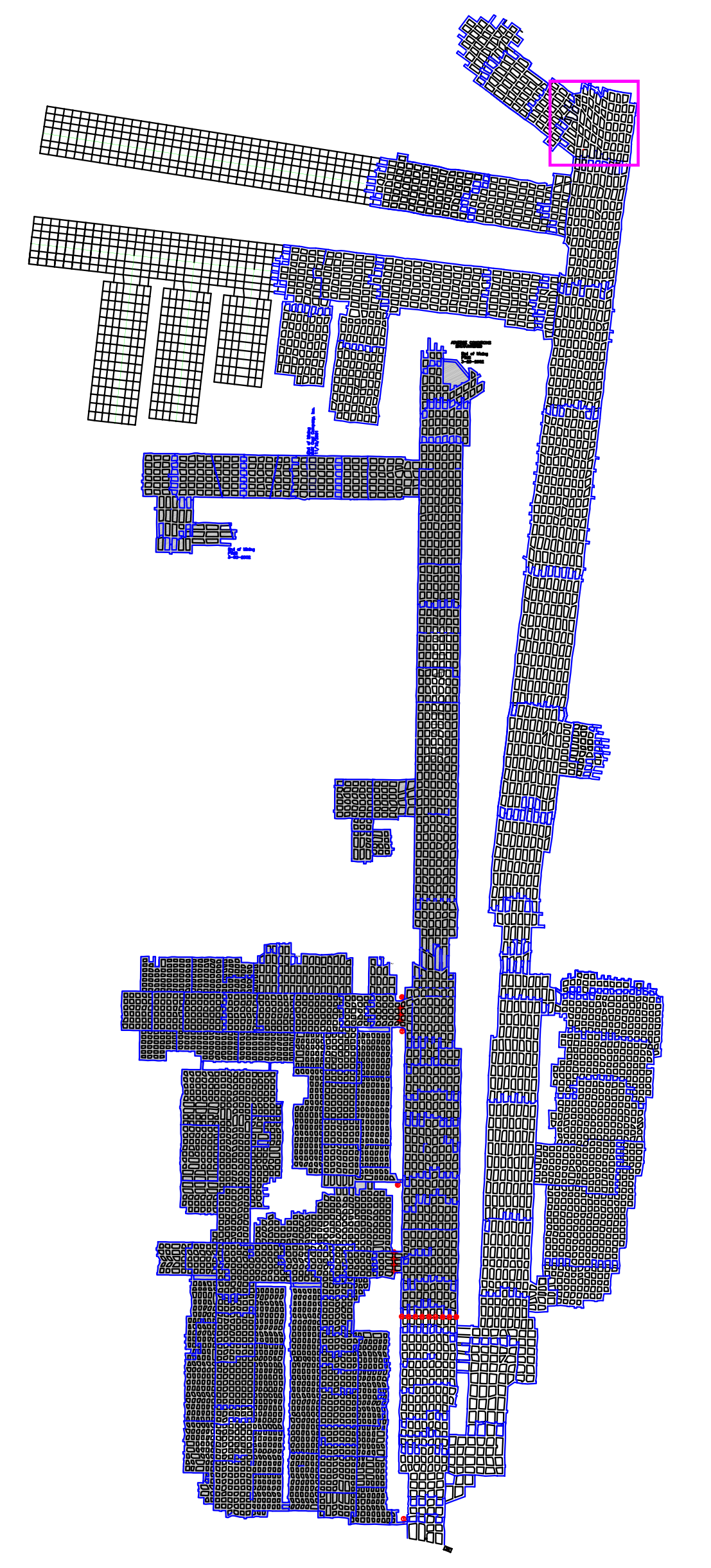
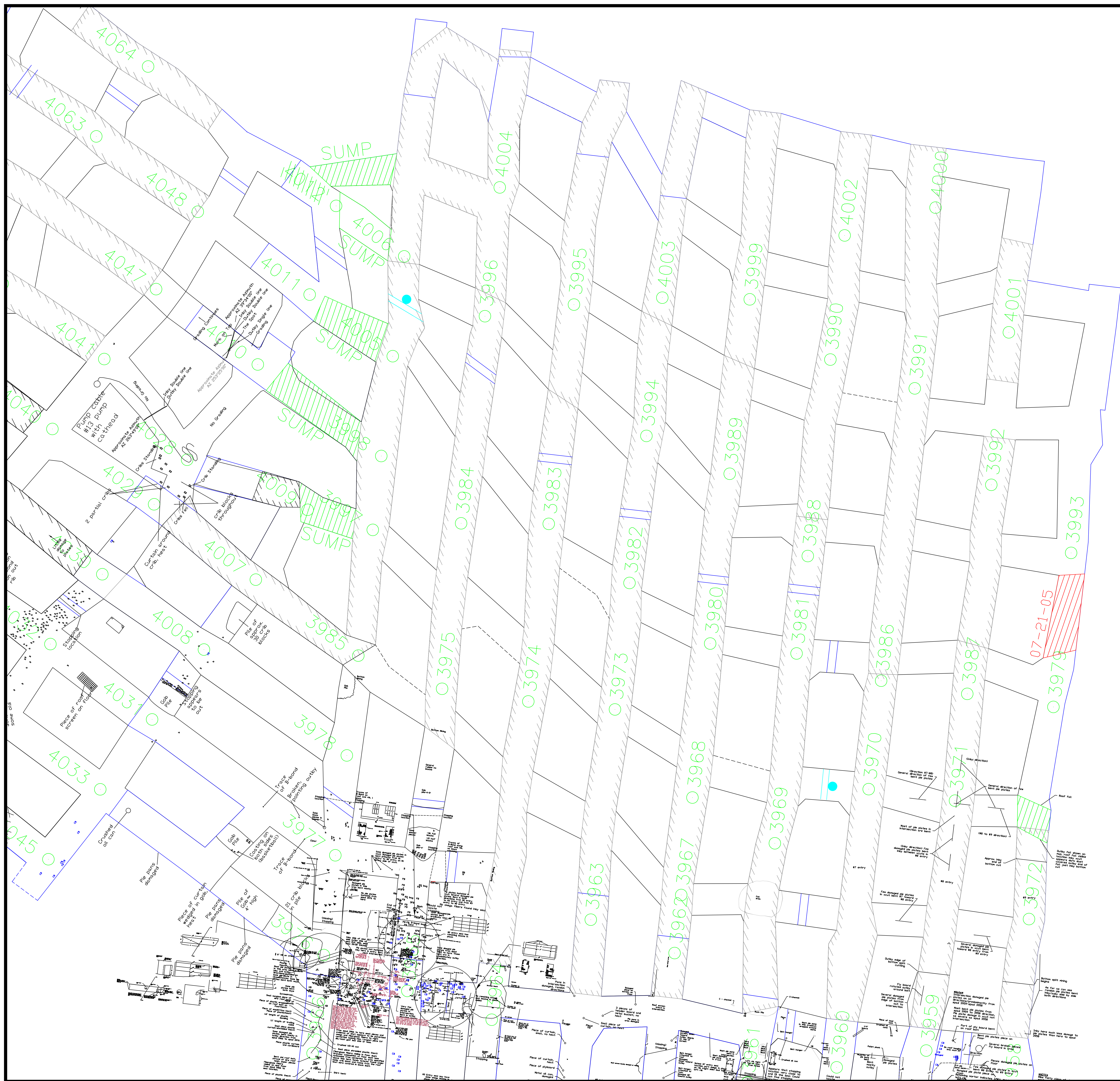
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Sago Mine  
Middle Kittanning Seam  
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MAP FOLIO Map 14 of 29

Mine Investigation  
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0' 1000' 2000'  
Scale: 1"=1000'

LEGEND

- HOLLOW BLOCK STOPPING
- HOLLOW BLOCK STOPPING WITH MANDOOK
- OMEGA BLOCK STOPPING
- OMEGA BLOCK STOPPING WITH MANDOOK
- OVERCAST
- PERMANENT SEAL
- REGULATOR
- AIR LOCK / DOUBLE DOORS
- FAN
- FALL
- CRIBS
- WATER
- BELT TRANSFER POINT
- TRACK
- OMEGA BLOCK
- PARTIAL OMEGA BLOCK
- BLOCK
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- WEDGE
- MISCELLANEOUS ITEMS
- CRIB BLOCK
- I-BEAM
- ELONGATED OBJECT
- FLYBOARD
- PIE PANS
- FIRE EXTINGUISHER
- KENNEDY PANEL

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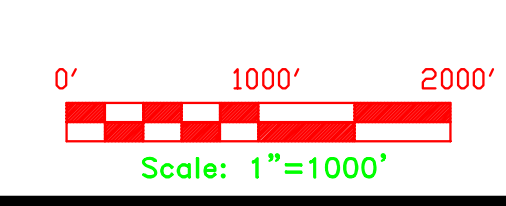
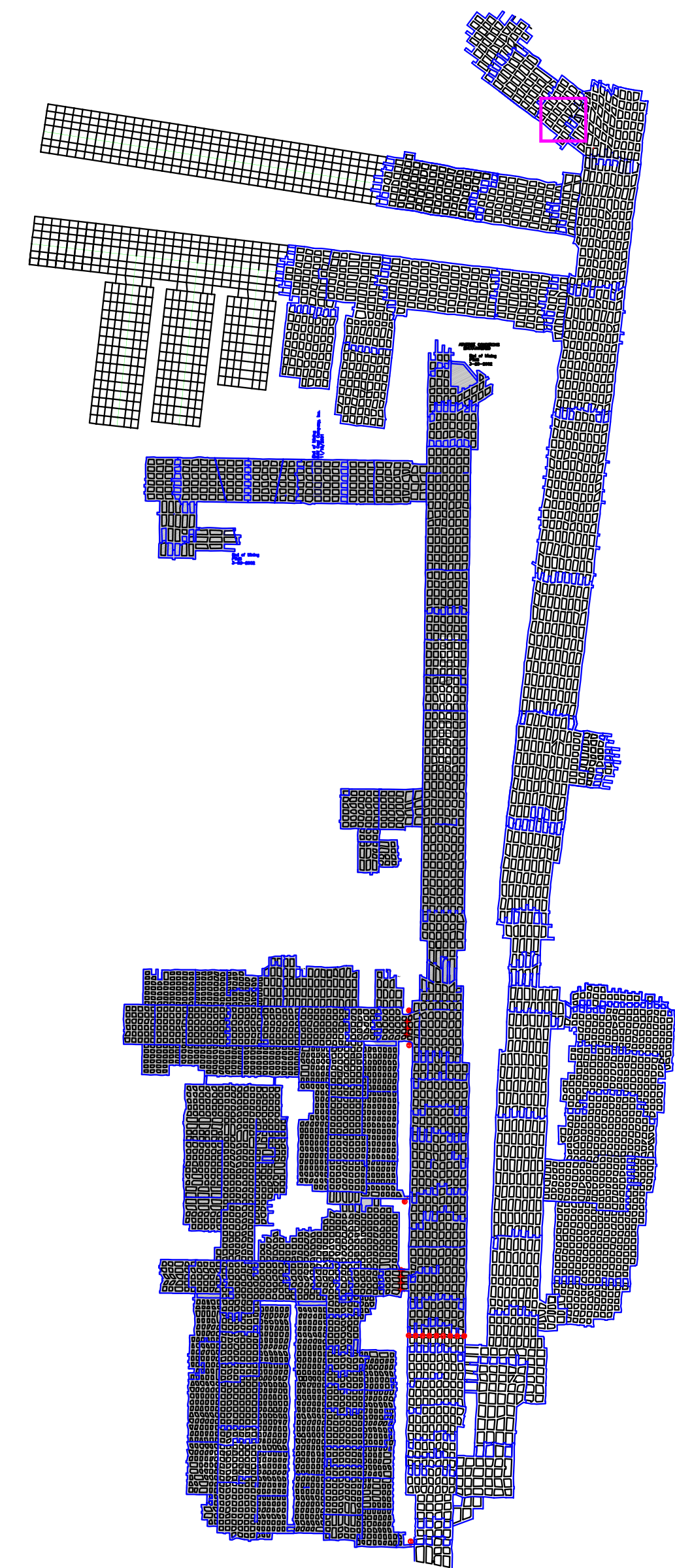
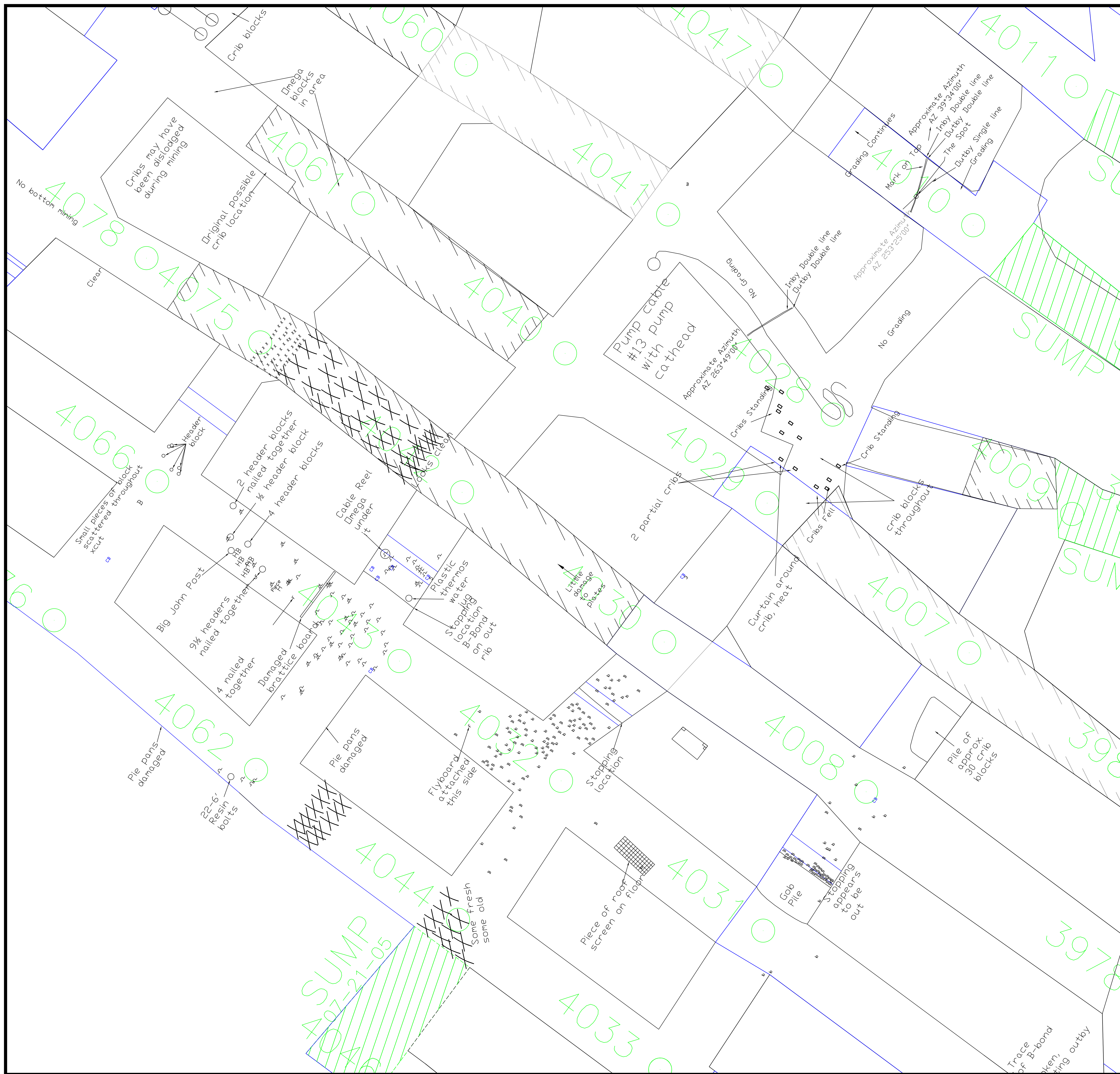
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Middle Kittanning Seam  
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MAP FOLIO Map 15 of 29

