APPENDIX R-3

Phase II Archaeological Addendum Survey, Site D, Tracker Archaeology Services

October 2020



Phase II Archaeological Investigations at Indian Hills Prehistoric Site D for proposed Additional Improvements at the Indian Hills Golf Course Fort Salonga, Township of Huntington, Suffolk County, New York

October 2020

Prepared for: The Northwind Group, Haupaugue, New York

Alfred G. Cammisa, RPA with Alexander Padilla (CAD)

MANAGEMENT SUMMARY

PR#:

17PR00525

Involved agencies:

Town of Huntington

Phase:

Phase II Addendum for additional development areas in 2020 at Site D

Location:

Fort Salonga Town of Huntington Suffolk County

Site Areas:

Site D: maximum site size about 1200 feet (365m) N-S by 225 (68m) E-W

Site D nucleus about 550 ft. (167) N-S by 80 ft. (24m) E-W

Located on an active portion of the golf course within graded soils near Fresh Meadow Road and paved cart paths, tees, green, & fairway

USGS:

Northport, NY

Survey overview:

ST no. & interval: 73 at 25 foot intervals

TU # & size: 6 TU's, 1 m sq. Size of freshly plowed area: na Surface survey transect interval: na

Results:

Sites D is a Woodland Period occupation with 5 Levanna points, tools, & FCR but located within heavily graded soils. Not NRE recommended.

Structures:

No. Of buildings/structures/cemeteries in project area: tees, out-building, paved cart-path

No. Of buildings/structures/cemeteries adjacent to project area: green, fairway, sand trap, Fresh Meadow Road

No. Of previously determined NR listed or eligible buildings/structures/cemeteries/districts: none

No. Of identified eligible buildings/structures/cemeteries/districts: none

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Date of Report:

Report completed October, 2020

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INTRODUCTION

Between September 15 and 17, 2020, TRACKER Archaeology, Inc. conducted a Phase II intensive survey at Site D for the proposed additional improvements at the Indian Hills Golf Course in Fort Salonga, Town of Huntington, Suffolk County, New York.

Previous work on the golf course property included a Phase IA documentary study and IB archaeological survey conducted in 2015. The Phase IB encountered a small prehistoric site (10304.001236). Recommendations were made to conduct a Phase II intensive testing of the Indian Hills Site if avoidance was not an option (see Cammisa 2015). That Phase II was also conducted in 2015.

In 2018, additional Phase I investigations were conducted due to additional development plans. The 2018 Addendum Phase IB encountered isolated finds across an additional 32 acres of proposed development on the golf course. In addition, another 3 prehistoric sites, Indian Hills Site A (extended), Site B (10304.001237), & Site C (10304.001238) were encountered. Indian Hills Site A is actually adjacent to the 2015 site and considered part of the same site (10304.001236). A Phase II was conducted at Sites A (extended), Site B, and site C (Cammisa with Padilla 2018 & 2019).

A 2020 Addendum Archaeological Phase IB Survey was initiated in response to additional proposed areas of development earlier this year. Two additional areas of prehistoric activity were reported. Site B (extended) was encountered next to previously reported Site B, extending the site parameters there. This area at Site B extended is currently proposed to be filled for development and therefore no Phase II was conducted there. Also, Site D was encountered along Fresh Pond Road (Cammisa with Padilla 2020). This report documents the Phase II conducted at Site D.

The study was conducted by TRACKER Archaeology, Inc. of Monroe, New York. Field work was conducted by P.I., Alfred G. Cammisa, M.A., with crew. chief, Alfred T. Cammisa and field technicians Daniel Cartwright and Jaimie Meinsen, M.A. Artifact analysis by Joseph Diamond, PhD. Report preparation was conducted by Alfred G. Cammisa with Alexander Padilla (CAD).

The work was performed for The Northwind Group, Haupaugue, New York.

RESEARCH QUESTIONS

-What is the temporal affiliation of the Site D?

Previous interrogations at Site A recovered a quartz Rossville point loosely dated to the Early Woodland, but also spanning to the Terminal Archaic to Middle Archaic Periods. This site also produced quartz bifaces, another point (tip), quartzite crystal, 1 FCR, and flakes, including glass flakes from an old wine bottle & associated 19th century ceramics.

Previous work at Site B recovered a chert Late Archaic Bewerton side notched point as well as 3 bifaces, a utilized flake, a core/biface, 3 more cores, 1 FCR, and flakes.

Previous at Site C produced no dateable artifacts but 2 bifaces, drills, spokeshave, shredder, (scraper), knife/scraper & flakes

Dateable artifacts at Site D could help us understand if Indian Hills Golf Course was utilized for a longer period of time or not.

-What activities are present on the Indian Hills Site D and are those activities replicated or unique from Sites A, B, & C? Defining artifact types and identify associated tasks will answer this.

-Can site seasonality be determined? Flotable features could possibly identify seasonality.

-Is the Indian Hills Sites D eligible for nomination to the National or State Registers of Historic Places? National or State Registers of Historic Places? Criteria needed to assist in this determination include:

- 1) Site integrity, including the depth and extent of undisturbed soil horizons and the presence or absence of cultural features and the degree of natural and/or human disturbance to those features.
- 2) Cultural components/affiliations and time range present.
- 3) Vertical (stratigraphy) and horizontal (spatial) distribution of the archaeological remains.
- 4) Site interpretation should demonstrate any uniqueness or significance in a local or regional context.

FIELD METHODS

Phase II field work was limited to only the 3 days the golf course closed for annual repairs and/or maintenance which took place between September 15 to 17, 2020. Field methods consisted of the excavation of additional close interval ST's and 1 meter square test units (TU's). Site D was located within the active portion of the golf course adjacent to tees, greens, sand traps, and a fairway, all of which were avoided from shovel testing.

Phase II Close Interval Shovel Testing

Phase II shovel testing was designed to test the mostly linear and sparsely concentrated nature this site (according to the Phase I shovel testing at 50 foot intervals). Re-shovel testing the entire site was necessary due to the fact that all the Phase I ST's were pulled out to groom the grass for the golfers after the Phase I was conducted.

Test Units

Test units were placed primarily in areas of highest artifacts concentration for this site. Test units measured 1 meter square. They were dug by natural stratigraphy. Excavation ceased at 10 cm. into culturally sterile subsoil.

Excavation of the 1 meter square TU's was accomplished manually with the use of shovel and trowels. Shovel technique utilized was the "skimming" method. Soil horizon interfaces or any potential feature stains were troweled in an attempt to uncover cultural features. Elevations of stratigraphy were recorded with the use of a line level which was placed at 10 cm above ground surface, usually at the corner with the highest elevation.

Pre-printed ST field forms were completed for all ST's. Note for all TU's were transcribed on pre-printed TU field forms. These were completed for each TU and level. Notes and sketches were also recorded in a field journal. Photographs were taken of stratigraphically profiled TU walls, environmental information, and general work in progress.

Soils were screened though a 1/4 inch wire mesh and analyzed for artifacts. Excavated soils were subjected to 100% screening. Stratigraphic profiles were mapped for TU's. All artifacts were bagged by TU and level, provenienced, and returned to the laboratory for processing and analyses.

FIELD RESULTS

Phase II addendum investigations at Indian Hill Site D included both re-shovel testing Site D as well as the excavation of TU's. Since all the flagging was removed by the golf course, Phase II shovel testing was re-numbered ST 1 to 73.

Close Interval Shovel Testing

Re-Shovel testing of Indian Hills Site D included a 25 foot (7.5m) ST interval across the site. This included 73 ST's .

Phase II shovel testing confirmed the following:

- -The 25 foot ST interval on Site D produced a surprising number of "positive" ST's,
- -Most of positive ST's and the most artifact dense were those within 50 feet from Fresh Meadow Road.
- -This site appears to have extended east off project area to Fresh Meadow Road Fresh Meadow Pond. The site may also extend, to a lesser degree, west on to the golf course fairway.

Test Excavation Units

Six TU's were excavated during the Phase II at Indian Hills Sites:

Areas for placement of TU's on this site was determined by both the density of positive ST's in a confined area as well as the individual artifact density per ST within that area. Also, this decision had to made the same day or overnight due to the compressed 3-day time limit the archaeology had to be completed on this active portion of the golf course.

Test Unit 1 was excavated next to positive ST 10 which had 3 flakes. Since this unit produced the most artifacts, TU 5 was placed adjacent to it.

Test unit 2 was placed next to ST 11 which we thought had FCR. Although this ST 11, upon later analysis, proved not to have FCR, TU 2 did produced FCR.

