

Capsule Summary

CE-1509

Principio Iron Works 1837 Charcoal Iron Furnace

Principio

Private

Circa 1836-37

The Principio Company was established in 1720. Beginning in 1725, intensive ironmaking activity started at the site and continued until the American Revolution. After the war, Samuel Hughes operated a cannon factory on the site, and, in 1836, the property passed to Joseph and George Price Whitaker, who made a series of capital improvements to it. Today the property reflects the Whitaker era of ownership.

The charcoal iron furnace consists of a truncated pyramid stone furnace stack with four arches. As originally built, the furnace only operated with one casting arch and one tuyere arch, but two tuyere arches were added during the elate 1860s renovations. During these renovations, a brick and stone tunnel head was added to the furnace top to raise its overall height. The 1837 furnace is the last above ground vestige of pig iron production at Principio and indeed is the last standing furnace in the Cecil, Baltimore, Harford, and Howard county region. Also on the site is a hot blast stove dating to circa 1867 and a turbine, gearing, and horizontal blowing engine dating to the same period.

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA

Geographic Organization:

Eastern Shore

Chronological/Development Period (s):

Agricultural-Industrial Transition: 1781-1835

Industrial-Urban Dominance: 1870-1930

Prehistoric/Historic Period Theme (s):

Economic

Resource Type:

Category: Structure

Historic Environment: Village

Historic Functions (s) and Use (s):

1837 Charcoal Iron Furnace

Known Design Source:

Maryland Historical Trust
State Historic Sites Inventory Form

MARYLAND INVENTORY OF
HISTORIC PROPERTIES

Survey No. CE-1509

Magi No.

DOE yes no

1. Name (indicate preferred name)

historic Principio Iron Works - 1837 Charcoal Iron Furnace

and/or common Principio Furnace

2. Location

street & number Maryland Route 7 and Principio Creek Bridge not for publication

city, town Principio Furnace vicinity of congressional district

state Maryland county Cecil

3. Classification

| Category | Ownership | Status | Present Use |
|---|---|--|---|
| <input type="checkbox"/> district | <input type="checkbox"/> public | <input type="checkbox"/> occupied | <input type="checkbox"/> agriculture <input type="checkbox"/> museum |
| <input type="checkbox"/> building(s) | <input checked="" type="checkbox"/> private | <input checked="" type="checkbox"/> unoccupied | <input type="checkbox"/> commercial <input type="checkbox"/> park |
| <input checked="" type="checkbox"/> structure | <input type="checkbox"/> both | <input type="checkbox"/> work in progress | <input type="checkbox"/> educational <input type="checkbox"/> private residence |
| <input type="checkbox"/> site | Public Acquisition | Accessible | <input type="checkbox"/> entertainment <input type="checkbox"/> religious |
| <input type="checkbox"/> object | <input type="checkbox"/> in process | <input type="checkbox"/> yes: restricted | <input type="checkbox"/> government <input type="checkbox"/> scientific |
| | <input type="checkbox"/> being considered | <input type="checkbox"/> yes: unrestricted | <input type="checkbox"/> industrial <input type="checkbox"/> transportation |
| | <input type="checkbox"/> not applicable | <input type="checkbox"/> no | <input type="checkbox"/> military <input checked="" type="checkbox"/> other: |

4. Owner of Property (give names and mailing addresses of all owners)

name York Building Products

street & number 1020 N. Hartley Street telephone no.:

city, town York state and zip code PA 17405

5. Location of Legal Description

courthouse, registry of deeds, etc. Cecil County Courthouse liber NDS65

street & number Main Street folio 794-98

city, town Elkton state MD

6. Representation in Existing Historical Surveys

title

date federal state county local

pository for survey records

city, town state

7. Description

Survey No. CE-1509

Condition

excellent
 good
 fair

deteriorated
 ruins
 unexposed

Check one

unaltered
 altered

Check one

original site
 moved date of move _____

Prepare both a summary paragraph and a general description of the resource and its various elements as it exists today.

