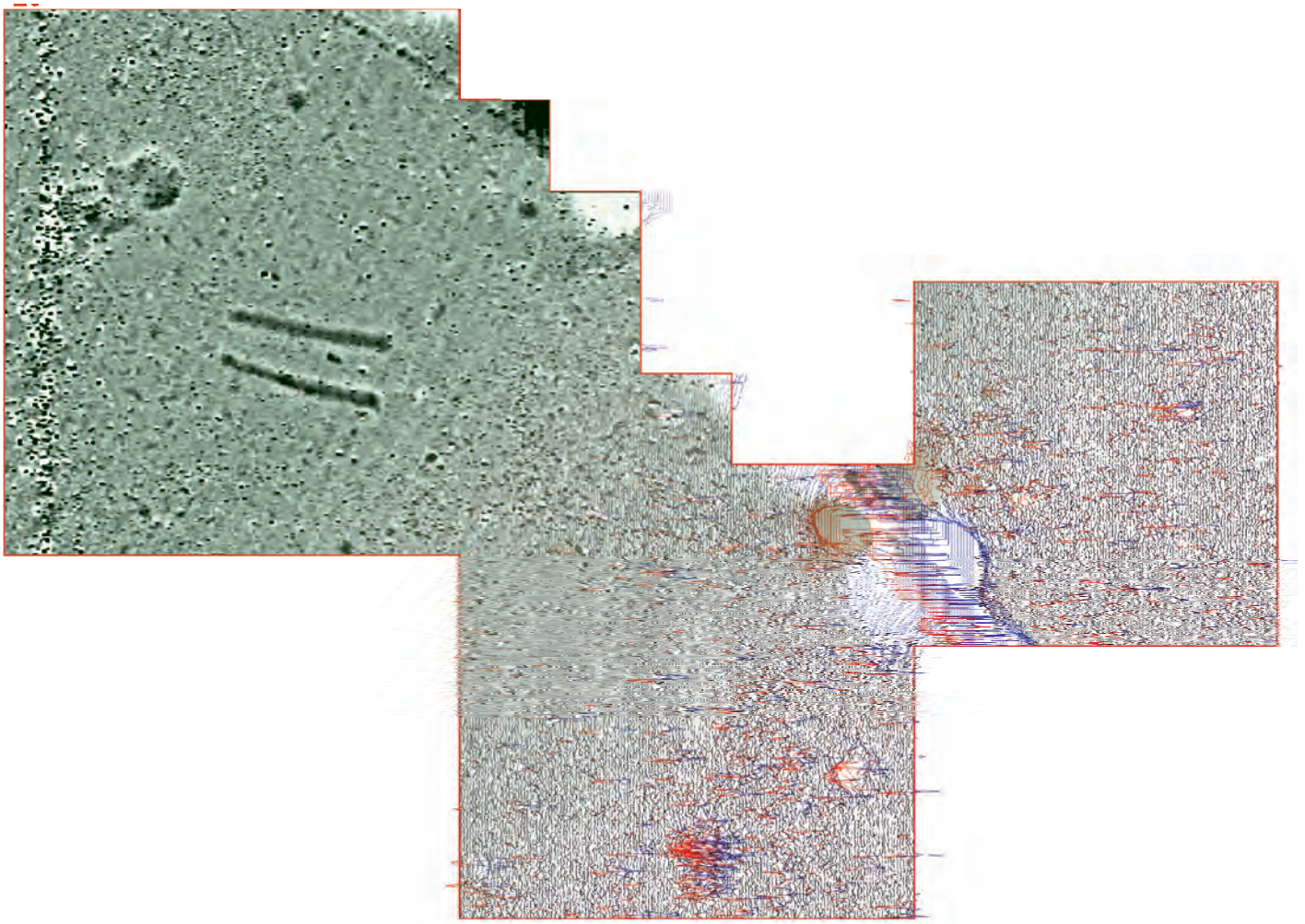




Fareham Major Development Area Wickham Road Fareham

Recorded Scanning
and Detailed Gradiometer Survey Report





**FAREHAM MAJOR DEVELOPMENT AREA
WICKHAM ROAD
FAREHAM**

Recorded Scanning and Detailed Gradiometer Survey Report

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November 2012

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QUALITY ASSURANCE

SITE CODE	85580	ACCESSION CODE		CLIENT CODE	
PLANNING APPLICATION REF.	N/A	NGR	456850 108650		

VERSION	STATUS*	PREPARED BY	APPROVED BY	APPROVER'S SIGNATURE	DATE	FILE
01	I	RDL	PAB			X:\PROJECTS\85580\GEOPHYSICS\REPORT\85580_GEOPHYSICS_FINAL.DOC

I= Internal Draft E= External Draft F= Final

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Recorded Scanning and Detailed Gradiometer Survey Report

Summary

A detailed gradiometer survey was conducted over land at the Dean Farm Estate, off Wickham Road, near Fareham, Hampshire. The project was commissioned by Trustees of the Benge Estate, through their agents Drivers Jonas Deloitte, with the aim of establishing the presence, or otherwise, and nature of detectable archaeological features on the site ahead of a proposed development.