Test unit 3 was placed next to ST 23 which had 10 flakes.

Test unit 4 was placed next to ST 25 which produced 5 flakes

Test unit 6 was placed next to ST 19 which produced 8 flakes

Stratigraphy

Stratigraphy differed from TU to TU and often included mottling, suggesting a lack of integrity likely associated with grading from the adjacent tee and sand trap, possibly the slope itself, and perhaps Fresh Meadow Road as well:

Level 2, A Horizon (included root mat & humus) - about 18 to 36 cm. thick of 10YR4/3 brown or 10YR4/2 dark grey brown, or 10YR4/4dark yellow brown loamy sand. This layer was mottled with either subsoils and/or other soil colors. This layer also contained occasional sparse modern and historic artifacts such as unidentified metal, including nails, undecorated whiteware, transfer printed whiteware. Sometime a color lens was apparent from possibly iron oxide or brick disintegration and, at TU 4, 1 kilo of oyster shell had been dumped. Soils were all hard-packed, likely from either intentional mechanical compressing after grading or parking heavy machinery in the past.

Level 3, B Horizon, subsoil - dug into about 10 cm. of 10YR 5/6 yellow brown loamy sand. This was a culturally sterile layer.

LABORATORY METHODS

Methods used consisted of the investigation of raw material variety, flake attributes such as decortication reduction sequences, tool identification, and edgeware analysis (retouch and utilization). Artifacts were weighed, selected whole points and other selected tools were measured. Analysis was, for the most part, conducted macroscopically (with the naked eye). The use of a hand lens or microscope may have been also used in some instances for determining use wear versus retouch, mineral composition, and some general analysis.

LABORATORY RESULTS

Phase II investigations of Indian Hills Site D resulted in the recovery of 653 prehistoric artifacts, 585 from TU's and 68 from ST's. Debitage from TU's accounted for 556 artifacts, there were 2 cores, tools accounted for 15 artifacts, 8 FCR came from TU's, and 4 natural red ochre. The exact type of artifacts and its location are listed in appendix 3 (Inventory).

Artifacts by ST Sixty eight artifacts were recovered from ST's.

ST	COUNT	ARTIFACT TYPES
9	1	Tertiary
10	3	Tertiary
11	2	Primary
13	2	Tertiary
14	1	Tertiary
15	3	2 tertiary, 1 primary
16	4	Tertiary
17	3	2 tertiary, 1 primary
18	4	Tertiary
19	8	6 tertiary, 2 primary
20	2	Tertiary & primary
21	1	Tertiary
23	10	6 tertiary, 4 primary
24	2	FCR, secondary
25	5	4 tertiary, 1 secondary

26	2	Tertiary & primary
27	1	Tertiary
35	1	Tertiary
38	3	2 primary, 1 tertiary
39	1	Tertiary
40	2	Tertiary & primary
42	2	Tertiary
43	3	2 tertiary, 1 primary
44	1	Tertiary
70	1	Tertiary

Artifacts by TU

Five hundred eighty five (585) artifacts were recovered from TU's which included 8 quartzite FCR (1.6% of FCR from TU's) and 4 red ochre (.7% of TU artifacts)

TU	Count	Types
1	122	Debitage & tools
2	102	96 Debitage, 3 FCR, & 3 red ochre
3	68	Debitage with 1 core & tool
4	120	112 Debitage, 6 tools, 2 FCR, 18 Oyster frags (1 kilo oyster discarded)
5	94	90 Debitage, 3 FCR, 1 red ochre
6	79	debitage with 1 core, tools

<u>Material</u>

Virtually all raw material was of quartzite or quartz with the exception of the 7 chert flakes and 4 natural red ochre.

Level for TU's:

All artifacts were from Level 2

Tools per TU: Fifteen tools were recovered from TU's

TU	Points	Bifaces	Scrapers	Hammerstone	Total
1	1 Levanna	2 (tip & frag)	1	1	5
2	0	0	0	0	0
3	0	1	0	0	1
4	2 (Levanna & frag)	3 (2 tips)	1	0	6
5	0	0	0	0	0
6	3 Levanna (frags)	0	0	0	3
Total	6 (40% of tools)	6 (40% of tools)	2 (13.5%) of tools	1 (7% of tools)	15 (2.5% of artifacts from TU's))

 $\frac{\text{Debitage per TU}}{\text{Five hundred fifty eight (556) pieces of debitage were collected from the 6 TU's and 2 cores.}$

TU	Tertiary	Secondary	Primary	Tested piece	Blocky shatter	Total (% of debitage)	Cores
1	86	25	4	1	1	117	0
2	77	10	8	1	0	96	0
3	56	5	5	0	0	67	1
4	95	15	2	0	0	112	0
5	79	8	3	0	0	90	0
6	61	10	4	0	0	76	1
Total	454 (81.7% of debitage)	73 (13.1% of debitage)	26 (4.7% of debitage)	2 (.4% of debitage)	1 (.15%of debitage)	556 (95.1% of total artifacts from TU's)	2 (.35% of total artifacts)

CULTURAL INTERPRETATIONS

Indian Hills Site D appears to represent a Mid-Late Woodland seasonal camp based on 5 Levanna Points and 8 fire cracked rock. Other than the associated cooking, heating, and light from the FCR, the occupants here were focused on hunting, butchering, hide processing and lithic tool making. The TU's conducted here however, showed signs of grading such as different soils from TU to TU and/or mottling of subsoil with topsoil. This is likely due from grading along the hill (moraine) for the golf course which included tees, sand traps, and fairway, and perhaps modifying slope, as well as modifications from the adjacent road (Fresh Meadow Road).

Activities on site appear to include:

- -Hunting as represented by 6 points (5 Levanna),
- -Butchering & Side Preparation with 6 bifaces and 2 scrapers,
- -Cooking/Heat as shown by 9 FCR,
- -Stone Tool Production-Final stage as represented by 454 tertiary flakes representing over 80 percent of the debitage.
- -Stone Tool Production-Initial stage shown by 2 cores, a large hammer stone and 26 primary flakes, representing over 4 percent of debitage.

Site Patterns/Spatial Analysis:

Indian Hills Site D is located about 150 feet west of Fresh Pond. Essentially, it is situated between Fresh Pond and a hill, technically, part of Harbor Hill Moraine. The site, by and large, follows along side of Fresh Meadow Road which leads to Fresh Pond and the L.I. Sound. This kind of lateral spreading of prehistoric artifacts along such a path has been shown in the past at documented Indian trails trough Long Island (see Cammisa et al 2000). It is difficult to say how far west Site D extends due to the golf course related features that were out of the project area (greens, tees, fairways, etc.). However, since the site comes to within 25 feet from Fresh Pond Road, we may assume it could have continued east to the road and perhaps the pond itself.

Site D is about 1220 feet north-south by about 200 east-west. However, the heaviest occupation (site nucleus) is north of the bend in Fresh Meadow Road and the cart road and this is about 550 feet north-south by about 80 feet east-west. To the south of this, the site begins to fade out both in terms of positive ST's and ST density. This area is both further from Fresh Pond and nearer more golf course related impacts.

Test unit 4 produced 95 tertiary flakes, the highest amount of on site. This TU also had the most bifaces leading to an interpretation of a likely lithic workshop (final stage of tool making). This TU also produced 3 points (including 1 Levanna), the highest on site. This TU is situated slightly upslope overlooking TU 1 (see below) and the road.

Test unit 1 also produced similar high tertiary flags, 86, for the second highest count on site along with 2 bifaces and a Levanna point.

Test into 6 is located at the southerly extent of the site nucleus, further from Fresh Pond and the coast and where the moraine is further back from the road. This TU produced 3 Levanna point fragments. This might be from a hunting related incident.

Surrounding Settlement Patterning

Indian Hills Site D is about 1220 SW of an undated ell fishing station on east side of Fresh Pond with no additional information available on this site.

-Indian Hills Site D I is about 1925 feet southeast of Indian Hills Site A . Site A was situated closer to the high bluff overlooking the Long Island Sound. This site was dated with a Rossville point with a suggested time of Early Woodland but possibly Middle Woodland to Terminal Archaic Periods. Activities here were hunting, butchering, tool making, ceremonialism, and ephemeral cooking. Two Phase II's were conducted here. In 2015 a Phase II was completed on the main component of Site A . In 2019 another Phase II was conducted on the extended section of Site A. Artifact density on the main section of Site A was between 19 to 81 per TU and included 1 FCR, bifaces, debitage, and a quartz crystal. There was also a glass utilized flake & drill, implying another component. On on the small, extended portion of Site A, the TU's density ranged between 0 to 35 and included bifaces and debitage.