SEE CONTINUATION SHEET

8. Significance

Survey No. CE-1509

| Period | Areas of Significance—Check and justify below | | | |
|---|---|---|---|--|
| <input type="checkbox"/> prehistoric | <input type="checkbox"/> archeology-prehistoric | <input type="checkbox"/> community planning | <input type="checkbox"/> landscape architecture | <input type="checkbox"/> religion |
| <input type="checkbox"/> 1400-1499 | <input type="checkbox"/> archeology-historic | <input type="checkbox"/> conservation | <input type="checkbox"/> law | <input type="checkbox"/> science |
| <input type="checkbox"/> 1500-1599 | <input type="checkbox"/> agriculture | <input type="checkbox"/> economics | <input type="checkbox"/> literature | <input type="checkbox"/> sculpture |
| <input type="checkbox"/> 1600-1699 | <input type="checkbox"/> architecture | <input type="checkbox"/> education | <input type="checkbox"/> military | <input type="checkbox"/> social/ |
| <input type="checkbox"/> 1700-1799 | <input type="checkbox"/> art | <input type="checkbox"/> engineering | <input type="checkbox"/> music | <input type="checkbox"/> humanitarian |
| <input checked="" type="checkbox"/> 1800-1899 | <input type="checkbox"/> commerce | <input type="checkbox"/> exploration/settlement | <input type="checkbox"/> philosophy | <input type="checkbox"/> theater |
| <input type="checkbox"/> 1900- | <input type="checkbox"/> communications | <input checked="" type="checkbox"/> industry | <input type="checkbox"/> politics/government | <input type="checkbox"/> transportation |
| | | <input type="checkbox"/> invention | | <input type="checkbox"/> other (specify) |

Specific dates **Builder/Architect**

check: Applicable Criteria: A B C D
and/or
Applicable Exception: A B C D E F G
Level of Significance: national state local

Prepare both a summary paragraph of significance and a general statement of history and support.

SEE CONTINUATION SHEET

9. Major Bibliographical References

Survey No. CE-1509

- May, Earl Chapin. Principio To Wheeling. New York: Harper & Brothers, 1945.
- Robbins, Michael W. The Principio Company. New York: Garland Publishing Co., 1986.

10. Geographical Data

Acreage of nominated property 90 acres
 Quadrangle name Havre De Grace, MD Quadrangle scale 1:24000

UTM References do NOT complete UTM references

| | | | | | | | |
|---|----------------------|----------------------|----------------------|---|----------------------|----------------------|----------------------|
| A | <input type="text"/> | <input type="text"/> | <input type="text"/> | B | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | Zone | Easting | Northing | | Zone | Easting | Northing |
| C | <input type="text"/> | <input type="text"/> | <input type="text"/> | D | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| E | <input type="text"/> | <input type="text"/> | <input type="text"/> | F | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| G | <input type="text"/> | <input type="text"/> | <input type="text"/> | H | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Verbal boundary description and justification

The Principio Iron Works property is bounded by Principio Creek to the east and south, by Maryland Route 7 to the north, and by Principio Station Road to the west.

This boundary encompasses all the resources associated with the historic iron works.

List all states and counties for properties overlapping state or county boundaries

| state | code | county | code |
|-------|------|--------|------|
| state | code | county | code |

11. Form Prepared By

| | | | |
|-----------------|--|-----------|----------------|
| name/title | Lee R. Maddex, Project Coordinator Sr. | | |
| organization | Institute for the History of Technology & Industrial Archaeology | date | 4/30/98 |
| street & number | 1535 Mileground | telephone | (304) 293-3829 |
| city or town | Morgantown | state | WV 26505 |

The Maryland Historic Sites Inventory was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

The survey and inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

return to: Maryland Historical Trust
 Shaw House
 21 State Circle
 Annapolis, Maryland 21401
 (301) 269-2438