The site comprises mainly arable fields with some pasture fields to the south just north of Fareham. It occupies a landscape with an undulating topography that rises and falls gently with a gradual drop in relief from north to south.

Of the entire site, some 138.7ha was suitable for recorded gradiometer scanning. The detailed gradiometer survey covered approximately 35ha and has demonstrated the presence of anomalies of definite, probable and possible archaeological interest within the survey area, along with regions of increased magnetic response and several modern services.

A number of anomalies of definite and probable archaeological interest have been identified; the larger of these are consistent with the extraction of chalk and other materials over the past few centuries at least. In addition much earlier remains have been uncovered including a possible long barrow with associated pits. Possible former tracks, ditches and trends consistent with agricultural ploughing, both modern and earlier, can be seen across the survey area.

Several regions of increased response and magnetic disturbance are probably related to agricultural activities associated with the modern farm and business estate.

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FAREHAM**

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Acknowledgements

The detailed gradiometer survey was commissioned by Trustees of the Benge Estate, through their agent Drivers Jonas Deloitte, and Wessex Archaeology is grateful to Mr. Glynne Benge, and to Gareth Wilson of the latter in this regard.

The fieldwork was directed by Ross Lefort and assisted by Laura Andrews, Alistair Black, Rachel Chester, Genevieve Shaw and Jennifer Smith.

Ross Lefort processed and interpreted the geophysical data in addition to writing this report. The geophysical work was quality controlled by Dr. Paul Baggaley. Illustrations were prepared by Kitty Foster.

The project was managed on behalf of Wessex Archaeology by Rob Armour Chelu.

**FAREHAM MAJOR DEVELOPMENT AREA
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Recorded Scanning and Detailed Gradiometer Survey Report

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Trustees of the Benge Estate, through their agents Drivers Jonas Deloitte, to carry out a geophysical survey of agricultural land around the Dean Farm Estate, off Wickham Road near Fareham, Hampshire (**Figure 1**), hereafter 'the Site' (centred on NGR 456850, 108650). The survey forms part of an ongoing programme of archaeological works being undertaken ahead of a proposed planning application for development at the Site.

1.1.2 The aim of the geophysical survey was to establish the presence/absence, extent and character of detectable archaeological remains within the survey area.

1.1.3 This report presents a brief description of the methodology followed, the detailed survey results and the archaeological interpretation of the geophysical data.

1.2 The Site

1.2.1 The Site, which comprises 138.7ha of agricultural land, is located 2.5km north of Fareham town centre. The Site is closely situated to Junction 10 of the M27 and Wickham Road (A32). The Site boundaries are defined: to the South by the M27; to the east by Wickham Road; to the west by the Fareham to Eastleigh railway line; and to the north by Knowle Road and the extents of the proposed development defined by the Client. There are a scattering of residential and commercial properties within close proximity of the Site boundary: these include housing at Funtley, and industrial units along with some housing within the Dean Farm Estate.

1.2.2 The Site is located on an area of gently sloping undulating land, the top of the slope to the north of the Site lies at a height of approximately 45m above Ordnance datum (aOD) with the land dropping gently towards the SSW to a height of approximately 15m aOD at the southern boundary of the Site. The underlying geology of the area is made up of clays, silt and sand with chalk dominating much of the Site. The Spetisbury Chalk Member (Cretaceous) is found along the north of the Site, the Portsdown Chalk Formation (Cretaceous) is present in the east, centre and parts of the west of the Site and the Lambeth Group – clay, silt and sand (Palaeogene), is present along the south and west of the Site. No superficial deposits have been recorded (BGS Geology of Britain Viewer).

1.2.3 The soils underlying the Site are most likely typical paleo-argillic brown earths of the 581d (Carstans) association (SSEW 1983). Soils derived from such geological parent material have been shown to produce magnetic

contrasts acceptable for the detection of archaeological remains through magnetometer survey.