-Indian Hills Site D is about 1170 feet east of Indian Hills Site B. Site B was encountered slightly south of Site A, but still towards the northerly end of the golf course not to far from the bluff and L.I. Sound. This site was dated with a chert Brewerton Side Notch point from the Late Archaic Period. Artifact density here was between 5 to 24 per TU. Artifacts included FCR, bifaces, utilized flake, cores and debitage with implied activities of camping (cooking &/or heat/light), hunting, butchering, hide preparation, and tool making.

Indian Hills Site D is about 2665 feet northeast of Indian Hills Site C. The undated Site C was situated further to the south, about 2900 feet south of Site A, out of view of the coast. Site C is also about 1487 feet east of a creek which flows north into the marshes of Crab Meadow and the Long Island Sound. The creek roughly parallels Makamah Road. Artifact density by TU here was 5 to 40 and artifacts here included bifaces, drill, and debitage. This site was also impact by modern construction/grading.

Prehistoric sites are also reported from Fresh Pond to the east, through Indian Hills Golf Club (NYSM 7616 & 707), to Makamah Beach which is close to to Site A, to the west.

Indian foot trails were reported closely paralleling the coast here from Nissequogue River to Northport Harbor (Stone nd: map). Much of this may be along, or close to, Route 25A.

The native inhabitants here appear to travel by a network of open water, along the Long Island Sound, tributaries, and incorporating foot trails. Some of the foot trails may be dated back through to the Late Archaic Period (see Cammisa et al 2000).

Most of the dateable sites in this vicinity are from the Late Archaic Period. Indian Hills Site D, which is located along Fresh Meadow Road, is from the Woodland Period.

SUMMARY AND RECOMMENDATIONS

Indian Hills Site D appears to represent a Mid-Late Woodland seasonal camp based on 5 Levanna Points and 8 fire cracked rock. Other than the associated cooking, heating, and light from the FCR, the occupants here were focused on hunting, butchering, hide processing and lithic tool making. The TU's conducted here however, showed signs of grading such as different soils from TU to TU and/or mottling of subsoil with topsoil. This is likely due from grading along the hill (moraine) for the golf course which included tees, sand traps, and fairway, and perhaps modifying slope, as well as modifications from the adjacent road (Fresh Meadow Road).

A site is eligible for nomination to the National Register of Historic Places if it meets one or more of the following criteria (as set forth in 9 NYCRR 427 and 428 or CRF 800):

- A) Associated with events that have made a significant contribution to the broad patterns of our history;
- B) Associated with the lives of persons significant in our past;
- C) Embodies the distinctive characteristics of a type, period, or method of construction, or represents a significant and distinguishable entity whose components may lack individual distinctions; or
- D) Has yielded, or may be likely to yield, information important in prehistory or history.

In our opinion, the Indian Hills Site D does not have research value that would make it eligible for the historic registers for the following reason:

Although the site produced high to moderate amount of artifacts which included single component period diagnostic points, a variety of tools, and FCR, they were encountered in heavily graded soils. Those soils appeared to have come from the adjacent terrain. This may include the cobble soils from the adjacent hilltop to the dark gray soils along the road near the wetlands. The subsoils was also often graded into the topsoil and the topsoil included some sparse modern trash.

No further work is therefore recommended.

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Stone, Gaynell, research & production

Not dated map of "Native Long Island" Suffolk County Archaeology Association-L.I. culture History Lab & Museum.