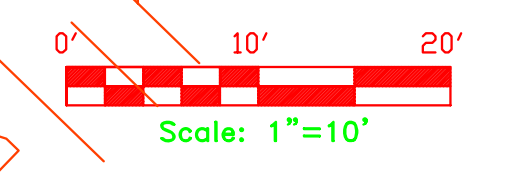
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- HOLLOW BLOCK STOPPING =
- HOLLOW BLOCK STOPPING WITH MANDOOK =
- OMEGA BLOCK STOPPING =
- OMEGA BLOCK STOPPING WITH MANDOOK =
- OVERCAST =
- PERMANENT SEAL =
- REGULATOR = R
- AIR LOCK / DOUBLE DOORS = DD
- FAN =
- FALL =
- CRIBS =
- WATER =
- BELT TRANSFER POINT =
- TRACK =
- OMEGA BLOCK =
- PARTIAL OMEGA BLOCK =
- BLOCK = B
- HALF BLOCK = b
- HALF BLOCK or HOLLOW BLOCK = HB
- 1/2 HEADER = H
- OVERCAST DECKING = Q
- WEDGE = w
- MISCELLANEOUS ITEMS = o
- CRIB BLOCK = CB
- I-BEAM = I
- ELONGATED OBJECT =
- FLYBOARD = F
- PIE PANS = P
- FIRE EXTINGUISHER = FE
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Preliminary

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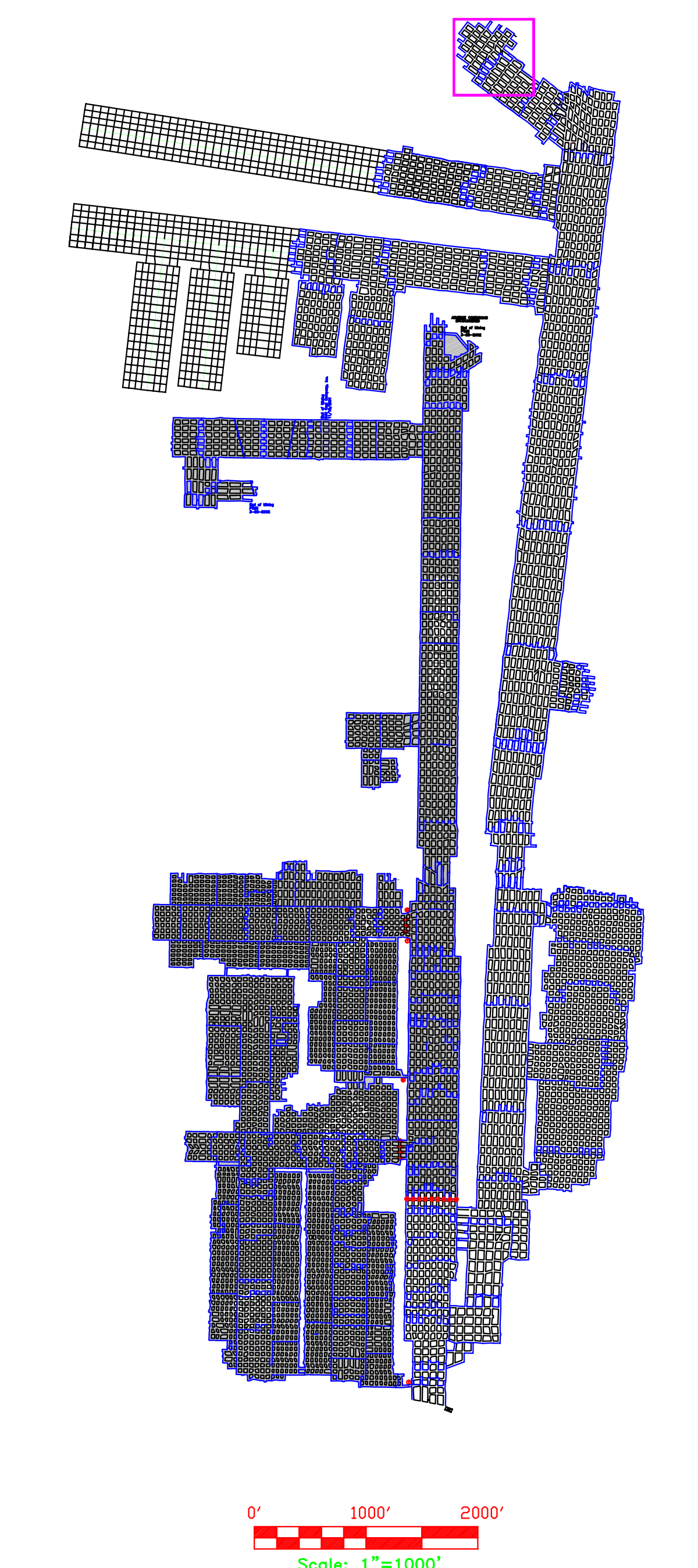
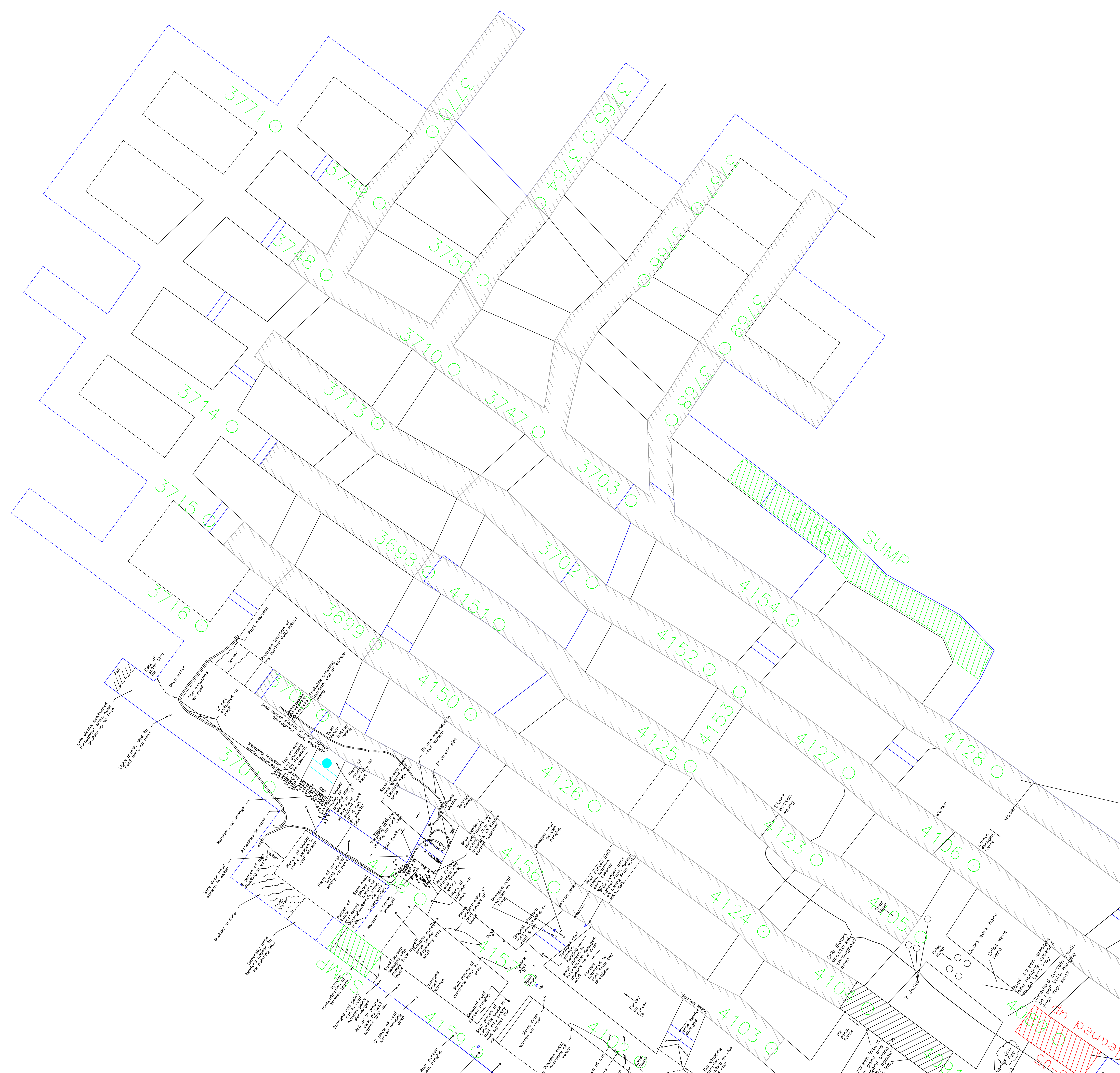
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MAP FOLIO Map 16 of 29

Mine Investigation  
 Team Mapping







0' 1000' 2000'  
Scale: 1"=1000'

LEGEND

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- HOLLOW BLOCK STOPPING WITH MANDOOK =
- OMEGA BLOCK STOPPING =
- OMEGA BLOCK STOPPING WITH MANDOOK =
- OVERCAST =
- PERMANENT SEAL =
- REGULATOR = R
- AIR LOCK / DOUBLE DOORS = DD
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- CRIBS =
- WATER =
- BELT TRANSFER POINT =
- TRACK =
- OMEGA BLOCK =
- PARTIAL OMEGA BLOCK =
- BLOCK = B
- HALF BLOCK = b
- HALF BLOCK or HOLLOW BLOCK = HB
- 1/2 HEADER = H
- OVERCAST DECKING = Q
- WEDGE = w
- MISCELLANEOUS ITEMS = o
- CRIB BLOCK = CB
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- FLYBOARD = F
- PIE PANS = P
- FIRE EXTINGUISHER = FE
- KENNEDY PANEL = K