MARYLAND HISTORICAL TRUST
 DHCP/DHCD
 100 COMMUNITY PLACE
 CROWNSVILLE, MD 21032-2023
 514-7600

CE-1509

Principio Iron Works-1837 Charcoal Iron Furnace and Equipment
Cecil County

Section 7.1

The Principio Company was established in 1720. Beginning 1725, intensive ironmaking activity started at the site and continued until the American Revolution. After the war, Samuel Hughes operated a cannon factory on the site, and, in 1836, the property passed to Joseph and George Price Whitaker, who made a series of capital improvements to it. Today, the property reflects the Whitaker era of ownership. The property consists of the Second Empire-style company office building, two 1920s corn cribs, foundational remains of a circa 1836 barn, a circa 1850 tool house, a 1890s wagon barn, standing remains of a 1890s blacksmith/wheelwrights shop, a 1890 charcoal kiln, a circa 1890 wash house, foundational remains of a scale house, foundational remains of two charcoal barns, 1837 charcoal iron blast furnace with hot blast stove and waterpowered blowing engine, partial remains of a 1890 hoist house, a 1890 blower engine house, and a circa 1850 shanty.

Resource Count: four (4)

The 1837 charcoal iron furnace was built in 1836-37. It is a truncated-pyramid stone furnace stack with four arches. As originally built, the furnace only operated with one casting arch and one tuyere arch, but two tuyere arches were added during the late 1860s renovations. During these renovations, a brick and stone tunnel head was added to the furnace top to raise its overall height. Stone from the nearby Philadelphia, Wilmington and Baltimore Railroad culverts were used during the post-Civil War renovation. The 1837 furnace is the last above ground vestige of pig iron production at Principio, and indeed, is the last standing furnace in the Cecil, Baltimore, Harford, and Howard county region, a region whose iron industry was significant in the nineteenth century.

The hot blast stove was built circa 1867. The tall nearly square brick structure is built upon a rubble stone foundation which houses a combustion chamber for burning furnace gas. The hot blast stove preheated the blast air before injection into the furnace and consequently doubled the iron output of the furnace. In operation, furnace gases, conveyed from the top of the stack in a downcomer, were burned in the combustion chamber and the rising hot air heated the tandem inverted U-pipes, heating the blast air before it was injected into the furnace. Piping carried the hot blast air to the blower engine and twin draft stacks vented the spent heat from the stove into the atmosphere. The blowing engine provided this blast of air. The stove is of unknown manufacture, but was likely constructed by the Weimer Machine Company of Lebanon, Pennsylvania, or it may have been retrofitted, reused from the early renovation. The Principio hot blast stove is a very rare survivor of the American charcoal iron industry.

The turbine and gearing was built circa 1867. It is a vertical waterpowered turbine of cast and wrought iron construction. It was once enclosed in a square wooden penstock which has since deteriorated away. The vertical waterpowered turbine supplied the motive power required to operate the blowing engine. It was manufactured by Poole and Hunt of Baltimore, largest machine in Maryland at that time. Water was conveyed from the dam

above the falls, through a twenty-four inch conduit to turbine. The falling water turned the blades inside the turbine and the power generated transmitted to the blowing engine through gearing. The spent water flowed out the bottom of the turbine into a tail race. It also powered an unidentified machine, perhaps an elevator or an ore crusher. The Principio Iron Works turbine and gearing is a very rare survivor of the American charcoal iron industry.

The horizontal blowing engine was built in circa 1867. It is of all-metal riveted construction, with tandem pistons and equalizing chest and rests on a pair of cast iron bed plates. The blowing engine was used to inject the hot blast into the furnace. The turbine is geared to the eccentric crankshafts which in turn powered tandem pistons. When one piston was pushing air into the furnace the other was pulling air from the hot blast stove. The equalizing chest acted as a one-way valve, permitting air to be blown in only. The manufacturer is unknown, but may have been fabricated in Wheeling or by Poole and Hunt. The Principio Iron Works blowing engine is a very rare survivor of the American charcoal iron industry.