United States Geological Survey

1967 Northport, New York quadrangle, 7.5 minute series.

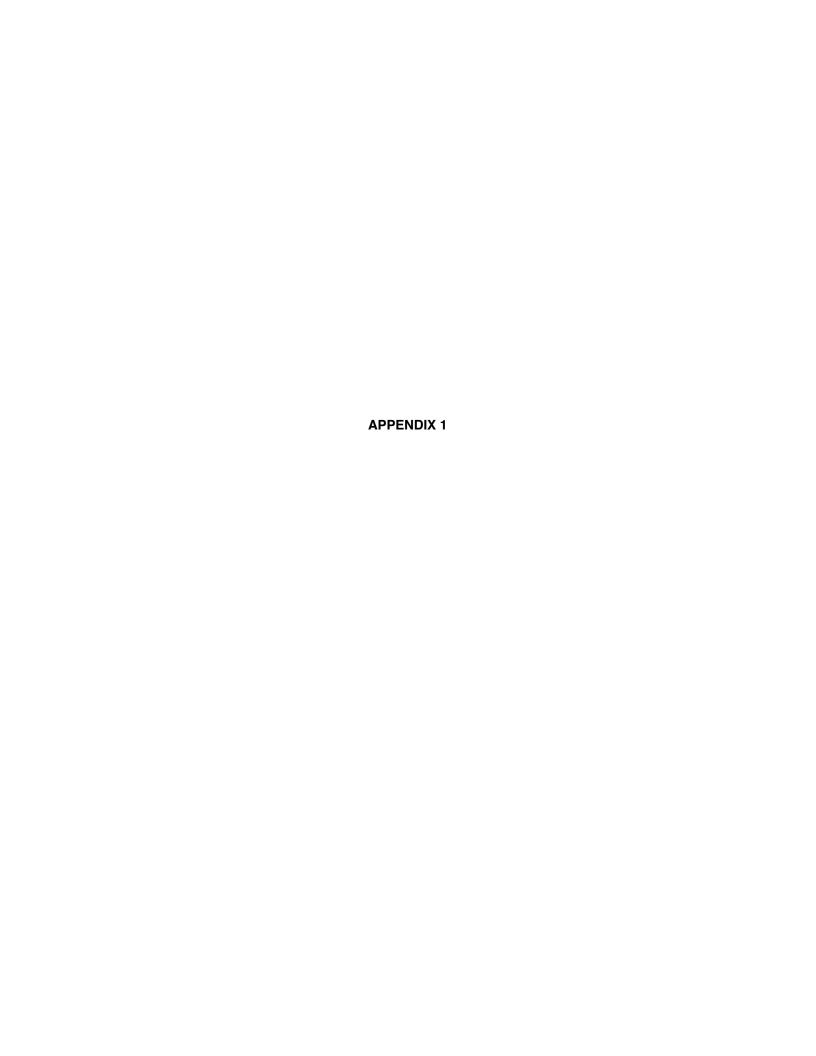
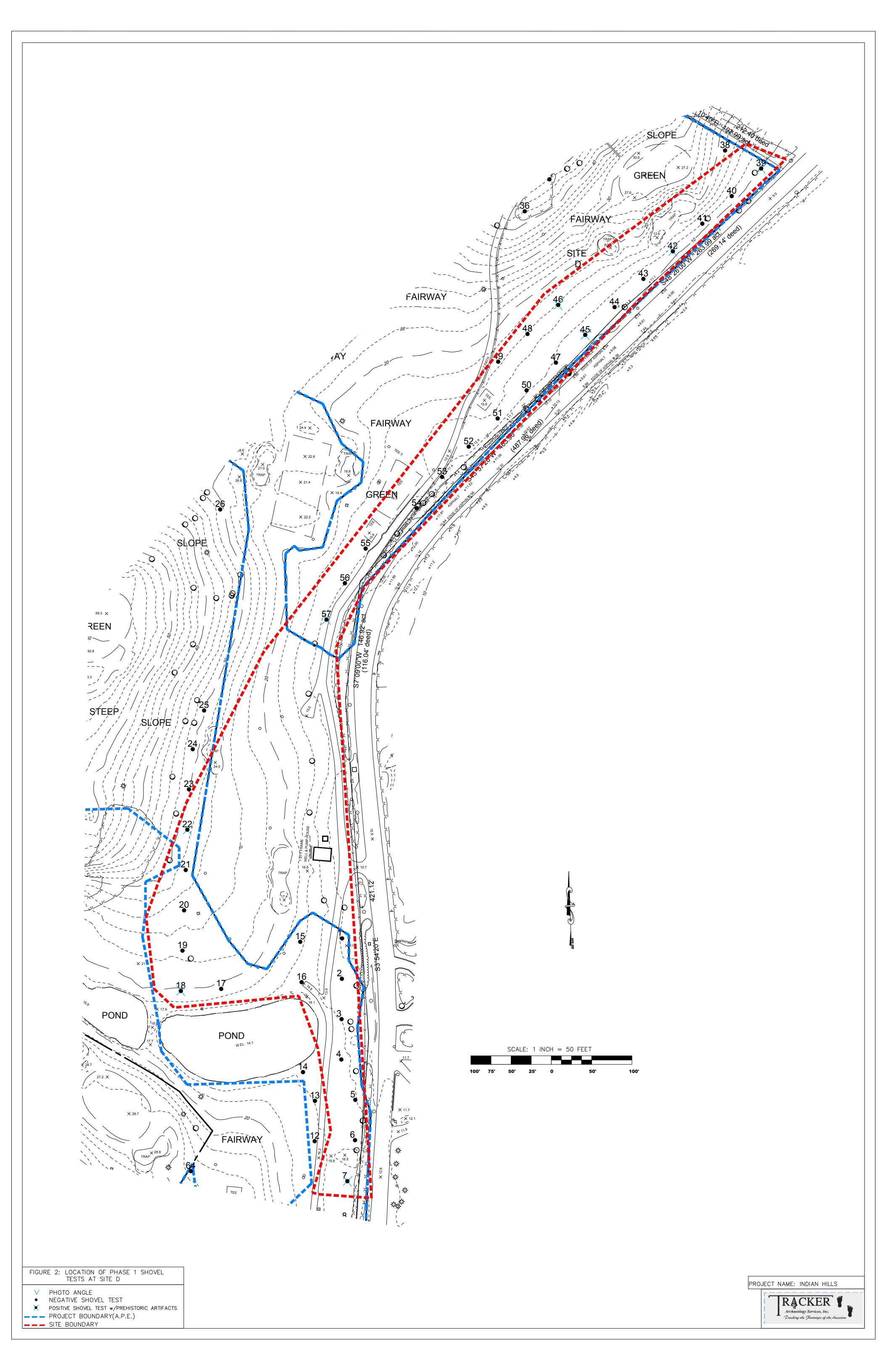
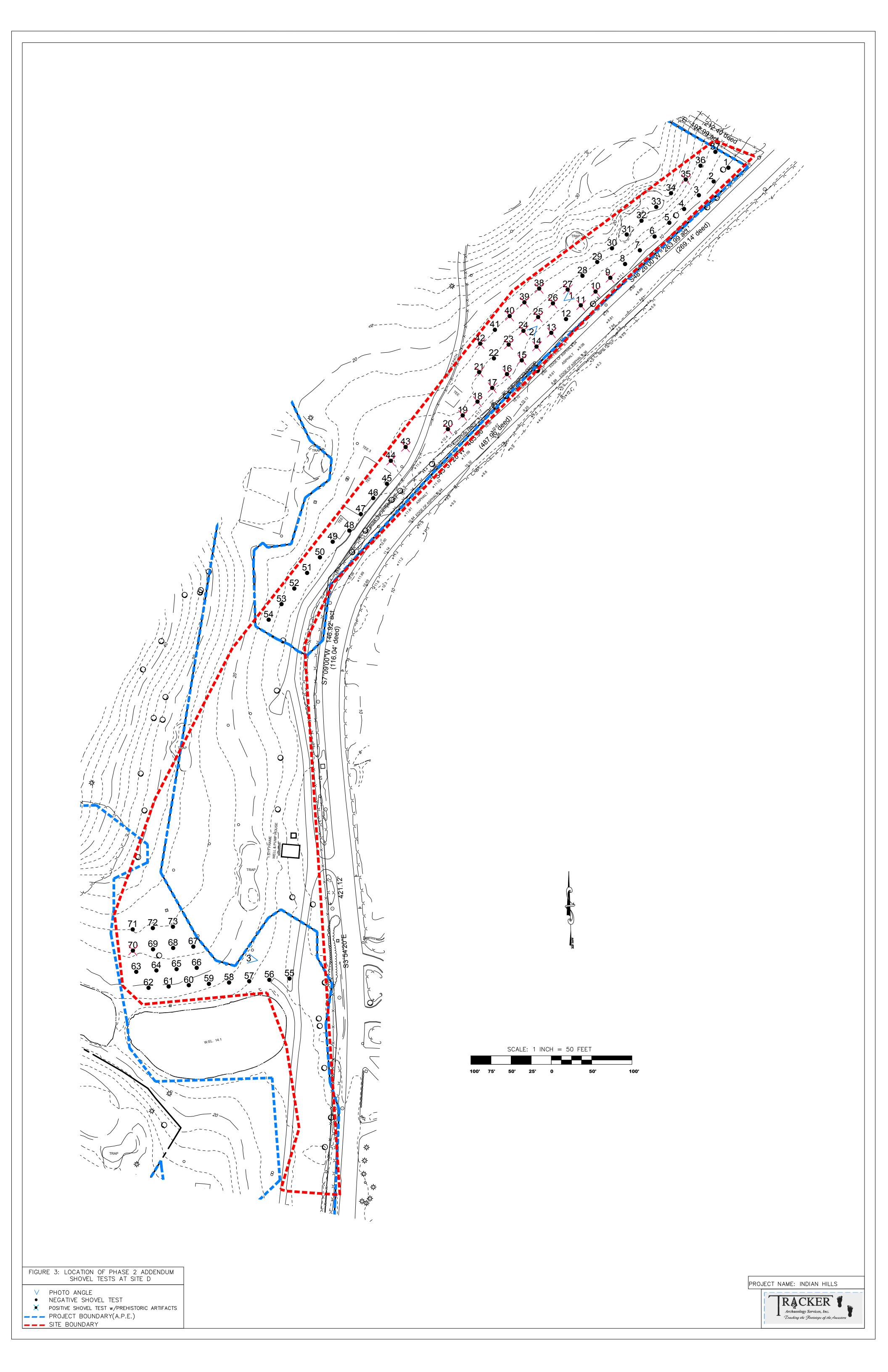
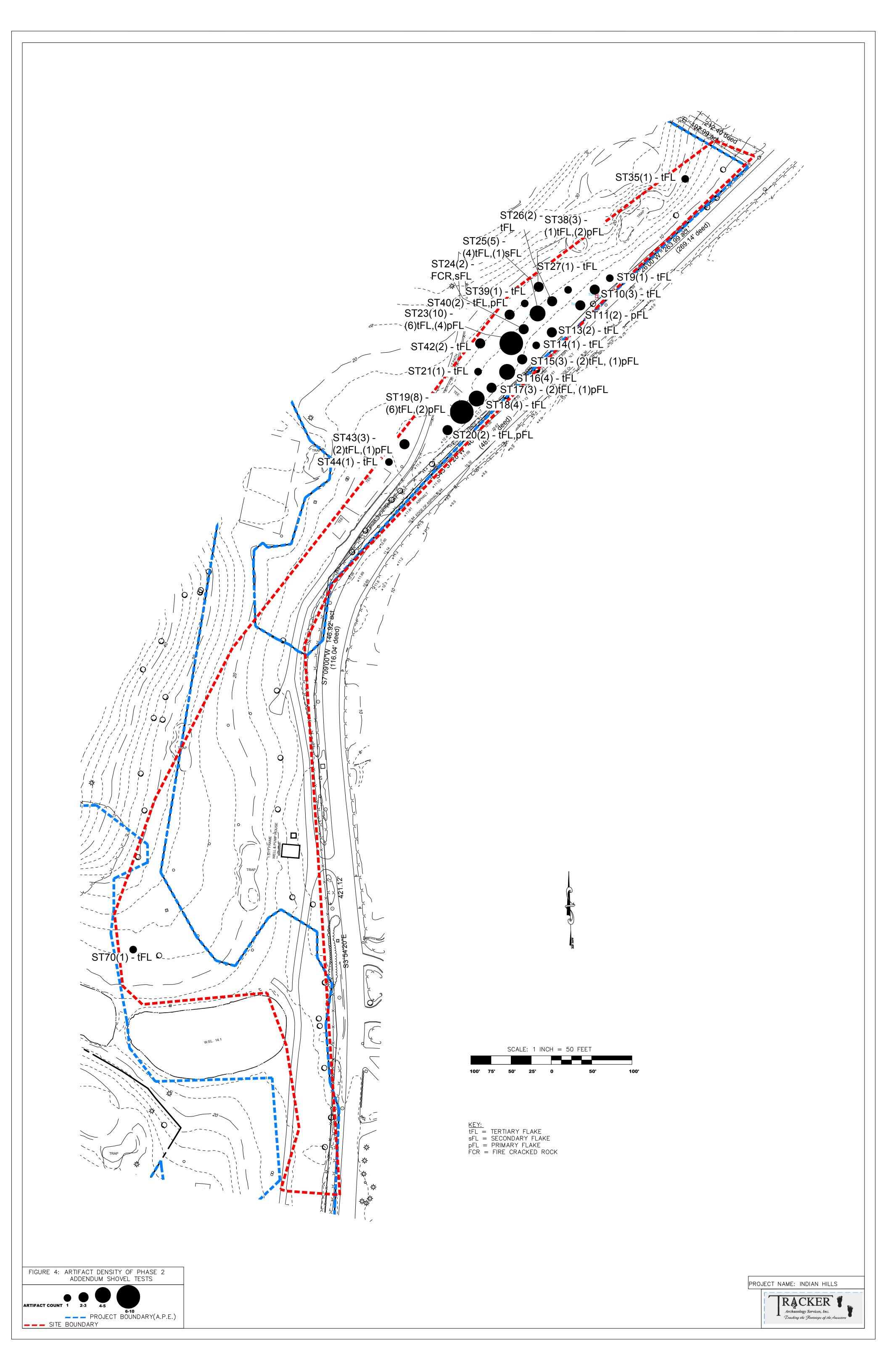