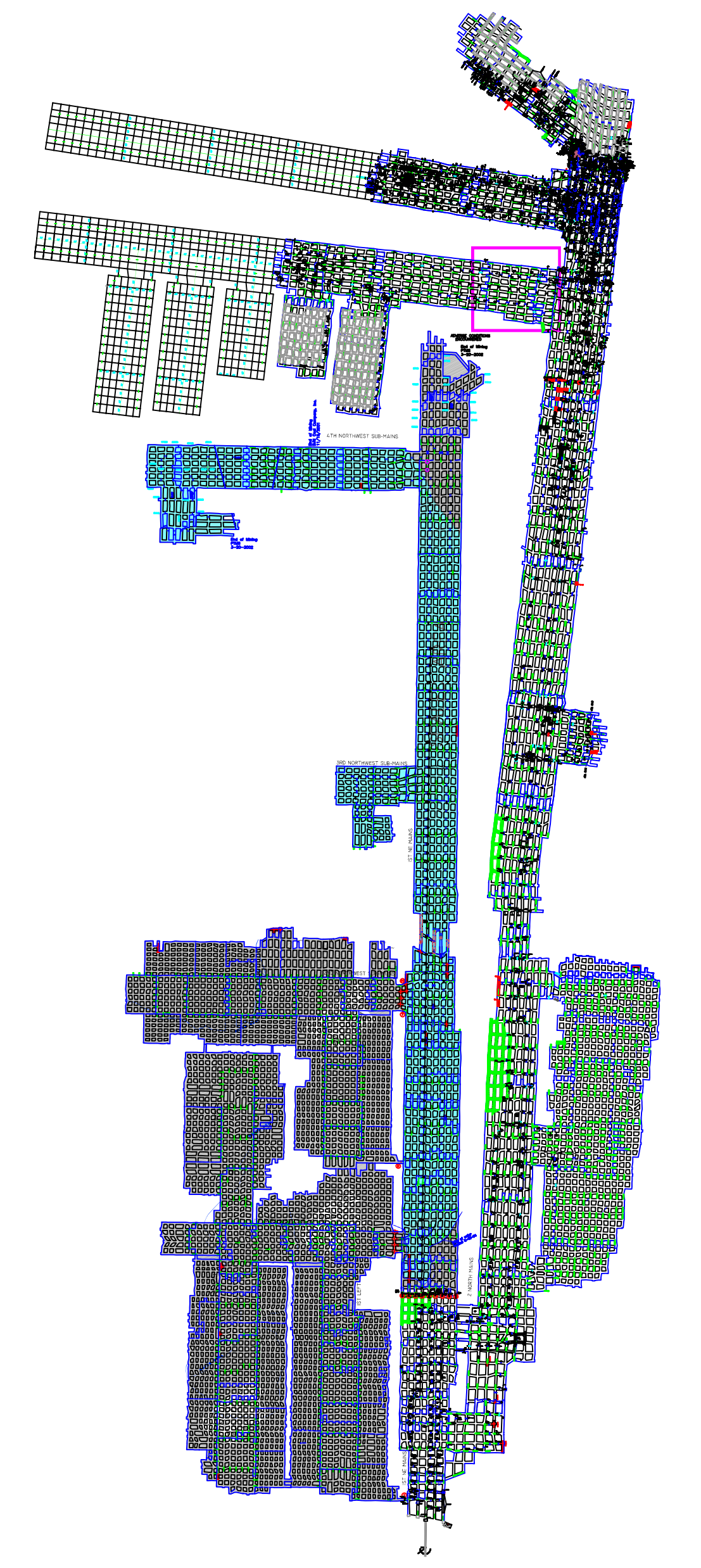
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MAP FOLIO Map 18 of 29

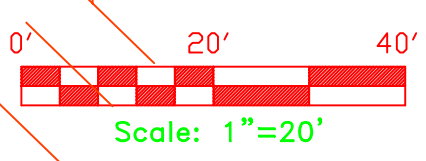
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LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN X
- FALL X
- CRIBS X
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK +
- OMEGA BLOCK ~
- PARTIAL OMEGA BLOCK ~
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- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT |
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



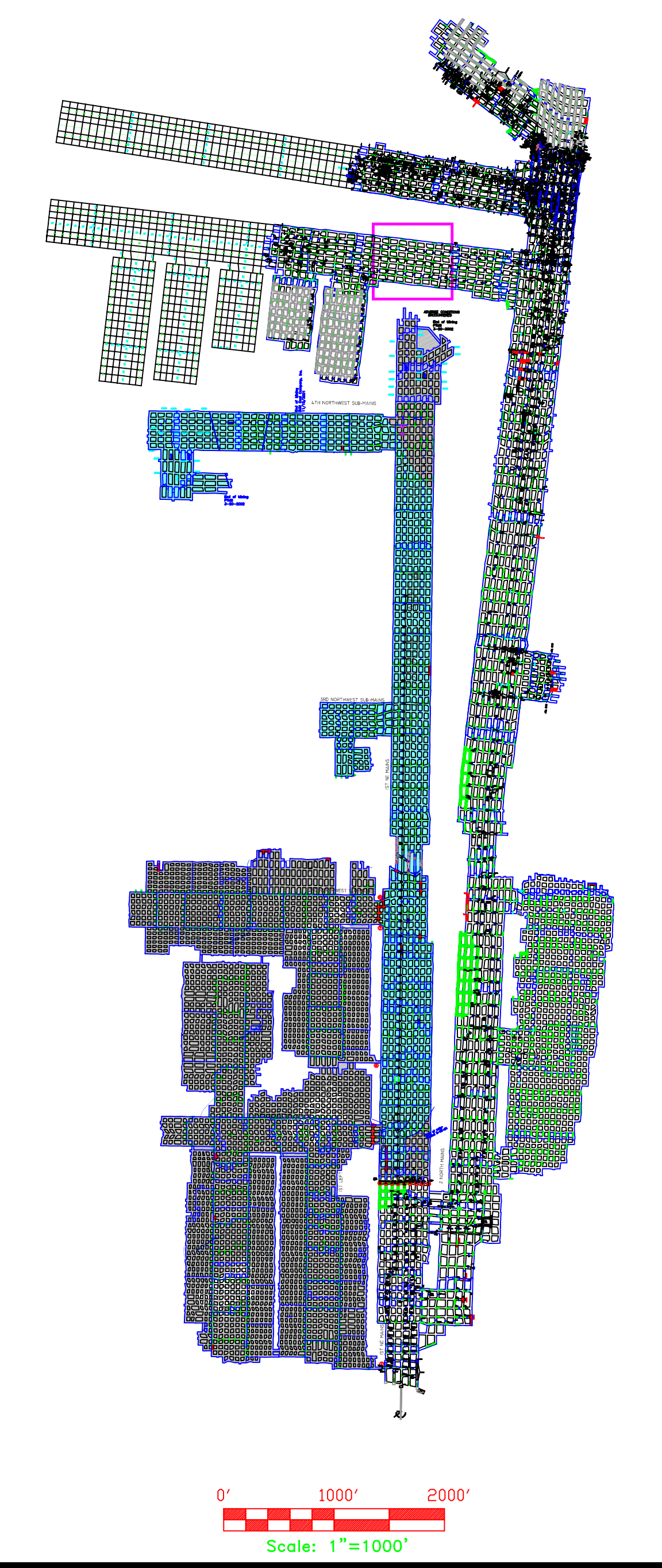
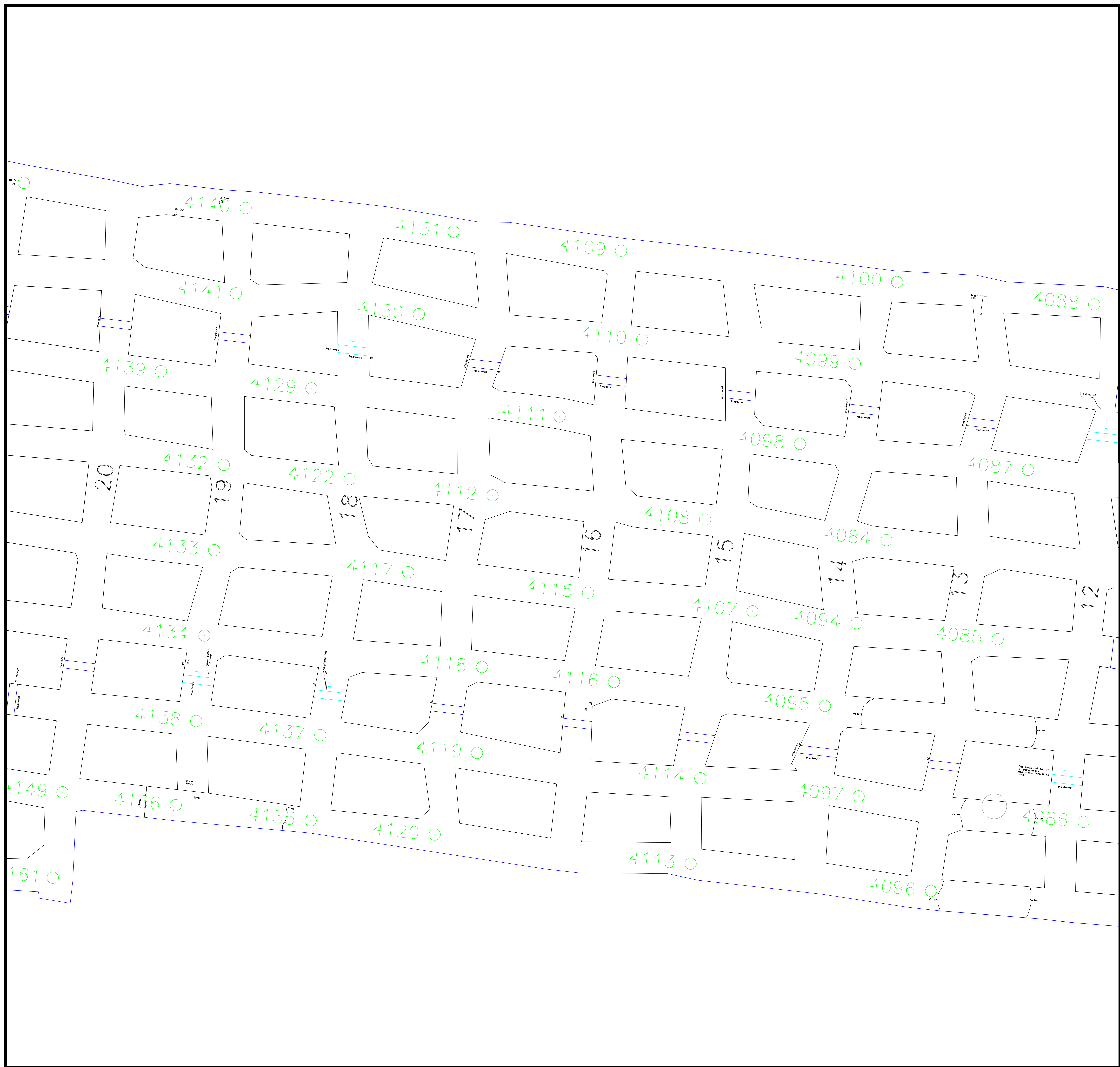
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MAP FOLIO Map 19 of 29

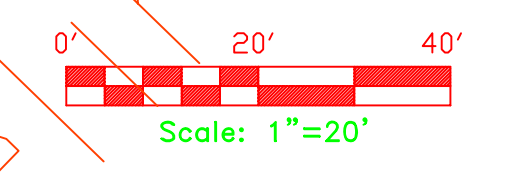
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- OVERCAST X
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- CRIBS □
- WATER ~
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- OMEGA BLOCK ~
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- I-BEAM I
- ELONGATED OBJECT |
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- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