The 1837 charcoal iron furnace, hot blast stove, horizontal blowing engine, and turbine and gearing are significant under Criterion A for the area of industry. The furnace with its appurtenances represent the state-of-the-art ironmaking technology employed at Principio Iron Works in the production of pig iron.

Established in 1720, the Principio Company constructed the Principio Iron Works, the first blast furnace and refinery forge in the Maryland Colony. Located at the head of the Chesapeake Bay, the ironworks plantation consisted of the 1725 Principio Furnace, the 1728 Principio Forge, a store, and dwellings. The Principio Iron Works operated until the time of the American Revolution when they were abandoned. The property was confiscated by the state of Maryland in 1781, and it passed to Colonel Samuel Hughes in 1785. Hughes rebuilt the furnace and added a foundry for the production of cannon. After these works were destroyed by British raiders during the War of 1812, Hughes rebuilt the ironworks, but it bankrupted him and the property passed to his creditors in 1817. The property remained virtually idle for the next two decades when it was first acquired by David Stewart and others in 1834, who in turn sold it Joseph Whitaker II and his brother George Price Whitaker in 1836. The Whitaker brothers completely renovated the aged ironworks, erecting a new blast furnace plant and new worker housing. Importantly, the site was crossed by the recently completed Philadelphia, Wilmington and Baltimore Railroad which created a nexus enabling the ironwork's products to reach larger national markets. Following the Civil War, George Price Whitaker embarked on a second program of capital improvements which included the construction of a new dam, hot blast stove, blowing engine, and waterpowered turbine, all of which were state-of-the-art for the period. Expanding the scope of production at the site, Whitaker, in 1883-84, erected a steampowered forge for the manufacture of wrought iron blooms. The 1837 furnace could not produce enough iron to keep his forge operating continuously and Whitaker commenced a third period of capital improvements to remedy this shortfall. Completed in August 1890, Whitaker erected a cupola-style blast furnace with hot blast stoves, blower engine house, boiler house, hoist house, and a cast house, but these improvements were abandoned shortly after his death in December 1890. Control of the property then passed to Whitaker's nephew Nelson E. Whitaker, who chose to close down the furnaces and produce wrought iron blooms only. Bloom production became closely allied with the Tyler Tube and Pipe Company of Washington, Pennsylvania, owned by William P. Tyler, Nelson E. Whitaker's son-in-law. The forge continued to operate until 1925 when production ceased. The storied Principio property reverted to agricultural use.

← TO PENNAPVILLE

CE-1509

MD RT 7 (POST ROAD)