2 METHODOLOGY

2.1 Introduction

2.1.1 The detailed magnetometer survey was conducted using a Bartington Grad601-2 dual fluxgate gradiometer system. The survey was conducted in accordance with English Heritage guidelines (2008).

2.1.2 The geophysical survey was undertaken by Wessex Archaeology's in-house geophysics team on 31st August to 10th October 2012. Field conditions at the time of the survey were good, with the majority of the survey area being under stubble. Two small fields to the south were under pasture at the time of survey and other areas to the south were deemed unsuitable for survey given the amount of vegetation and ferrous debris visible at the surface.

2.2 Method

2.2.1 Individual survey grid nodes were established at 30m x 20m (scanning survey) and 30m x 30m intervals (detailed survey) using a Leica Viva RTK GNSS system, which is precise to approximately 0.02m and therefore exceeds English Heritage recommendations (2008).

2.2.2 The magnetometer survey was conducted using a Bartington Grad601-2 fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors. The system has an effective sensitivity of 0.03nT, in accordance with EH guidelines (2008). Data for the recorded scanning survey was collected at 0.25m intervals along transects spaced 10m apart. Data for the detailed survey was collected at 0.25m intervals along transects spaced 1m apart. Detailed survey data were collected in the zigzag method.

2.2.3 The area covered by scanning data totalled 138.7ha, from this data 33 survey areas amounting to a little over 25% of the scanned area (approximately 35ha) were targeted over anomalies of potential archaeological interest, extended areas of increased magnetic response as well as targeting possible sites highlighted in the desk-based assessment and control areas thought to be quiet based on the scanning data.

2.2.4 Data from the detailed survey was subject to minimal data correction processes. These comprise a zero mean traverse function (typically ± 5 nT thresholds) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. These two steps were applied to all survey areas, with no interpolation applied. The data from the scanning survey was processed and imaged using MagPick. The smooth function was used to correct for variations between the two sensors used, no de-stepping was applied to the scanning data.

2.2.5 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 1**.

3 GEOPHYSICAL SURVEY RESULTS AND INTERPRETATION

3.1 Introduction

- 3.1.1 The gradiometer survey has been successful in identifying anomalies of probable and possible archaeological interest across the Site, along with a number of modern services. Results are presented as a series of greyscale, XY plots, and archaeological interpretations, at a scale of 1:2000 (**Figures 2-29**). The data are displayed at -2nT (white) to +3nT (black) for the greyscale images and $\pm 25\text{nT}$ at 25nT per cm for the XY trace plots.
- 3.1.2 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (**Figures 3-30**). A scanning interpretation (**Figure 3**) has been included in this report, this aims to highlight large features identified in the scanning such as services and extended spreads of suspected geology and archaeology. Significant anomalies over 30m in length have been identified only, detailed survey was utilised to investigate smaller scale areas of magnetic disturbance. Full definitions of the interpretation terms used in this report are provided in **Appendix 2**.
- 3.1.3 Numerous ferrous anomalies are visible throughout the detailed survey dataset. These are presumed to be modern in provenance and are not referred to, unless considered relevant to the archaeological interpretation.

3.2 Recorded Scanning Survey Results

- 3.2.1 The results of the recorded scanning survey (**Figure 2**) show a generally quiet magnetic background across the majority of the Site. A large number of small ferrous anomalies are visible across much of the Site. Localised regions of magnetic disturbance and increased magnetic response are evident, particularly in close proximity to buildings, roads and other extant infrastructure and features. Some of these areas of disturbance are thought to relate to geological features, these areas are highlighted on the scanning interpretation (**Figure 3**).
- 3.2.2 The area to the west around **4000** contains a number of east-west aligned features. They are characterised by a series of bipolar magnetic anomalies (black and white) arranged end to end; these anomalies are thought to be created by ceramic field drains. To the south of this is a modern service **4001** that runs from the east side of the disused Highstead chalk pit south east towards the east side of Funtley. Close to this service at **4002** are a pair of parallel trends that show up clearly in the scanning data as positive anomalies. Immediately north of this at **4003** is an area of noise in the data, this does not correspond to any buried features but is a product of the overhead power lines running across the Site.
- 3.2.3 A large area of increased magnetic response is present at **4004** although it is not clear whether this relates to geological or anthropogenic activity. A linear anomaly is present at **4005** and is similar to others noticed within the data such as at **4007** and **4011**. These anomalies may correspond to archaeological features but as they are so slight the possibility that they are composed of a number of separate unrelated anomalies that merely appear

joined cannot be discounted. A path shows in the data as a line of ferrous material at **4006**; another line of ferrous is present at **4017** that may represent an additional path or former boundary.