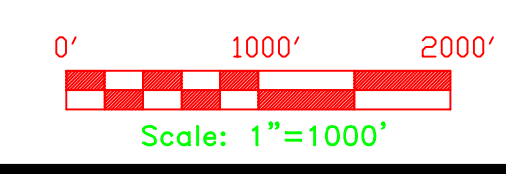
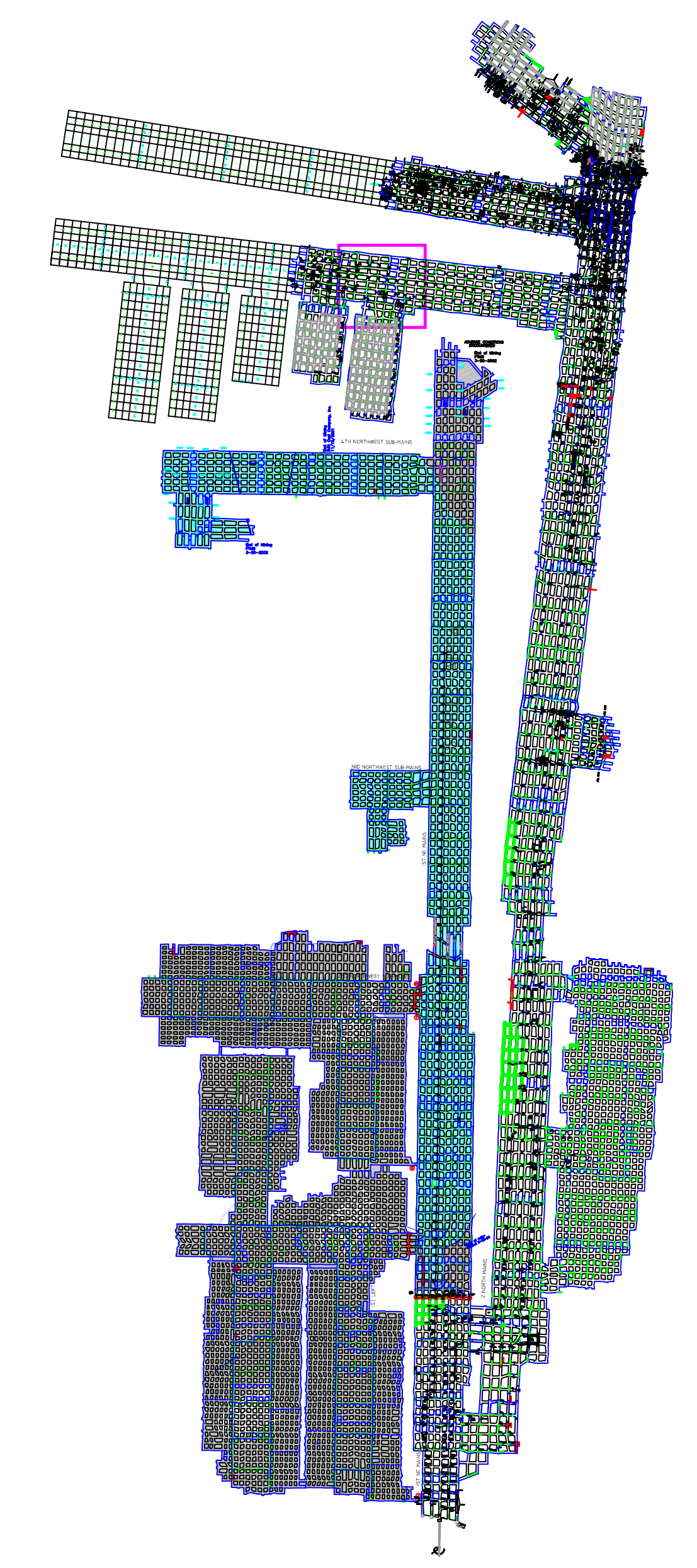
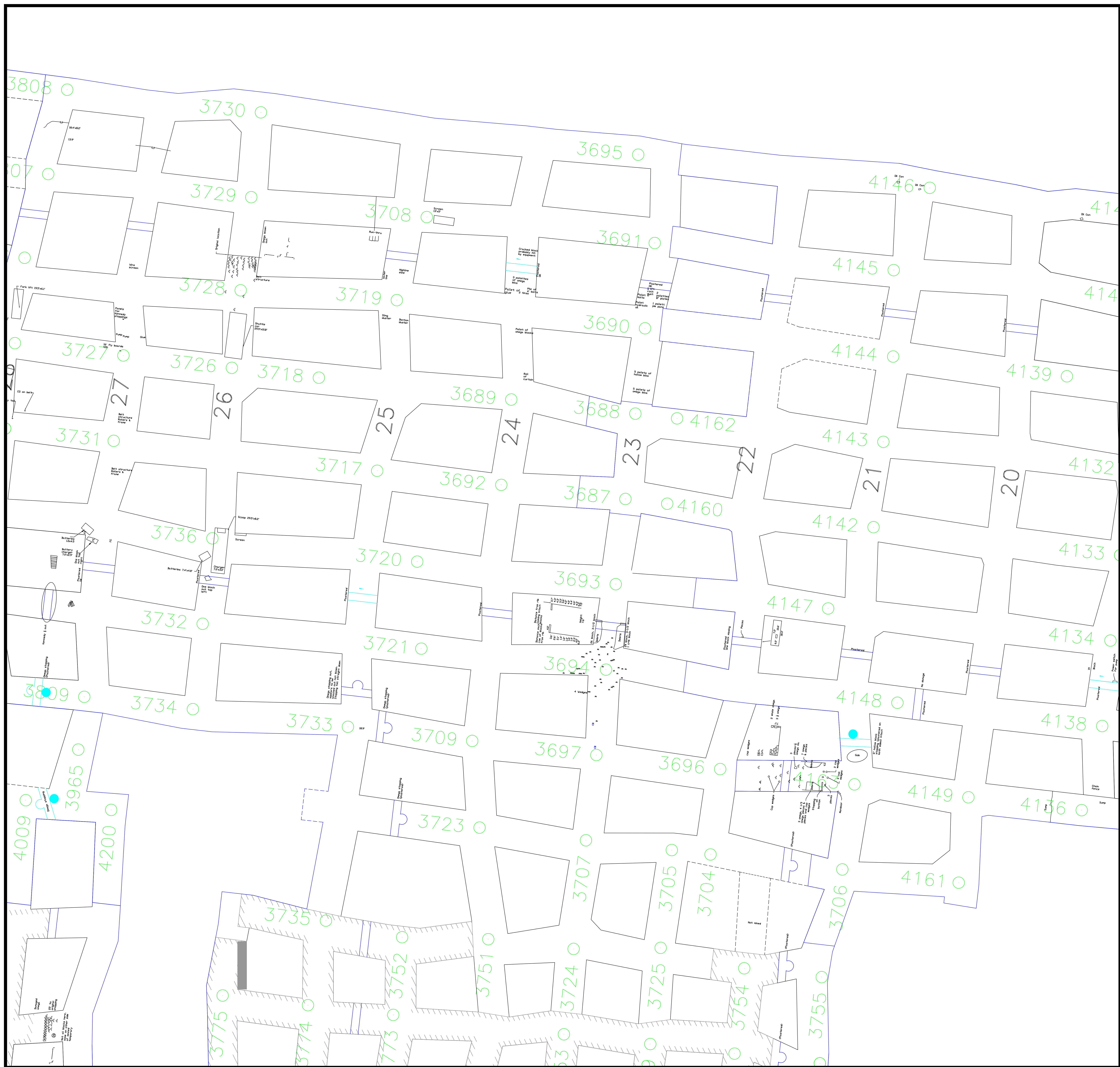
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Sago Mine  
 Middle Kittanning Seam  
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 WV STATE ID # U-2016-988  
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MAP FOLIO Map 20 of 29

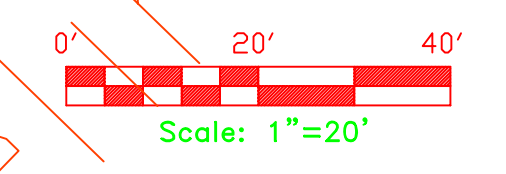
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LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |||
- OMEGA BLOCK STOPPING |+|
- OMEGA BLOCK STOPPING WITH MANDOOK |++|
- OVERCAST ⊗
- PERMANENT SEAL ⊕
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN ⊠
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- CRIBS □
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK —+—
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- PARTIAL OMEGA BLOCK ~
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER H
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT |
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



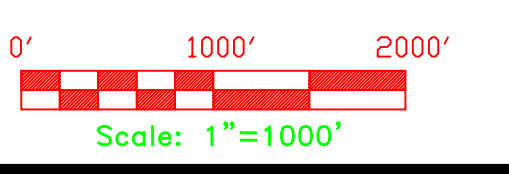
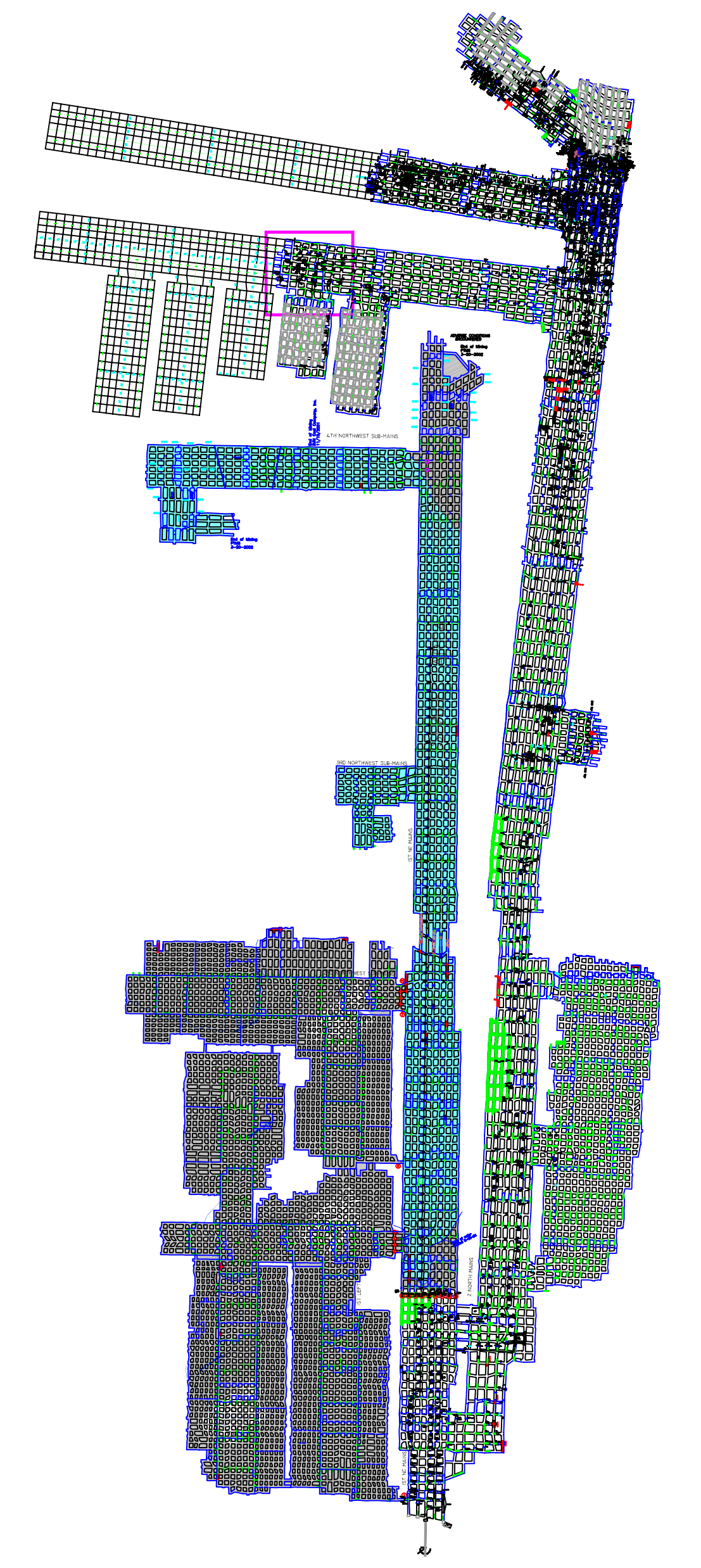
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Sago Mine  
 Middle Kittanning Seam  
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MAP FOLIO Map 21 of 29

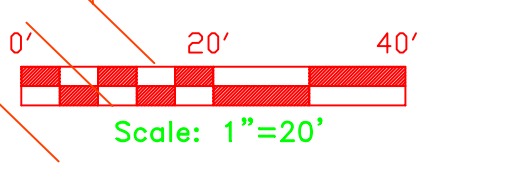
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LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN F
- FALL X
- CRIBS □
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK + + +
- OMEGA BLOCK ~
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- ELONGATED OBJECT |
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Preliminary

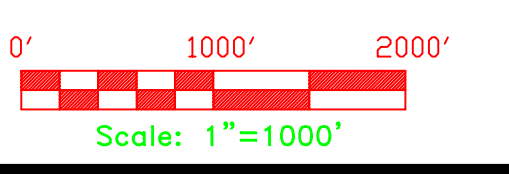
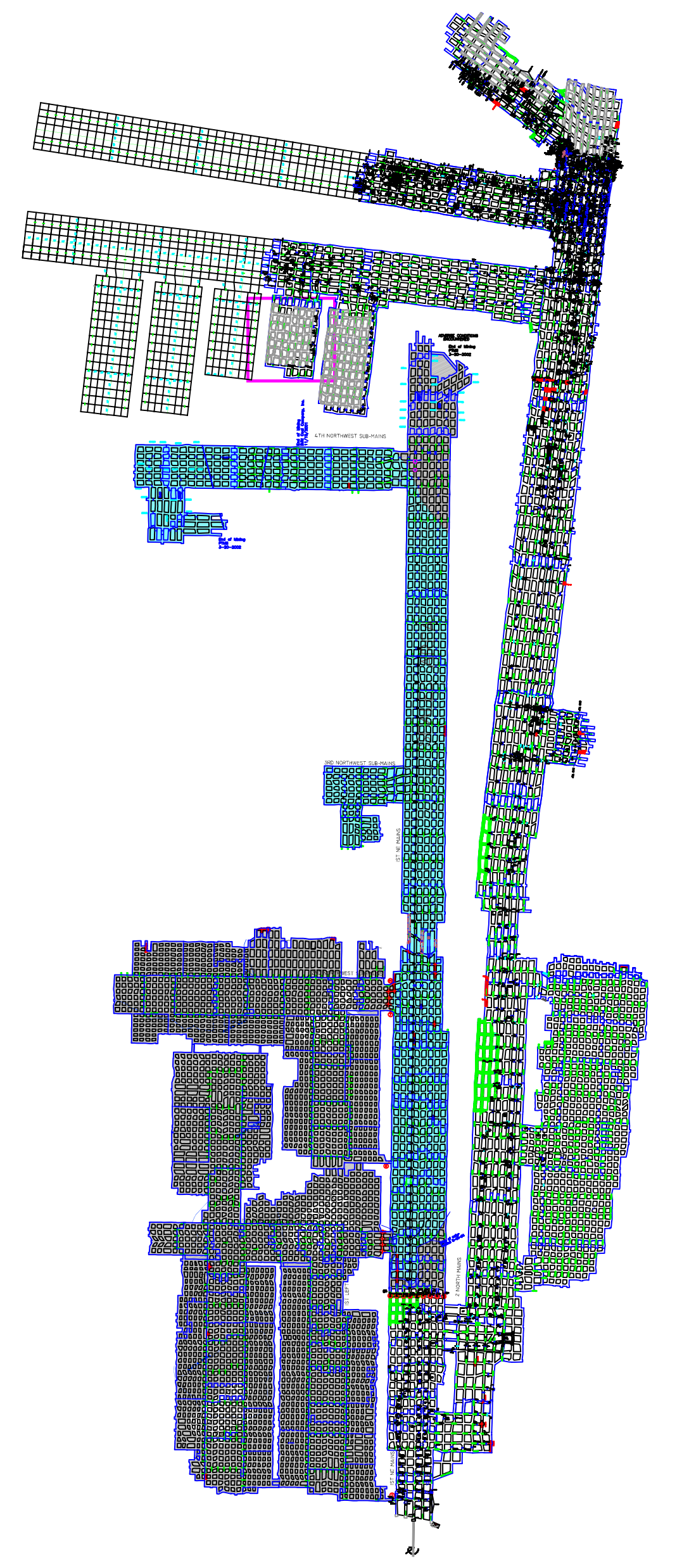
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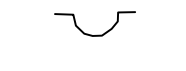
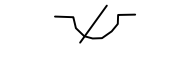