PRINCIPPIO STATION ROAD

CE-112A

CE-1499

CE-1500

CE-1501

CE-1502

CE-1503

CE-1506

CE-1504

CE-1505

CE-1507

CE-1509

CE-1508

CE-1510

CE-1511

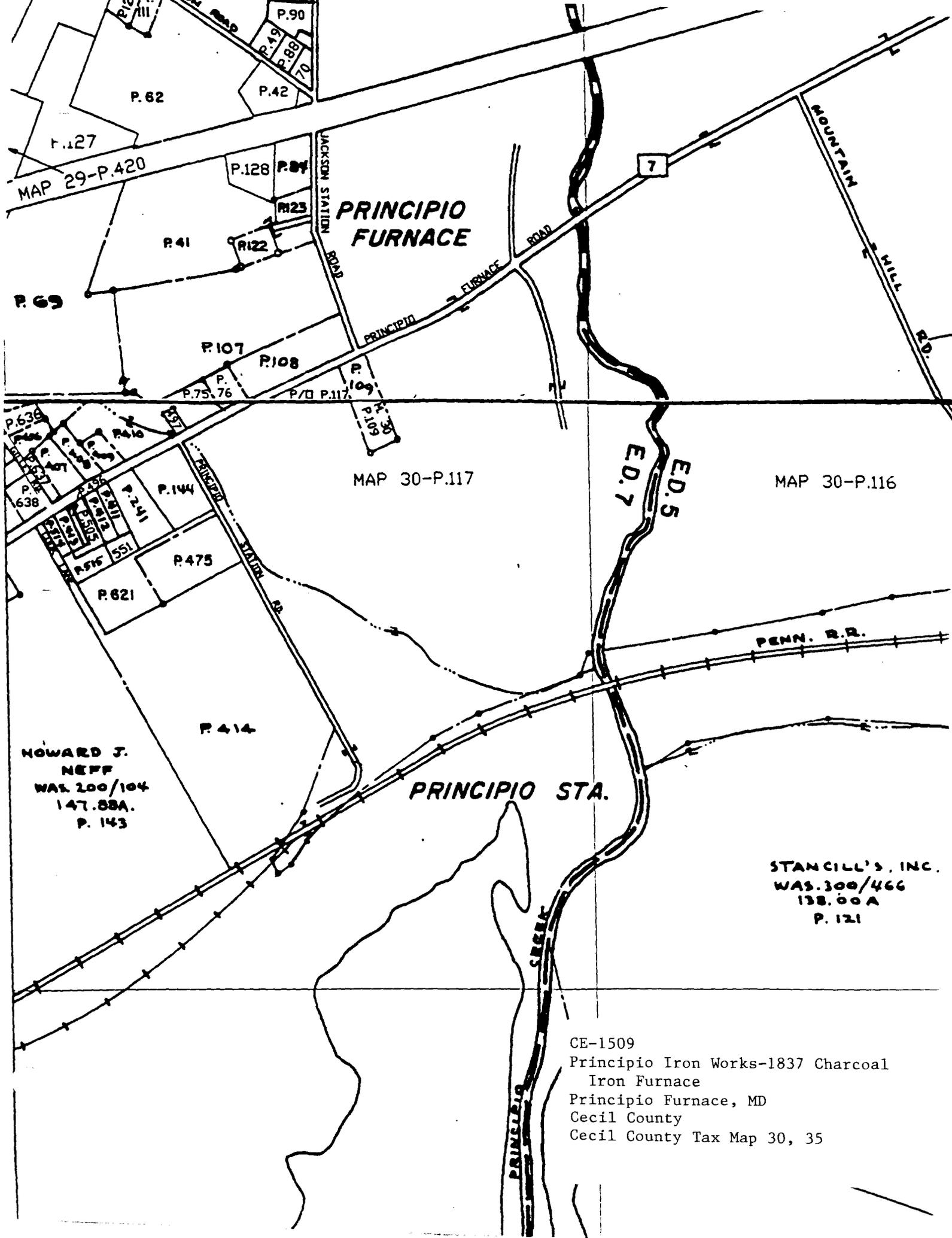
CE-1512

PRINCIPPIO CREEK



NO SCALE

Principio Inland Wetlands
RESOURCE SKETCH MAP
MAY 1998
Principio Furnace, Cecil County, Maryland



HOWARD J.
NEFF
WAS. 200/104
147.88A.
P. 143

PRINCIPIO STA.

STANCILL'S, INC.
WAS. 300/466
138.00A
P. 121

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Principio Iron Works-1837 Charcoal
Iron Furnace
Principio Furnace, MD
Cecil County
Cecil County Tax Map 30, 35



CE-1509

1837 CHARCOAL IRON FURNACE

PRINCIPAL IRON WORKS

CECIL COUNTY, MARYLAND

LEE R. MADDEX

MARCH 1998

MARYLAND SHPD

VIEW OF FURNACE WITH HOT BLAST STOVE, LOOKING SOUTH

~~12116~~ 1 of 2



CE-1509

1837 CHARCOAL IRON FURNACE

PRINCIPAL IRON WORKS

CECIL COUNTY, MARYLAND

LEE R. MADDOX

MARCH 1998 MARYLAND SHPD

VIEW OF HORIZONTAL BLOWING ENGINE (LEFT), TURBINE & GENERATOR (RIGHT),
AND 24" CONDUIT (TOP); LOOKING SOUTHWEST

~~13116~~ 2 of 2