- 3.2.4 The area to the east of the survey area is dominated by modern services with at least five visible at **4009**, **4010**, **4012** and **4013** along with another possible service visible at **4008** that is visible as a line of ferrous material.
- 3.2.5 Three chalk pits (identified as such from mapping) were detected at **4014**, **4018**, north east of **4001** and **4019** and are characterised by ferrous anomalies. Another similar anomaly is visible at **4020** however, as it is not recorded on available old mapping, it is regarded as an as-yet uninvestigated ferrous anomaly.
- 3.2.6 Two large positive anomalies were identified at close proximity that were considered to be archaeological; **4015** appears as an elongated oval feature whereas **4016** is clearly visible as two very clear near-parallel positive anomalies aligned approximately ESE-WNW. A linear ferrous feature aligned north to south is present at **4017**.
- 3.2.7 The suspected archaeology was targeted along with trends, quarry pits and other areas of increased magnetic response including many small anomalies observed in the scanning data (not depicted on the scanning interpretation). In most cases modern services were avoided entirely except in cases where interesting anomalies were observed running into these features. Several quiet areas in the scanning data were also targeted to serve as a control.

3.3 Gradiometer Survey Results and Interpretation

- 3.3.1 **Area 1** was targeted as the scanning data revealed a concentration of positive anomalies in this area. These positive anomalies (**4021**) appear to be geological in origin with values that only just reach above 2nT and diffuse edges that seamlessly blend into the background values. The other anomalies in this area are positive trends (0.5-1.5nT) that may relate to ploughing and very small positive anomalies with values around 3-4nT that may possibly be archaeological.
- 3.3.2 **Area 2** was targeted for similar reasons as **Area 1** but revealed that the apparent positive anomalies observed in the scanning data were small ferrous anomalies. The scanning survey detected the positive (black) ends of these dipolar (black and white) anomalies making the scanning data look more promising than it turned out to be. Aside from the ferrous anomalies a number of positive trends (0.5-2nT) were observed along with some small positive anomalies (2-5nT) of possible archaeological interest. The trends could be either archaeological or could relate to ploughing, little more can be said about the small positive anomalies as they form no significant patterns in their spatial distribution. An area of increased magnetic response is present at **4022**, there are no obvious patterns visible within this area and it might be geological in origin.
- 3.3.3 **Area 3** was targeted over an area that featured field drains identified in the scanning data along with positive anomalies that were suspected to be archaeological. The ceramic field drains (**4024**) are the most noticeable features in this data and these bipolar anomalies (black and white) have

values ranging from -3 to 3nT. They are spaced roughly 20m apart and are aligned east to west with each bipolar anomaly representing an individual section of pipe. There are two positive anomalies in this area that have been termed archaeological, with the larger of the two at **4023** and the smaller present south of **4024**. They have been identified as archaeology as their size, shape, form and strength are consistent with such an interpretation. **4023** measures over 6.5m in length, has a sub-oval shape and has very clear edges with magnetic values between 5nT and 10nT; the shorter anomaly measures 2.5m in length and has a sub-circular shape. These anomalies most likely represent a cut features such as pits. The remaining anomalies are linear trends and small positive magnetic anomalies interpreted as possible archaeology. The western half of the survey area is covered by broad, weak magnetic anomalies with very diffuse edges; these are considered to be geological like similar anomalies observed in **Area 1**.

- 3.3.4 **Area 4** was targeted as a control survey area in a field with no suspected archaeology observed from the scanning data. No clear archaeological features were detected in this area. In addition to two large ferrous anomalies in the centre the most noticeable anomaly is a spread of increased magnetic response at **4025**. This spread has no obvious order or patterning to it and may be similar to the spread outlined in **Area 2** at **4022**. The remaining anomalies are positive trends and very small positive anomalies of possible archaeological interest.
- 3.3.5 **Area 5** was targeted over an area that showed potential with a concentration of small positive anomalies observed in the scanning data at this location. Many of the positive anomalies observed in the scanning turned out to be ferrous anomalies when the area was surveyed in detail although one was revealed to be archaeological. It is located at **4026** and is L-shaped measuring over 20m in length and is aligned with the ploughing trends in this field (ESE-WNW) although it is clearly not in itself a ploughing trend. It has magnetic values around 5nT, well defined edges and is considered to be a short length of ditch. Aside from the modern service that cuts the north-east corner of the survey area the most noticeable features are the ploughing trends that show up very clearly in this field. They are both positive and negative and are aligned with the current field boundary. There are two long trends running roughly north to south just past **4026**, they are diffuse in form values of only 1.8nT at their strongest with values dipping close to the background in places and may represent geological features. There are a small number of closely spaced positive trends that run at a different angle to the ploughing that are aligned roughly east to west, these may prove to be archaeological. The remaining features are small positive anomalies of possible archaeological interest.
- 3.3.6 **Area 6** was targeted on two very clear positive trends observed in the scanning data (**Figures 2 and 3, 4002**) along with an area of enhanced magnetic values. The two positive linear anomalies (**4028**) were confirmed as archaeological features; they are aligned parallel approximately 3.5m apart and the longer of the two features measures approximately 42m in length. They have magnetic values of around 5nT but vary in strength along their length, fading out at either end rather than having clearly defined ends. There are faint trends with magnetic values around 0.5nT that line up with the southern of the two linear features running both east and west from it. They are most likely to be ditches given their positive values, possibly