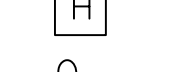


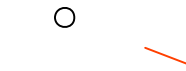




MAP FOLIO Map 22 of 29

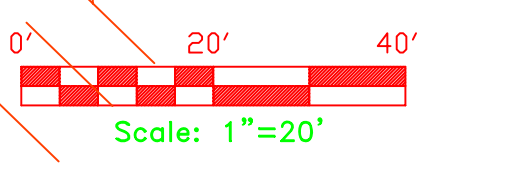
Mine Investigation  
Team Mapping

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LEGEND

- HOLLOW BLOCK STOPPING 
- HOLLOW BLOCK STOPPING WITH MANDOOK 
- OMEGA BLOCK STOPPING 
- OMEGA BLOCK STOPPING WITH MANDOOK 
- OVERCAST 
- PERMANENT SEAL 
- REGULATOR 
- AIR LOCK / DOUBLE DOORS 
- FAN 
- FALL 
- CRIBS 
- WATER 
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- OMEGA BLOCK 
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Preliminary

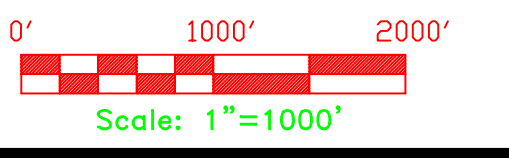
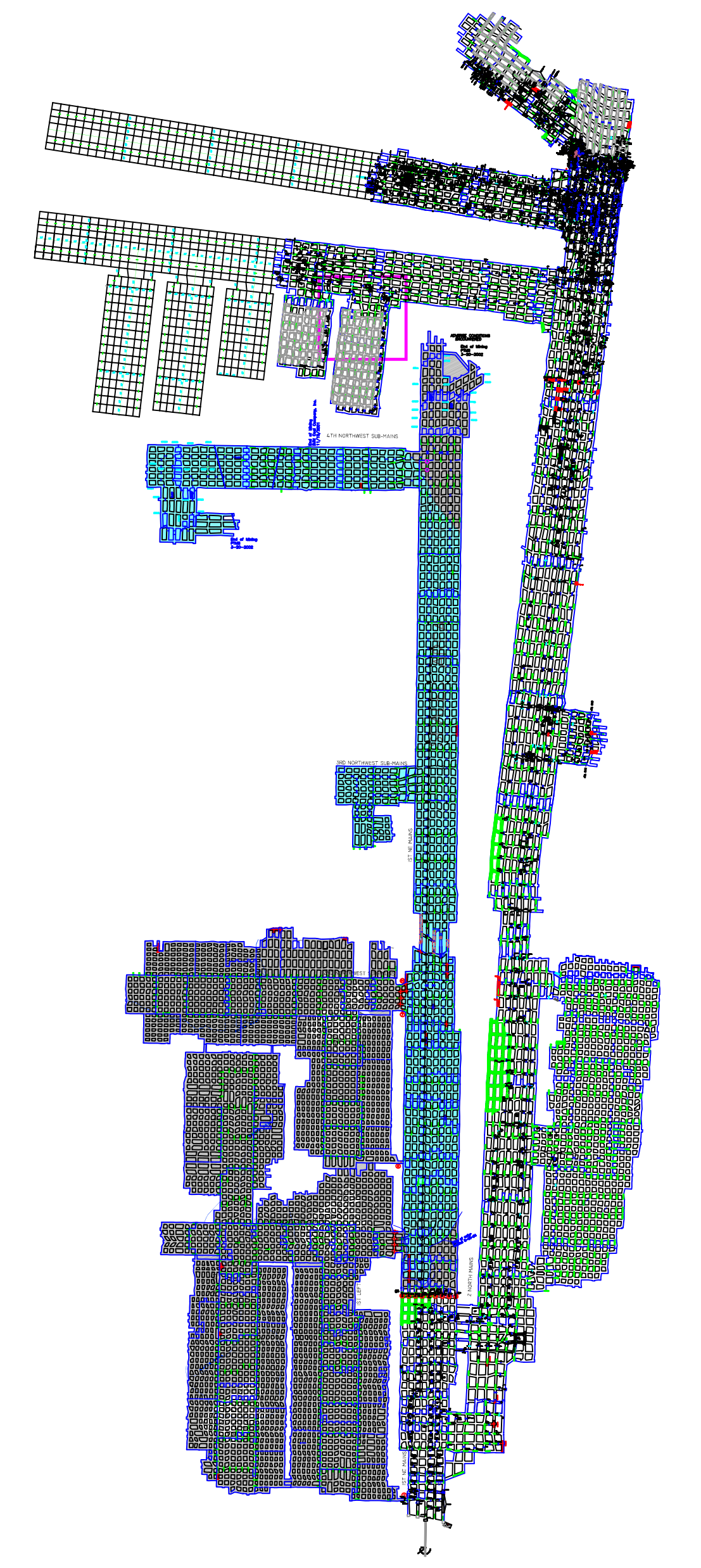
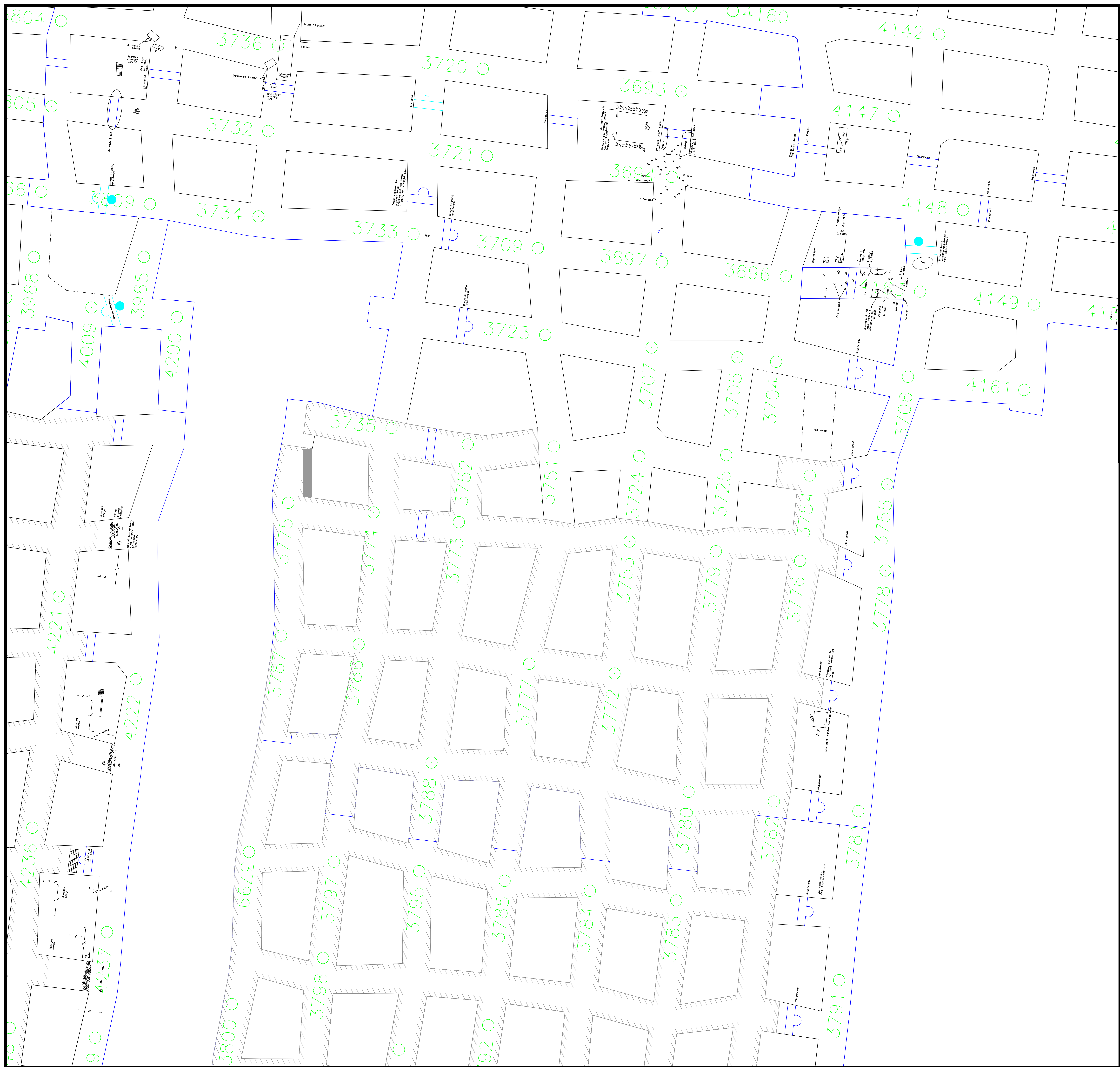
Sago Mine  
Middle Kittanning Seam  
MSHA ID # 46-08791  
WV STATE ID # U-2016-988

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MAP FOLIO Map 23 of 29

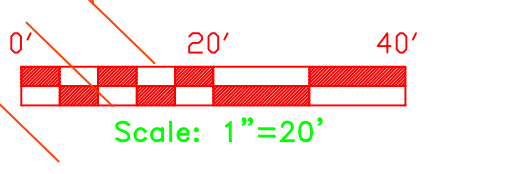
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- OMEGA BLOCK STOPPING WITH MANDOOK |+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN F
- FALL ⊗
- CRIBS □
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK + + +
- OMEGA BLOCK Ω
- PARTIAL OMEGA BLOCK Ω
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER H
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT |
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- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