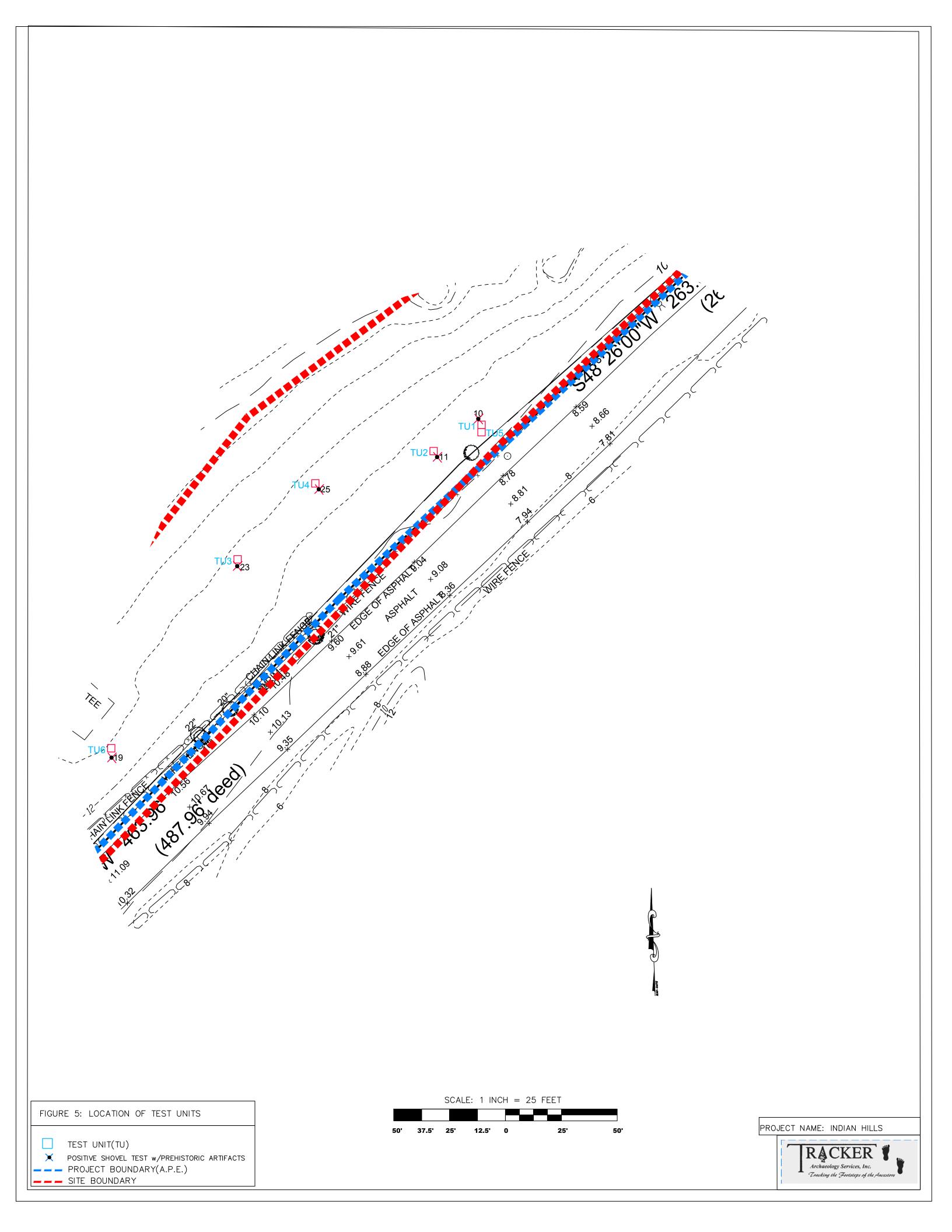


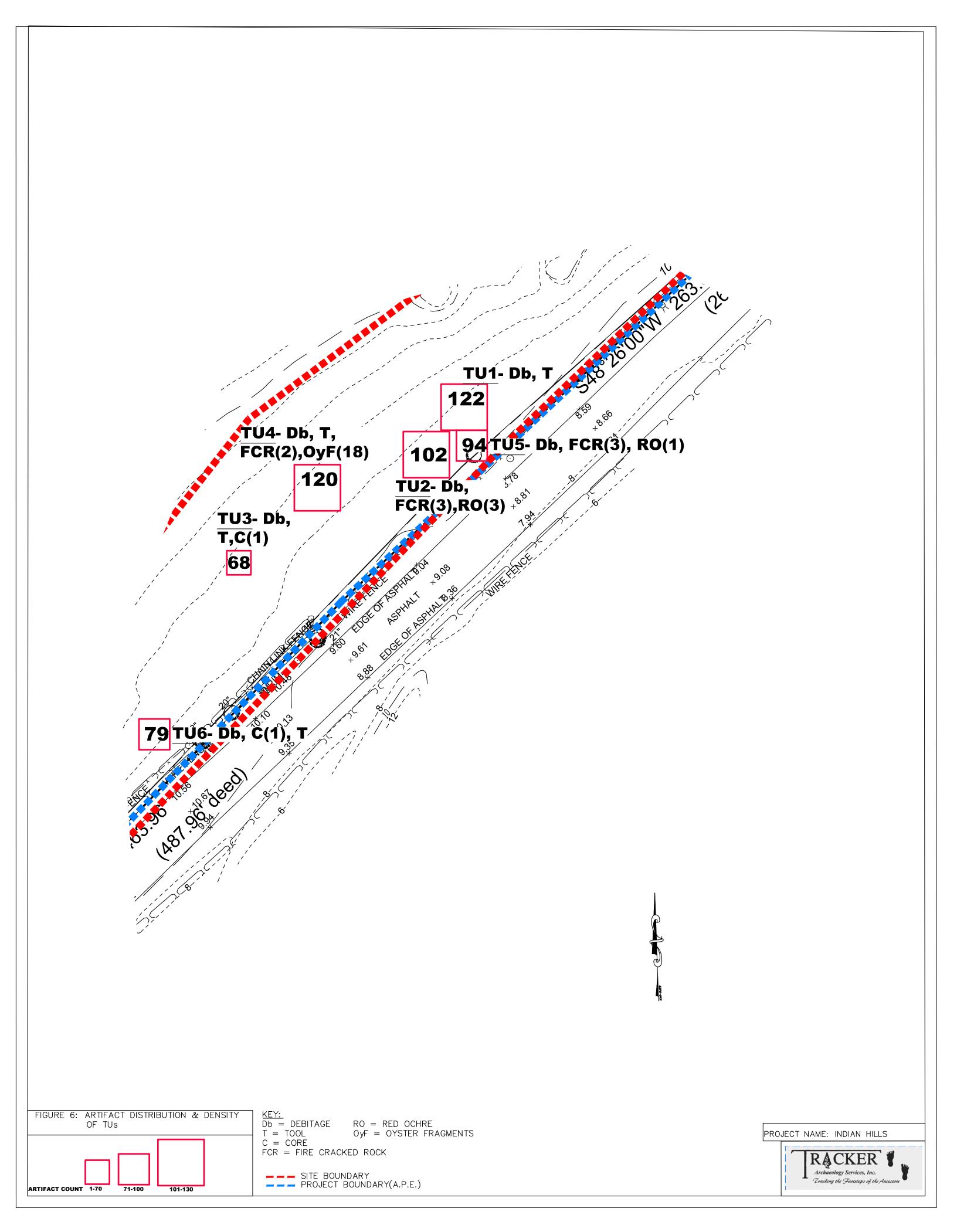
Figure 1 Northport, NY USGS

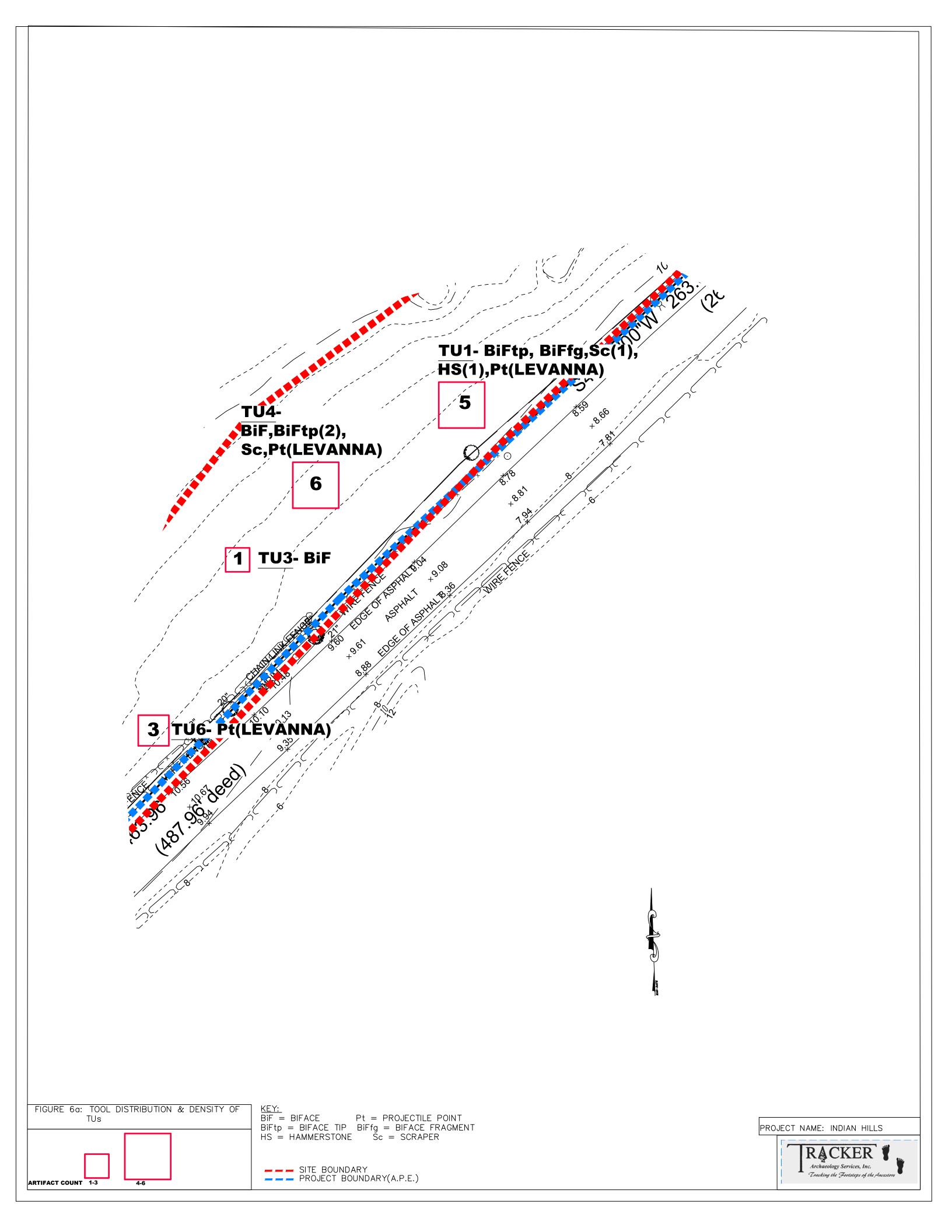


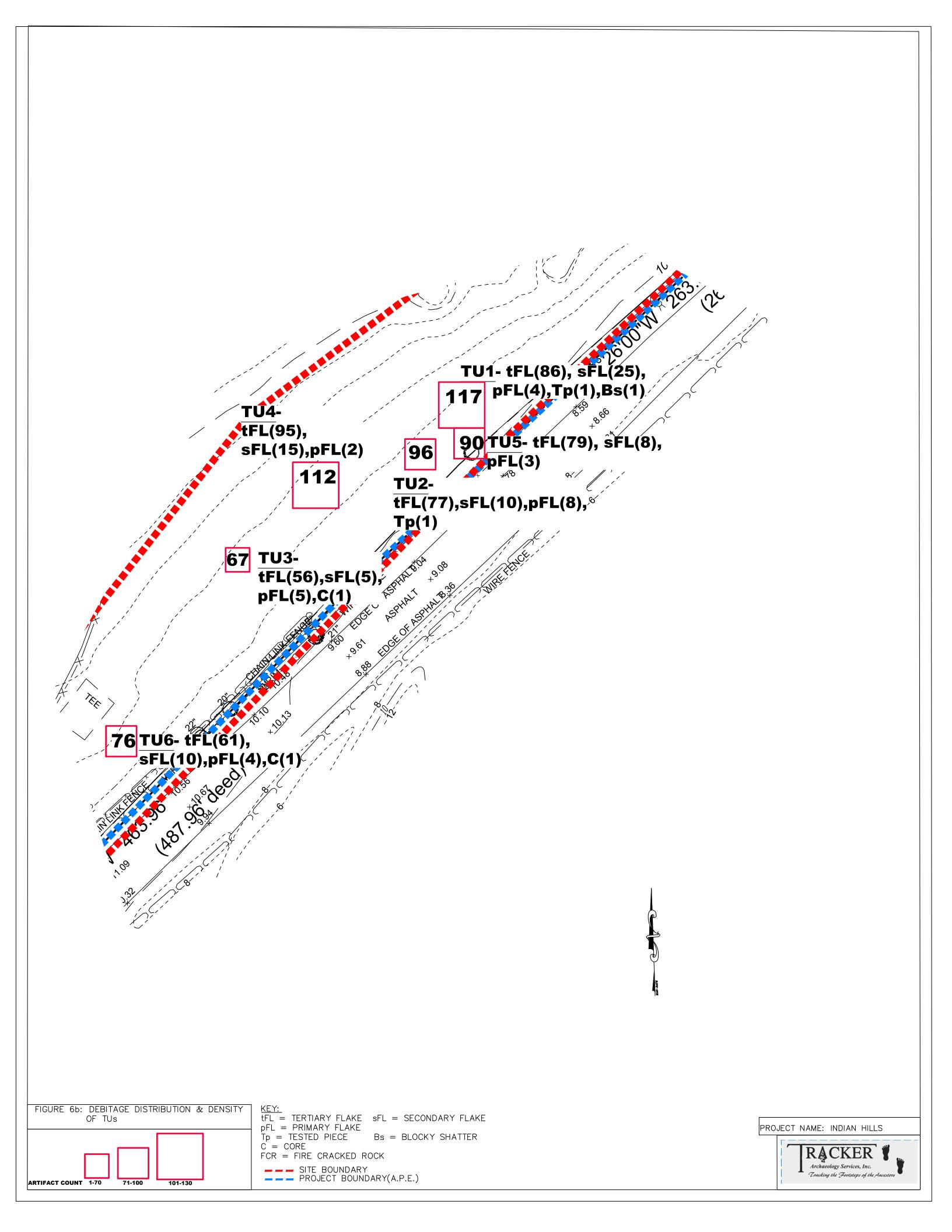


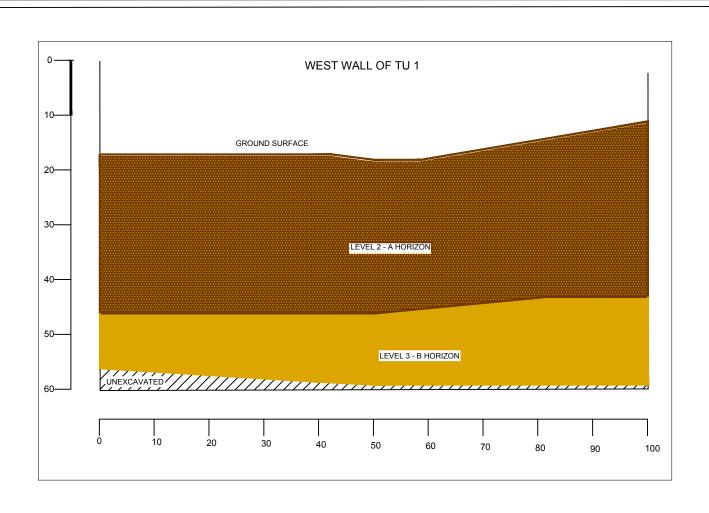


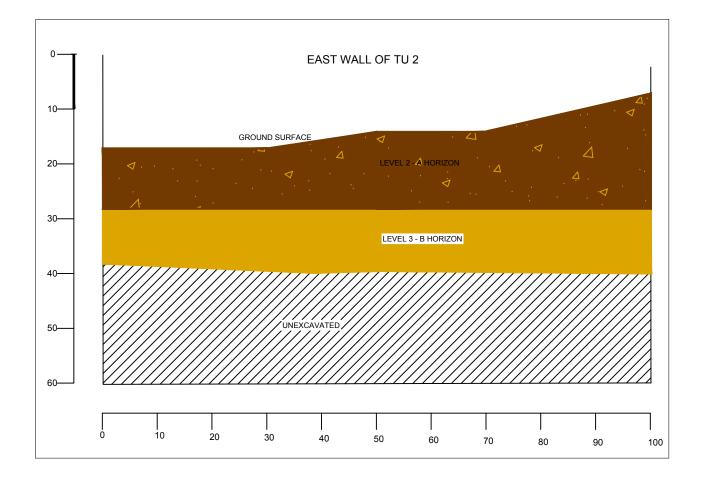












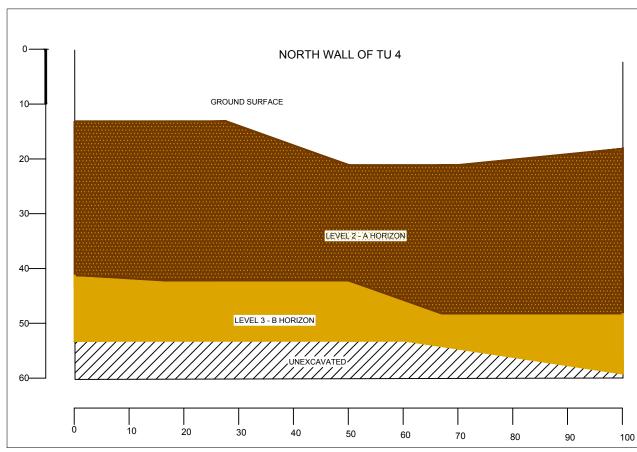
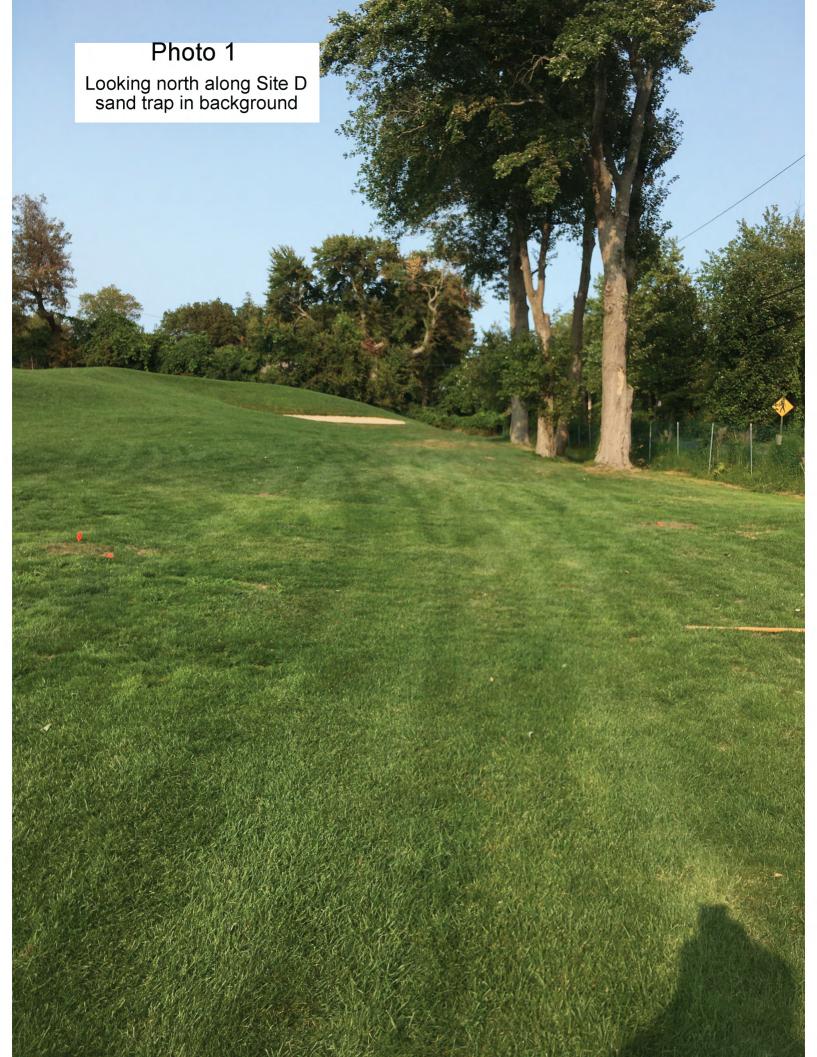


FIGURE 7: PROFILES OF TU 1, 2, & 4

PROJECT NAME: INDIAN HILLS





















APPENDIX 2

SHOVEL TESTS

STP Site D:	LV	DEPTH(CM)	TEXTURE	COLOR	HOR	COMMENT
1	1 2 3	0-3 3-22 22-32	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
2	1 2 3	0-4 4-17 17-27	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
3	1 2 3	0-4 4-15 15-25	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
4	1 2 3	0-3 3-18 18-28	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
5	1 2 3	0-4 4-20 20-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
6	1 2 3	0-3 3-20 20-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
7	1 2 3	0-4 4-20 20-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM .
8	1 2 3	0-3 3-22 22-32	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
9	1 2 3	0-4 4-19 19-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
10	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
11	1 2 3	0-3 3-24 24-34	rootmat,leaves,humus LoSa pea gravel LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
12	1 2 3	0-3 3-21 21-31	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM

13	1 2 3	0-3 3-20 20-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
14	1 2 3	0-3 3-22 22-32	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
15	1 2 3	0-3 3-23 23-33	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
16	1 2 3	0-3 3-23 23-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