Preliminary

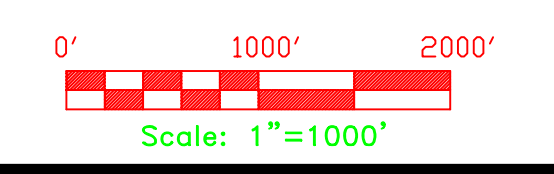
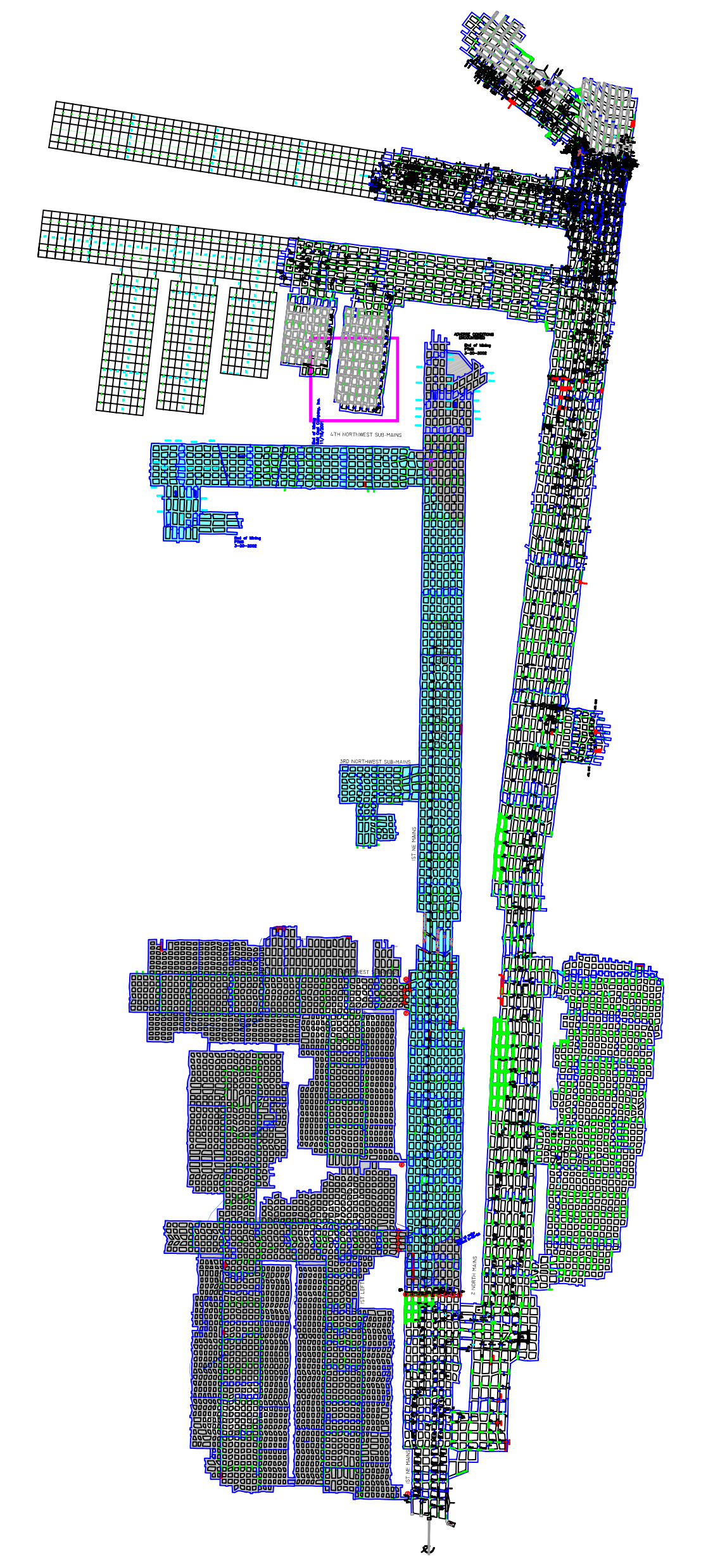
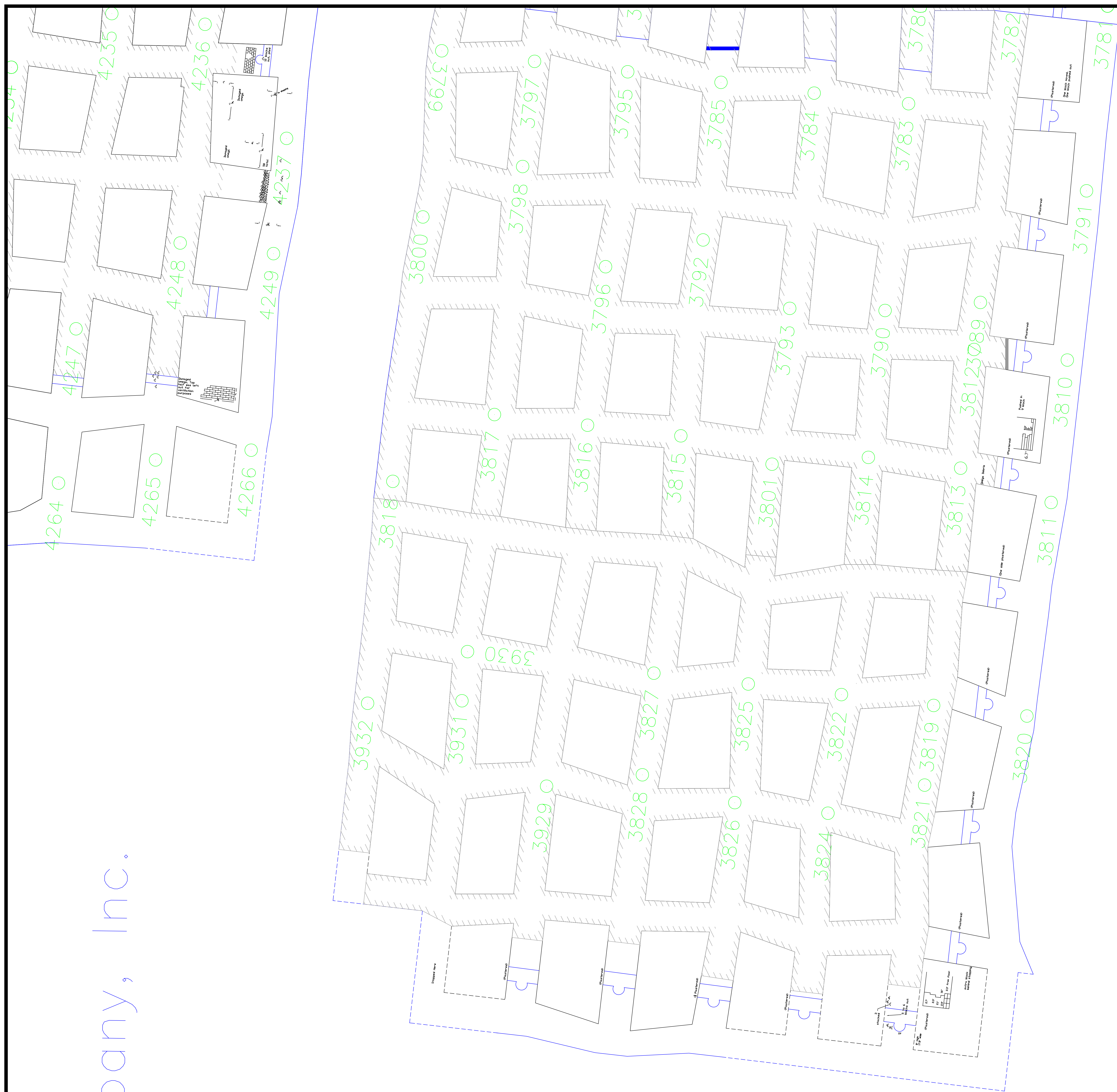
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Middle Kittanning Seam  
MSHA ID # 46-08791  
WV STATE ID # U-2016-988

Revised: 04/25/06

MAP FOLIO Map 24 of 29

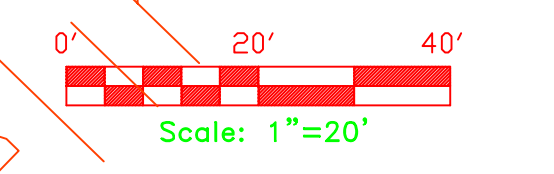
Mine Investigation  
Team Mapping

g  
company, Inc.



LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|+|+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN F
- FALL [Symbol]
- CRIBS [Symbol]
- WATER [Symbol]
- BELT TRANSFER POINT ▲
- TRACK + + + + +
- OMEGA BLOCK [Symbol]
- PARTIAL OMEGA BLOCK [Symbol]
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER [H]
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT [Symbol]
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



Preliminary

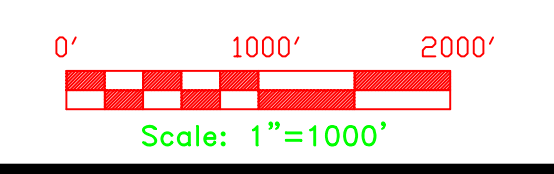
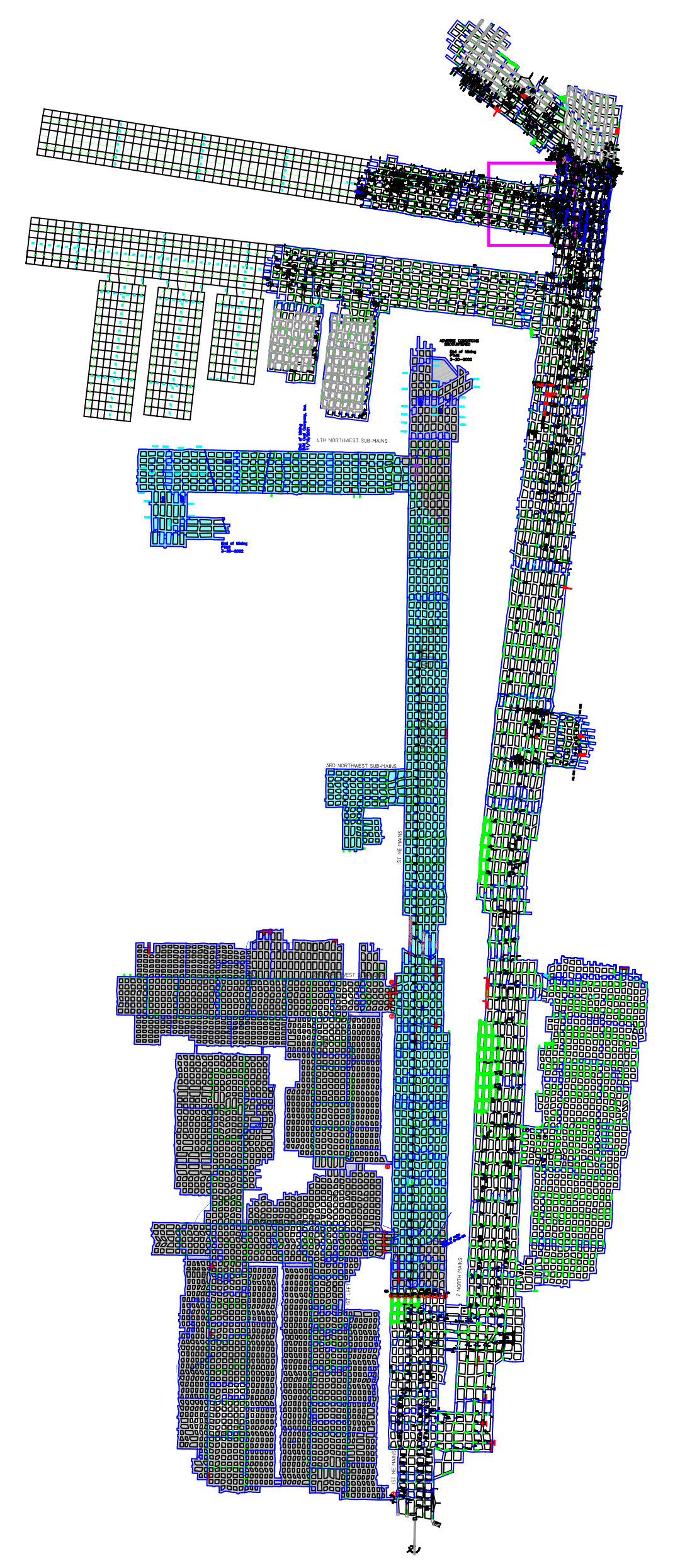
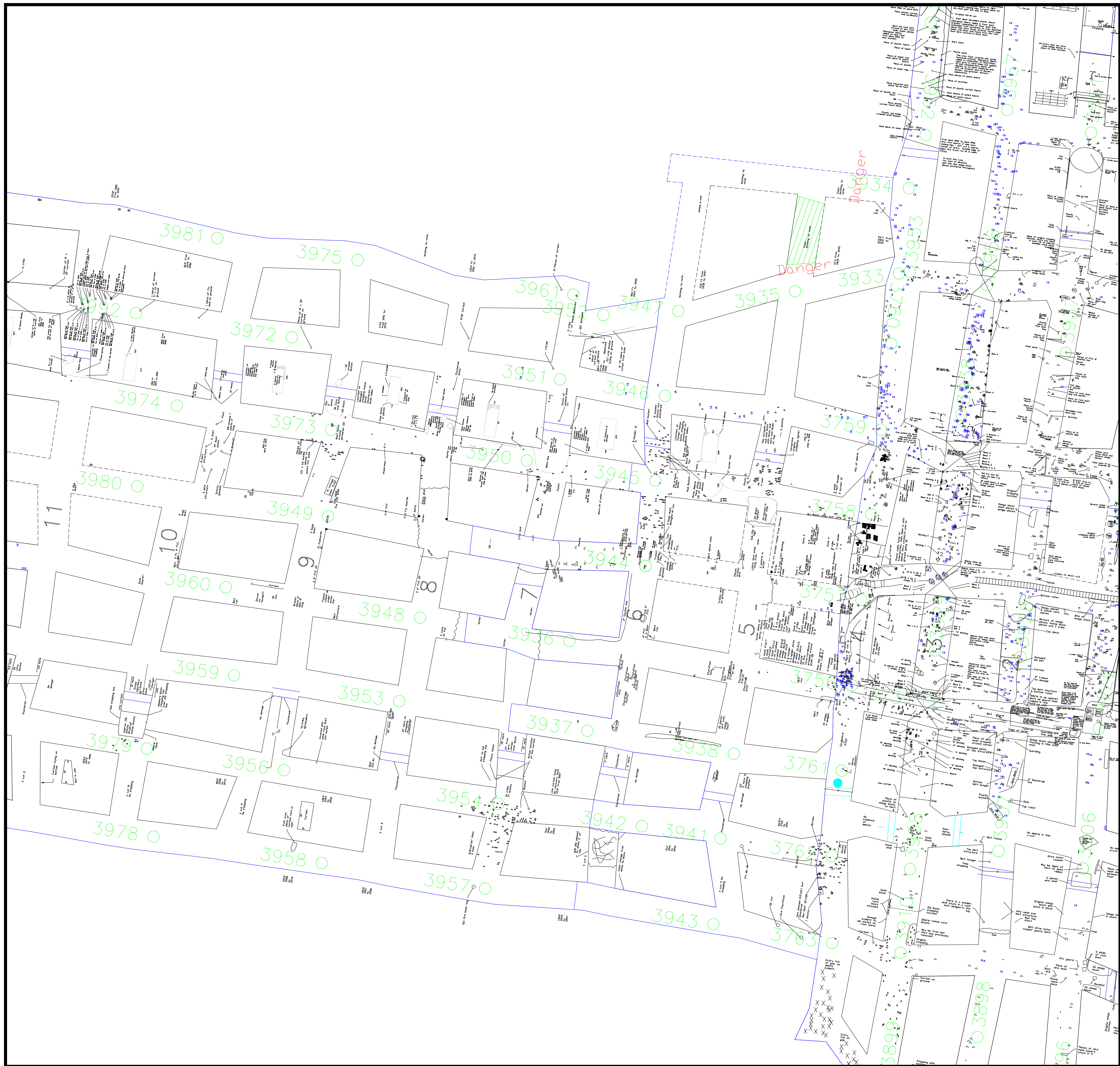
Sago Mine  
Middle Kittanning Seam  
MSHA ID # 46-08791  
WV STATE ID # U-2016-988  
Revised: 04/25/06

MAP FOLIO Map 25 of 29

Mine Investigation  
Team Mapping

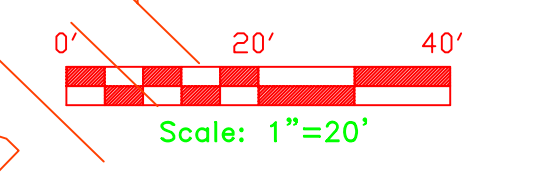
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LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN F
- FALL F
- CRIBS C
- WATER W
- BELT TRANSFER POINT B
- TRACK T
- OMEGA BLOCK O
- PARTIAL OMEGA BLOCK P
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER H
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT E
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K



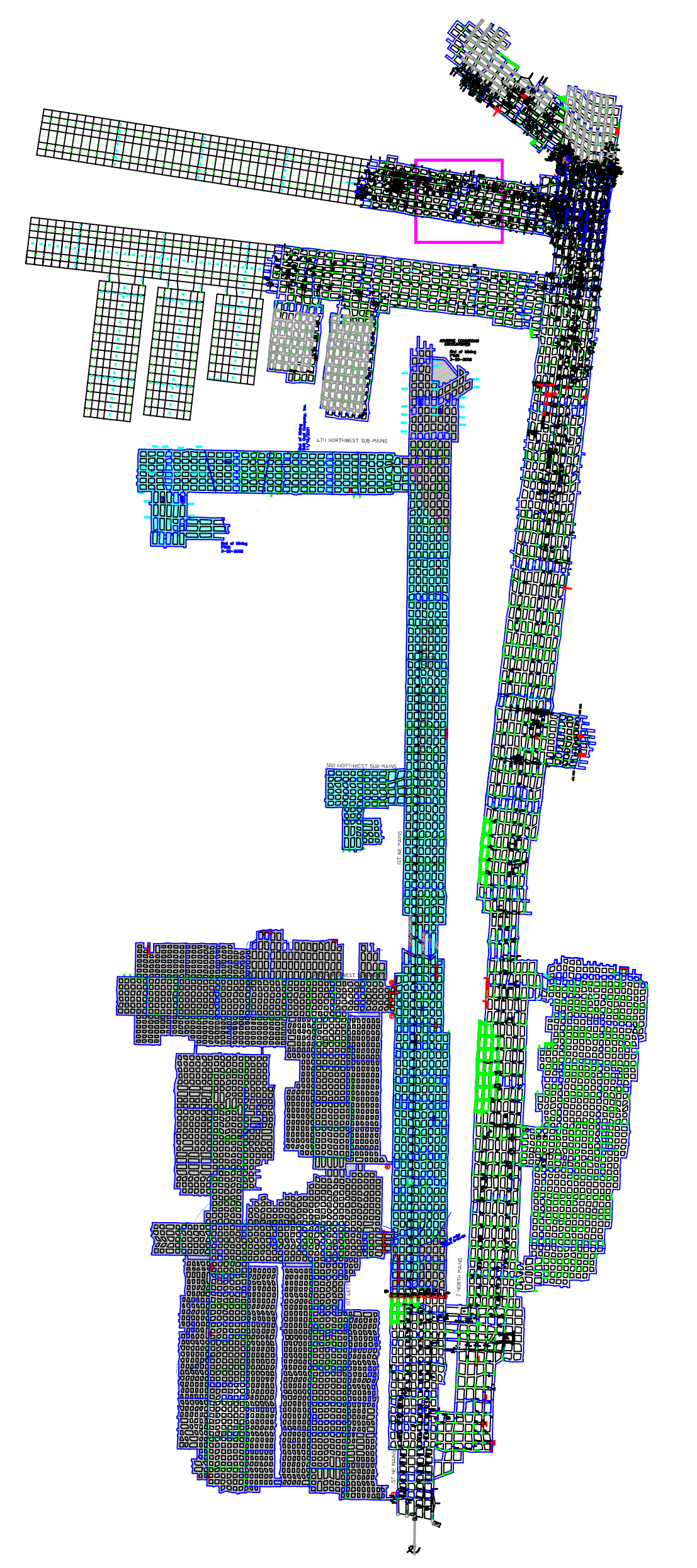
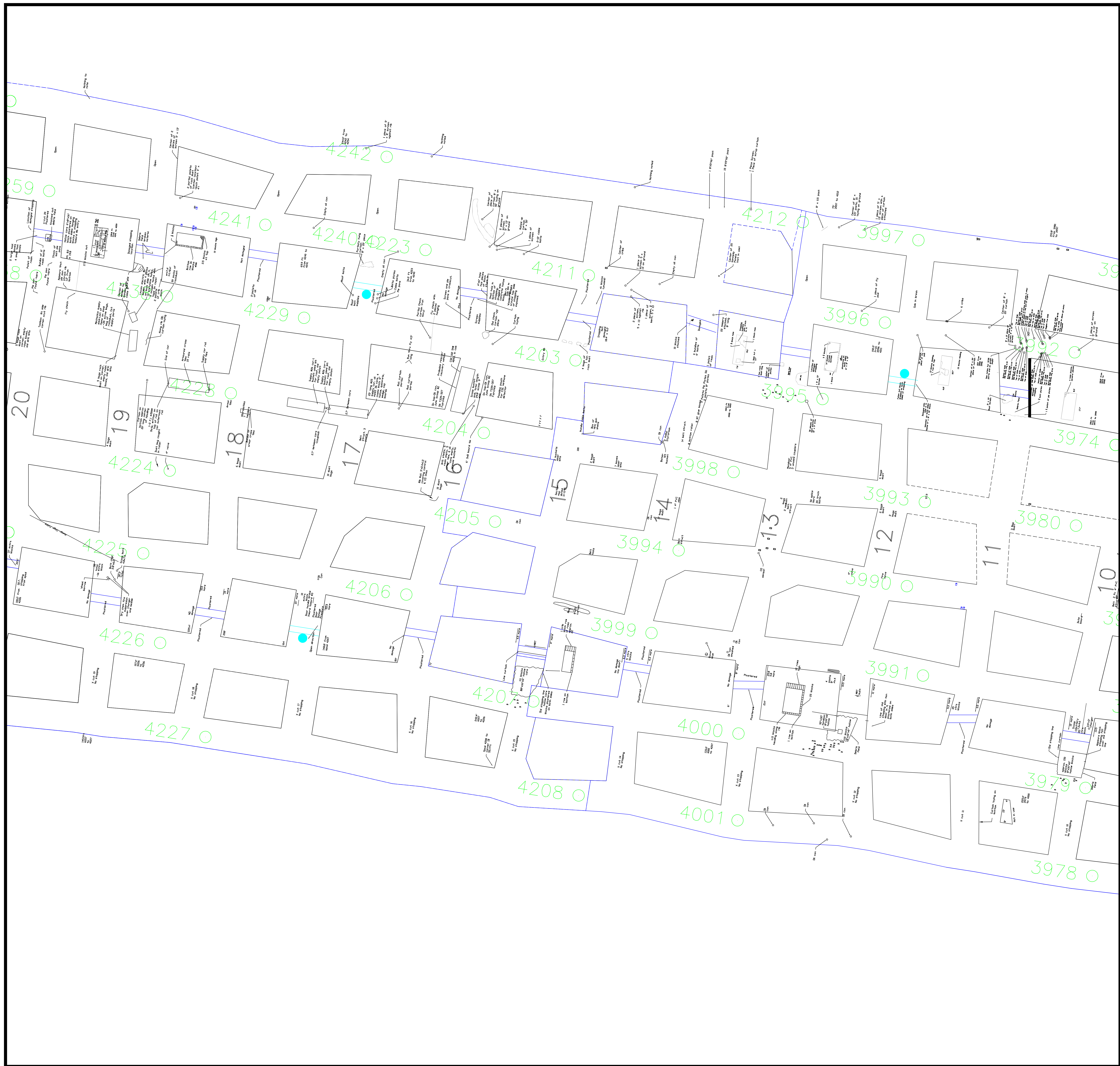
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Sago Mine  
Middle Kittanning Seam  
MSHA ID # 46-08791  
WV STATE ID # U-2016-988

Revised: 04/25/06

MAP FOLIO Map 26 of 29

Mine Investigation  
Team Mapping



0' 1000' 2000'  
Scale: 1"=1000'

LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|
- OVERCAST X
- PERMANENT SEAL +
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN F
- FALL ⊘
- CRIBS □
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK + + +
- OMEGA BLOCK ~
- PARTIAL OMEGA BLOCK ~
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER H
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT |
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K

0' 20' 40'  
Scale: 1"=20'

Preliminary

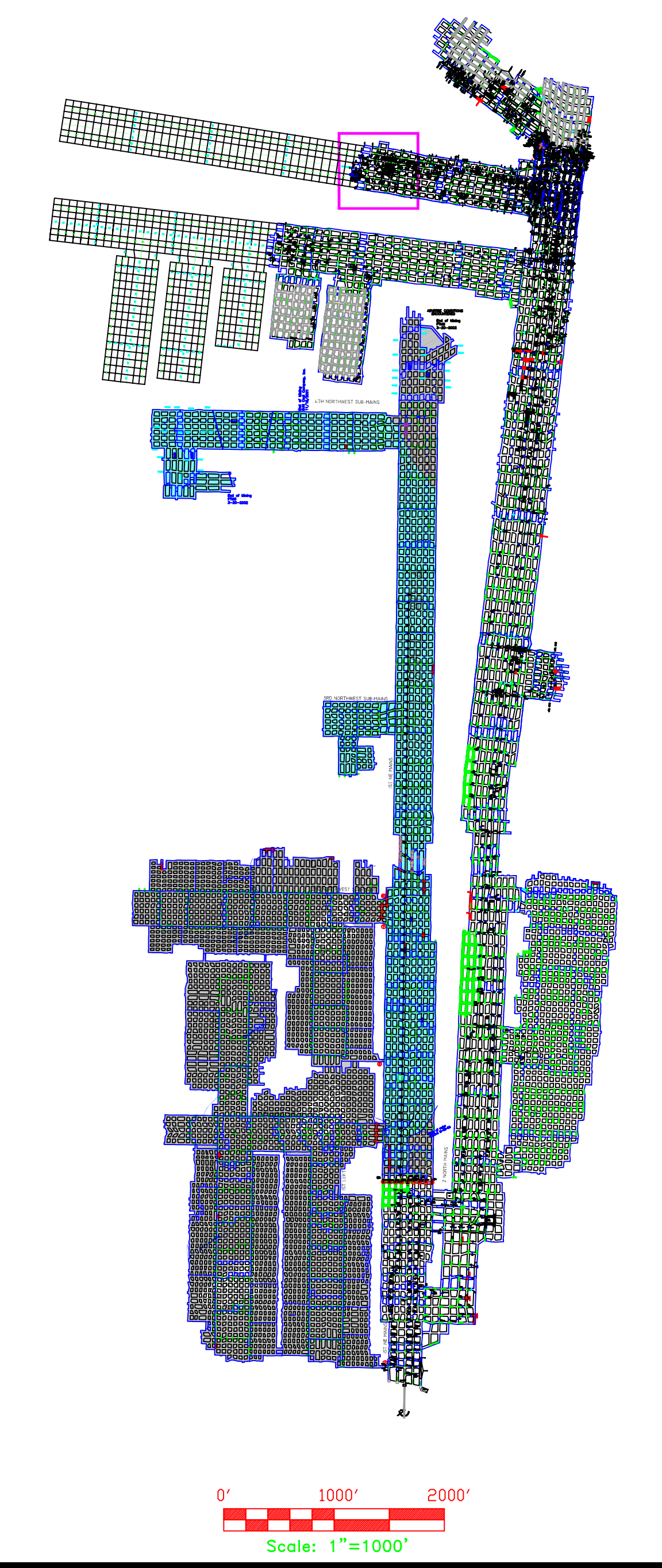
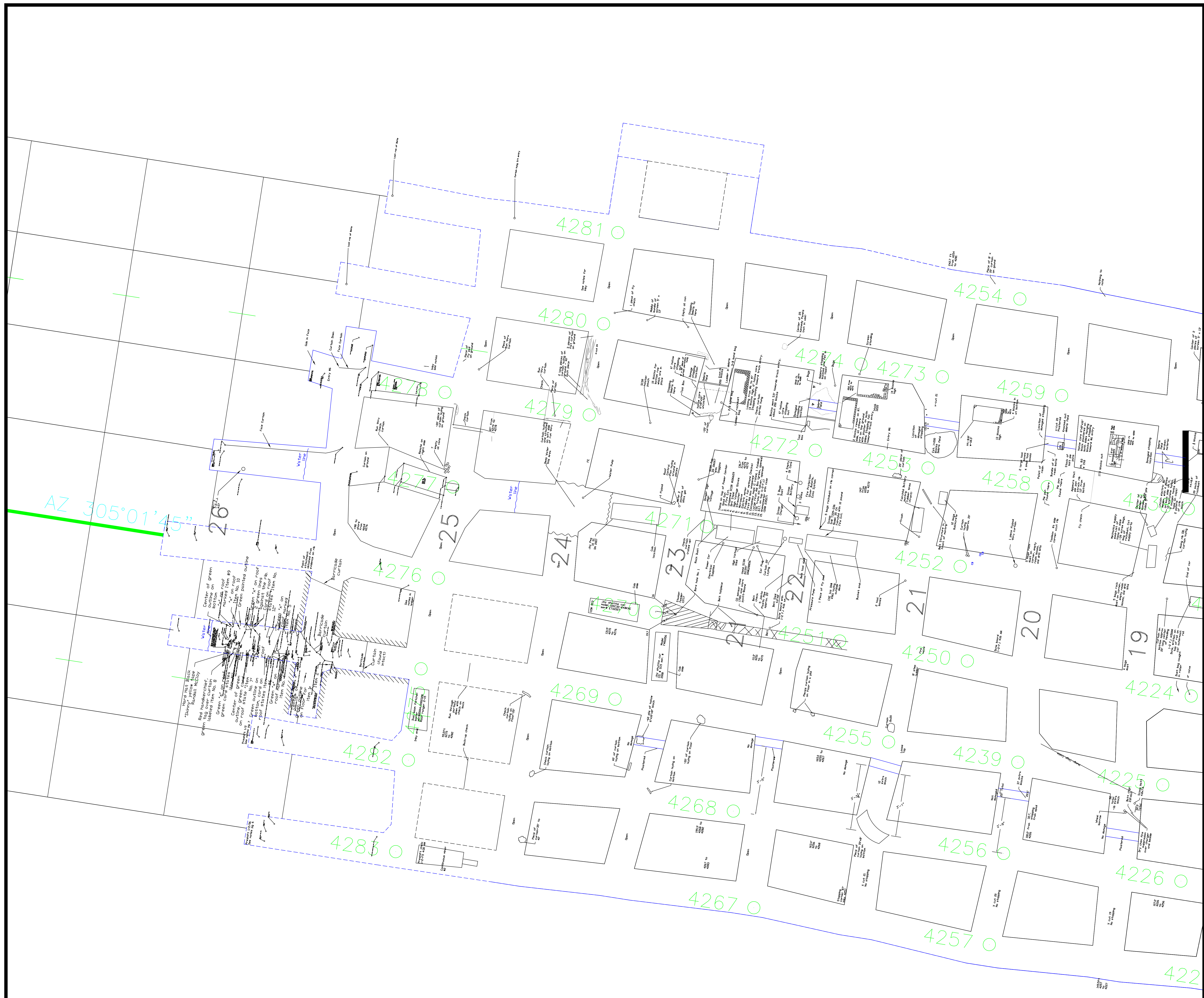
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MSHA ID # 46-08791  
WV STATE ID # U-2016-988