17	1 2 3	0-5 5-19 19-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/4	A/O A B	NCM flake NCM
18	1 2 3	0-3 3-21 21-31	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
19	1 2 3	0-4 4-23 23-33	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
20	1 2 3	0-3 3-19 19-29	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
21	1 2 3	0-3 3-20 20-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
22	1 2 3	0-3 3-18 18-30	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
23	1 2 3	0-5 5-22 22-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
24	1 2 3	0-3 3-23 23-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
25	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM

26	1 2 3	0-3 3-23 23-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
27	1 2 3	0-5 5-26 26-37	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
28	1 2 3	0-5 5-27 27-37	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
29	1 2 3	0-2 2-24 24-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
30	1 2 3	0-2 2-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
31	1 2 3	0-3 3-22 22-32	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
32	1 2 3	0-3 3-24 24-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
33	1 2 3	0-3 3-27 27-37	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
34	1 2 3	0-2 2-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
35	1 2 3	0-3 3-24 36-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
36	1 2 3	0-3 3-24 24-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
37	1 2 3	0-3 3-22 22-32	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
38	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM

39	1 2 3	0-3 3-24 24-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
40	1 2 3	0-3 3-24 24-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
41	1 2 3	0-4 4-26 26-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
42	1 2 3	0-3 3-26 26-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
43	1 2 3	0-4 4-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
44	1 2 3	0-3 3-24 23-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
45	1 2 3	0-2 2-26 26-38	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
46	1 2 3	0-3 3-26 26-40	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
47	1 2 3	0-3 3-23 23-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
48	1 2 3	0-3 3-25 25-40	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
49	1 2 3	0-3 3-25 25-40	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
50	1 2 3	0-35 3-26 26-43	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
51	1 2 3	0-3 3-20 20-38	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM

52	1 2 3	0-3 3-22 22-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
53	1 2 3	0-3 3-23 33-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
54	1 2 3	0-3 3-23 23-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
55	1 2 3	0-3 3-26 26-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
56	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
57	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
58	1 2 3	0-3 3-26 26-36	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
59	1 2 3	0-4 4-25 25-38	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
60	1 2 3	0-2 2-23 23-33	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
61	1 2 3	0-3 3-24 24-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
62	1 2 3	0-3 3-24 24-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
63	1 2 3	0-3 3-19 19-29	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
64	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM

65	1 2 3	0-3 3-27 27-27	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
66	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
67	1 2 3	0-4 4-26 26-26	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
68	1 2 3	0-2 2-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
69	1 2 3	0-4 4-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
70	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM flake NCM
71	1 2 3	0-3 3-25 25-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
72	1 2 3	0-8 8-23 23-34	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM
73	1 2 3	0-5 5-24 24-35	rootmat,leaves,humus LoSa LoSa	10YR4/3 10YR5/6	A/O A B	NCM NCM NCM

TEST UNITS

TU 1	LV 2 3	NE 20-49 49-59	SE 20-44 44-54	CENT 18-46 46-56	NW 11-43 43-53	SW 17-46 46-56	TEXTU LoSa n LoSa		COLOR 10YR4/3-56 10YR5/6	HOR A B
2	2 3	17-28 28-39	7-28 28-39	14-28 28-39	11-28 28-43	7-26 26-42	LoSa LoSa	cobbles	310YR4/3 10YR5/6	A B
3 Note: c	2 3 orange s	21-49 49-59	15-49 49-59	16-49 49-59	16-49 49-59	11-47 47-57	LoSa LoSa	mottled	10YR4/4-3/2 10YR5/6	A B
4	2 3 shell in to	18-48 48-59	15-44 44-54 ed stainir	21-42 42-52 ng (iron d	13-41 41-53 oxide?)	19-40 40-51	LoSa LoSa	mottled	10YR4/2-5/4 10YR5/6	A B
5	2	17-37 37-55	16-34 34-52	15-36 36-57	13-39 39-53	11-34 34-54	LoSa LoSa	mottled	10YR4/3-5/6 10YR5/6	A B
6	2	11-41 41-53	20-41 41-54	19-42 42-53	20-40 40-52	27-40 40-53	LoSa LoSa		10YR4/3 10YR5/6	A B

Note: all were hard-packed soils & all had modern/historic metal or ceramic, or modern beer glass

APPENDIX 3

CAT	SF ST	TU	LV	ARB	FT	GP	CL	MAT	MOR DESCRIPTION	СТ	WT
1	9					10	3	54	29 tertiary white	1	0.20
2	10					10	3	53	29 tertiary clear	3	2.20
3	11					10	3	54	27 primary white	2	29.40
4	13					10	3	53	29 tertiary white & clear	2	2.00
5	14					10	3	53	29 tertiary white/clear	1	0.30
6	15					10	3	54	29 tertiary white	2	0.40
7	15					10	3	54	27 primary white	1	1.90
8	16					10	3	53	27 tertiary white & clea4	4	1.80
9	17					10	3	54	29 tertiary white	2	0.70
10	17					10	3	53	27 primary clear	1	2.40
11	18					10	3	54	29 tertiary white	4	1.80
12	19					10	3	54	29 tertiary white	6	1.80
13	19					10	3	54	27 primary white	2	22.20
14	20					10	3	54	29 tertiary white	1	0.70
15	20					10	3	54	27 primary white	1	3.80
16	21					10	3	53	29 tertiary banded clear/white	1	1.10
17	23					10	3	53	29 tertiary banded clear/white	6	4.70
18	23					10	3	54	27 primary white	4	6.70
19	24					10	3	54	28 secondary white	1	1.40
20	24					10	9	54	FCR	1	7.20
21	25					10	3	54	29 tertiary white	4	1.00
22	25					10	3	54	28 secondary white & brown	1	4.30
23	26					10	3	54	29 tertiary white	1	0.40
24	26					10	3	54	27 primary white	1	1.10
25	27					10	3	54	29 tertiary white	1	0.60
26	35					10	3	53	29 tertiary clear & white banded	1	0.30
27	38					10	3	54	29 tertiary brownish white	1	0.90
28	38					10	3	54	27 primary white	2	6.90
29	39					10	3	54	29 tertiary white	1	0.70

CAT	SF ST	TU	LV	ARB	FT	GP	CL	MAT	MOR DESCRIPTION	СТ	WT
30	40					10	3	54	29 teetiary white	1	0.20
31	40					10	3	54	28 secondary white	1	0.80
32	42					10	3	54	29 teetiary white	2	0.80
33	43					10	3	53	29 tertiay clear	2	1.90
34	43					10	3	53	27 primary clear	1	0.80
35	44					10	3	54	29 tertiary white	1	2.20
36	70					10	3	53	29 tertiary clear	1	0.30
37		1	2			10	3	54	21 Hammerstone brown	1	151.30
38		1	2			10	3	54	32 tested cobble light brown	1	187.20
39		1	2			10	3	54	27 primary white	4	106.40
40		1	2			10	3	54	28 secondary white	1	11.20
41		1	2			10	3	54	28 secondary white	22	66.70
42		1	2			10	3	54	28 secondary grey brown	1	1.40
43		1	2			10	3	54	33 blocky shatter white	1	19.20
44		1	2			10	3	54	29 tertiary grey	1	2.10
45		1	2			10	3	54	28 secondary grey	1	0.50
46		1	2			10	3	54	29 tertiary heat treated pink	1	1.00
47		1	2			10	3	54	29 tertiary white quartzite/quartz	84	57.80
48		1	2			10	1	53	1 Levanna Pt clear	1	3.30
49		1	2			10	7	53	81 Biface tip clear	1	4.10
50		1	2			10	7	54	71 possible Scraper white	1	4.20
51		1	2			10	7	54	81 Biface frag white	1	4.30
52		2	2			10	8	57	95 red ochre/hemetite	3	177.70
53		2	2			10	9	54	FCR pink	3	22.30
54		2	2			10	3	54	32 tested cobble pink	1	14.40
55		2	2			10	3	54	27 primary clear & white	8	36.60
56		2	2			10	3	54	28 secondary clear & white	10	11.20
57		2	2			10	3	54	29 tertiary clear & white	74	19.60
58		2	2			10	3	54	29 teetiary grey	1	0.80

CAT	SF ST	TU	LV	ARB	FT	GP	CL	MAT	MOR DESCRIPTION	СТ	WT
59		2	2			10	3	54	29 tertiary pink	2	2.50
60		3	2			10	3	54	30 Core white	1	201.90
61		3	2			10	3	54	27 primary white	5	20.90
62		3	2			10	3	54	28 secondary white	5	6.30
63		3	2			10	3	52	29 tertiary Mt Merino?	6	2.30
64		3	2			10	3	54	29 tertiary clear & white	50	28.10
65		3	2			10	7	54	81 Biface clear/white	1	3.60
66		4	2			10	2	89	1 oyster	6	3.30
67		4	2			10	2	89	1 oyster 12	12	13.20
68		4	2			10	9	54	FCR fire effected quartzite	2	29.40
69		4	2			10	3	54	29 tertiary clear & white	94	64.40
70		4	2			10	3	52	29 tertiary Mt Merino	1	1.30
71		4	2			10	3	54	27 primary white	2	22.90
72		4	2			10	3	54	28 secondary white	15	30.20
73		4	2			10	1	54	1 Levanna Pt white	1	7.90
74		4	2			10	1	54	1 Point frag white	1	2.70
75		4	2			10	7	54	81 Biface tip white	1	19.80
76		4	2			10	7	54	81 Biface tip white 1	6.4	
77		4	2			10	7	54	81 Biface white	1	28.90
78		4	2			10	7	54	71 Scraper white	1	9.80
79		5	2			10	8	57	95 red ochre/hemetite	1	29.20
80		5	2			10	9	54	FCR	3	184.70
81		5	2			10	3	54	27 primary white	3	27.70
82		5	2			10	3	54	28 secondary white	8	17.20
83		5	2			10	3	54	29 tertiary grey	1	0.20
84		5	2			10	3	54	29 tertiary white & clear	78	36.30
85		6	2			10	3	54	27 prmary white	4	6.90
86		6	2			10	3	54	28 secondary white	10	15.00
87		6	2			10	3	54	29 tertiary grey	1	0.40

CAT	SF	ST	TU	LV	ARB	FT	GP	CL	MAT	MOR DESCRIPTION	СТ	WT
88			6	2			10	3	54	29 tertiary clear & white	60	43.00
89			6	2			10	1	54	1 Levanna Point frags clear & white	3	5.70
90			6	2			10	3	54	30 flake Core clear & white	1	10.80