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MAP FOLIO Map 27 of 29

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0' 1000' 2000'  
Scale: 1"=1000'

LEGEND

- HOLLOW BLOCK STOPPING ||
- HOLLOW BLOCK STOPPING WITH MANDOOK |+|
- OMEGA BLOCK STOPPING |+|+|
- OMEGA BLOCK STOPPING WITH MANDOOK |+|+|+|
- OVERCAST ⊗
- PERMANENT SEAL ⊕
- REGULATOR R
- AIR LOCK / DOUBLE DOORS DD
- FAN ⊠
- FALL ⊙
- CRIBS □
- WATER ~
- BELT TRANSFER POINT ▲
- TRACK + + + + +
- OMEGA BLOCK ~
- PARTIAL OMEGA BLOCK ~
- BLOCK B
- HALF BLOCK b
- HALF BLOCK or HOLLOW BLOCK HB
- 1/2 HEADER H
- OVERCAST DECKING Q
- WEDGE w
- MISCELLANEOUS ITEMS o
- CRIB BLOCK CB
- I-BEAM I
- ELONGATED OBJECT |
- FLYBOARD F
- PIE PANS P
- FIRE EXTINGUISHER FE
- KENNEDY PANEL K

0' 20' 40'  
Scale: 1"=20'

Preliminary

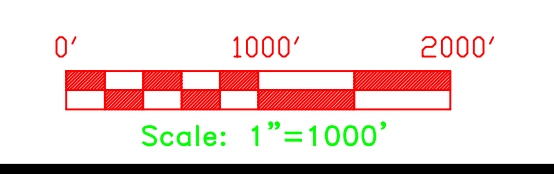
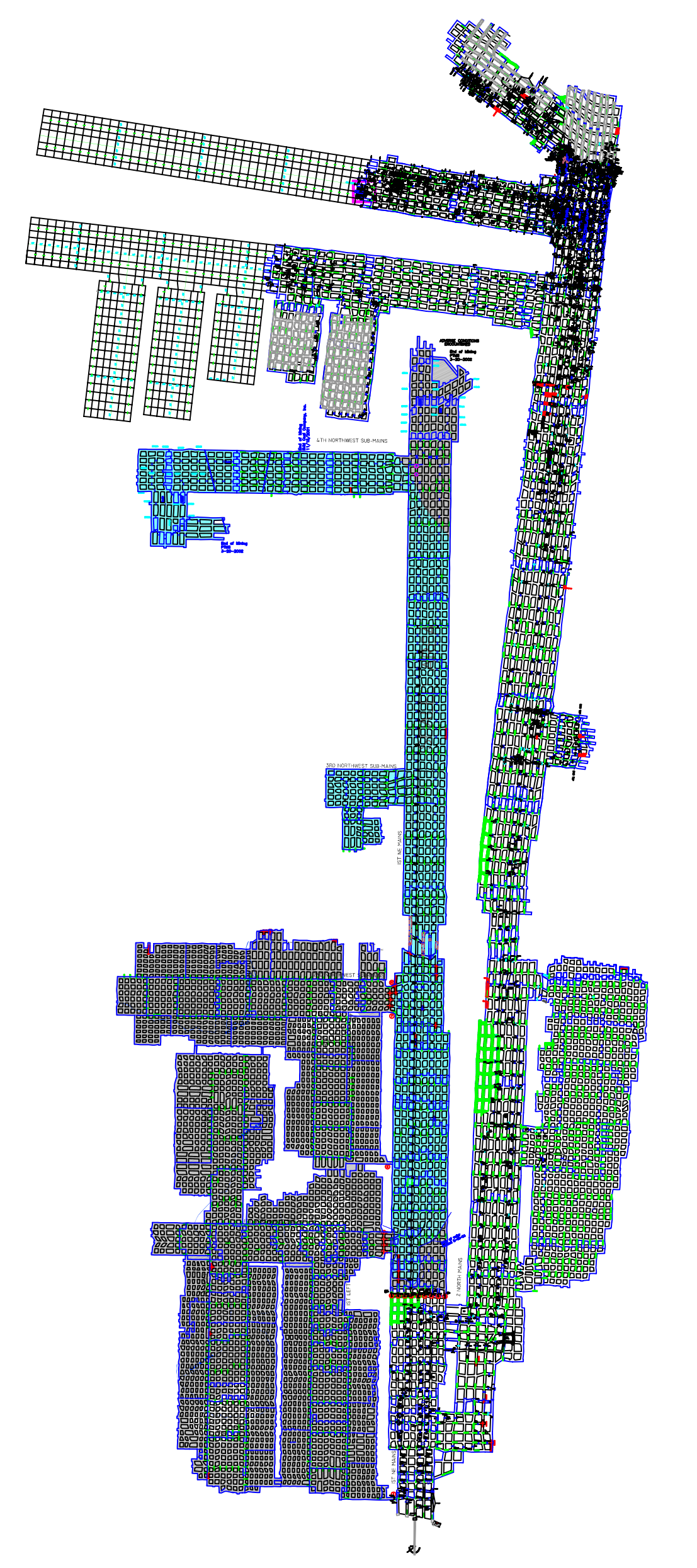
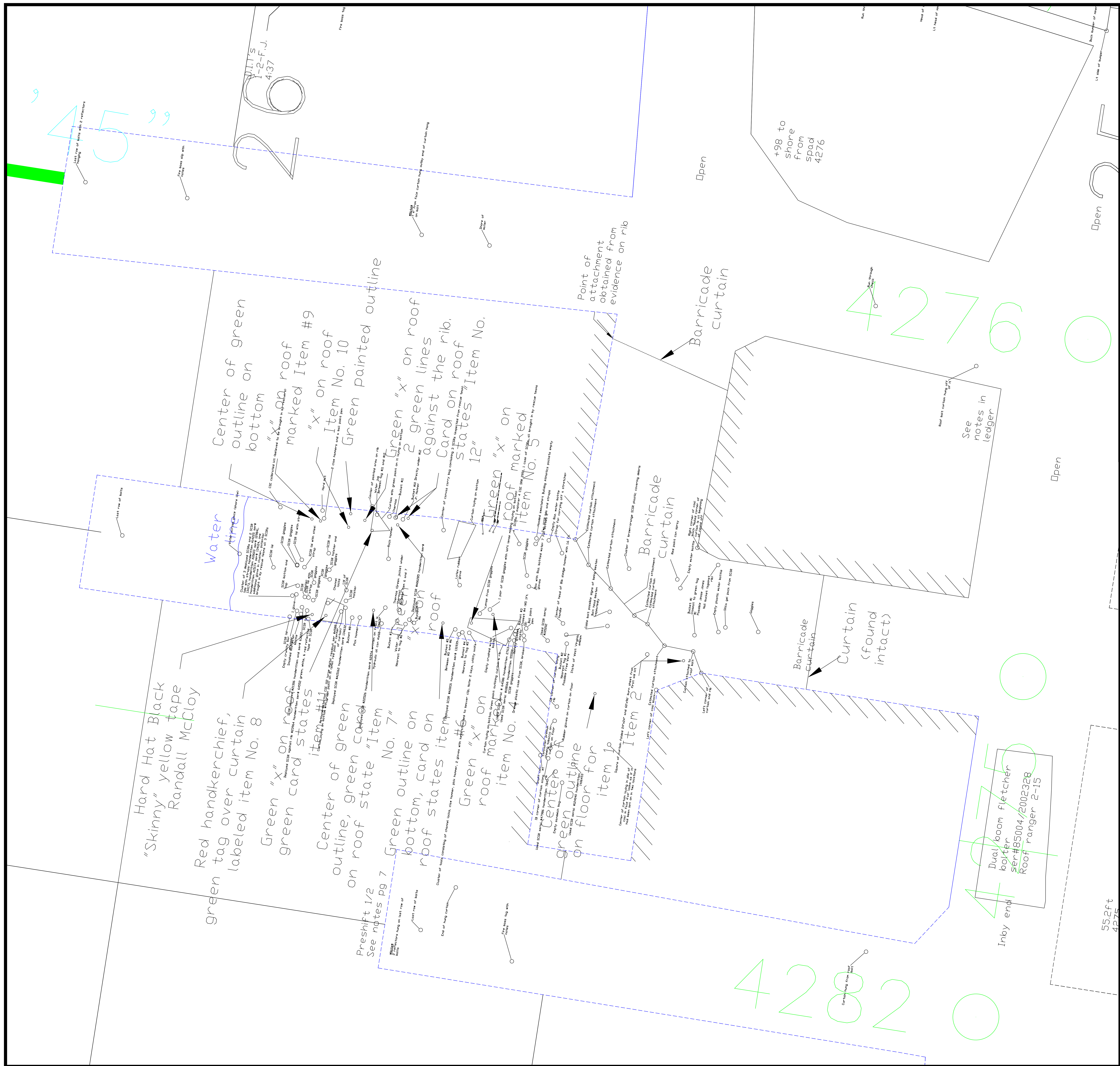
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MSHA ID # 46-08791  
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Revised: 04/25/06

MAP FOLIO Map 28 of 29

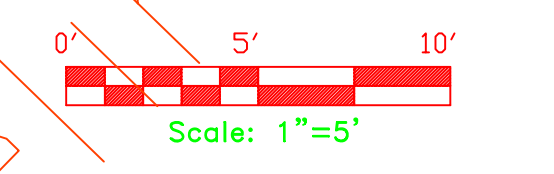
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LEGEND

HOLLOW BLOCK STOPPING	
HOLLOW BLOCK STOPPING WITH MANDOOK	
OMEGA BLOCK STOPPING	
OMEGA BLOCK STOPPING WITH MANDOOK	
OVERCAST	⊗
PERMANENT SEAL	⊕
REGULATOR	R
AIR LOCK / DOUBLE DOORS	DD
FAN	⊗
FALL	⊗
CRIBS	⊗
WATER	~
BELT TRANSFER POINT	▲
TRACK	+
OMEGA BLOCK	Ω
PARTIAL OMEGA BLOCK	Ω
BLOCK	B
HALF BLOCK	b
HALF BLOCK or HOLLOW BLOCK	HB
1/2 HEADER	H
OVERCAST DECKING	Q
WEDGE	w
MISCELLANEOUS ITEMS	o
CRIB BLOCK	CB
I-BEAM	I
ELONGATED OBJECT	—
FLYBOARD	F
PIE PANS	P
FIRE EXTINGUISHER	FE
KENNEDY PANEL	K



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WV STATE ID # U-2016-988

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MAP FOLIO Map 29 of 29

Mine Investigation  
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