defining some kind of track. The reason for these features fading out could be the result of a number of factors, these include a loss of contrast due to the fill of the ditches becoming less magnetic in places and possibly the result of partial preservation due to damage sustained from modern ploughing. The area of increased magnetic response at **4027** is characterised by a spread of small bipolar anomalies (typically between -5nT and 5nT) and does not appear to form any clear anthropogenic pattern. This could either be a scatter of magnetically enhanced debris (e.g. ceramic) or is perhaps more likely a deposit of magnetically enhanced geological material such as is observed in areas of gravel. There are a great many ploughing trends in this area that are very likely to be modern and there is an anomaly with a diffuse form between **4027** and **4028** that is very likely to be geological. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.

- 3.3.7 **Area 7** was targeted in an area defined as increased magnetic response from the scanning data (**4004**). These responses are shown to result mostly from small ferrous anomalies when detailed data was collected here. Apart from the ferrous anomalies, geology, ploughing trends and small positive anomalies that can be observed in many areas across the Site, the only features of possible interest are a number of linear and curvilinear trends (**4029**). They have positive magnetic values of 1nT and are aligned differently from the ploughing trends observed in this field.
- 3.3.8 **Area 8** was targeted purely as a control survey block that was deemed to be of low potential from the scanning data it was also targeted over a findspot of an Iron Age coin mentioned in the desk-based assessment (WA 2012). No definite or probable archaeological features were identified in this block. Aside from the usual anomalies (ploughing trends, ferrous and small positive anomalies) the only notable features are a single positive linear trend and a curvilinear negative geological anomaly (**4030**). This broad negative anomaly has values around -2nT and is considered to be geological due to its very diffuse and ill-defined edges.
- 3.3.9 **Area 9** was targeted over the same broad area of increased magnetic response as **Area 7** and this area too revealed few anomalies of interest. Most of the anomalies were ferrous and this concentration is possibly explained by the public footpath that runs between **Areas 7** and **9** resulting in a greater amount of rubbish discarded in the fields either side. The only features of possible interest aside from the numerous small positive anomalies are a number of faint linear positive trends (**4031**). They are set at a differing alignment from the ploughing trends in the area and have values around 1nT.
- 3.3.10 **Area 10** was targeted on an area with many areas of enhanced magnetic response thought to represent an area of human activity. The detailed survey results reveal that there are a variety of broad anomalies that are not clearly anthropogenic. There are two types of anomaly that dominate this area, the first are broad positive anomalies that dominate the north and east (**4032**) and the second are dense concentrations of bipolar anomalies (**4033**). The broad anomalies around **4032** are positive with values around 1.5nT and have diffuse edges; these anomalies are considered to be

geological and are very similar in form to those observed in **Areas 1 and 3**. The concentrated bipolar anomalies such as is seen at **4033** are very similar to those seen in other areas (**4022, 4025 and 4027**) and are considered to most likely to be geological given the wide spread of such regions across this south west of the Site. Other than the many ploughing trends the only anomalies of possible interest are the numerous small positive anomalies present throughout the area and several linear and curvilinear trends such as the example at **4034**. It has magnetic values of 1nT and lies parallel to a similar trend, these could be ploughing trends from an earlier period as they are on a different alignment to the modern examples.

- 3.3.11 **Area 11** was targeted over an area of positive anomalies observed in the scanning data, for the most part these turned out to be geological features. These anomalies (**4035**) are positive with values between 2.5nT to 3nT at the strongest points and have an irregular shape in plan with very diffuse edges that blend seamlessly into the background. There is one group of positive anomalies to the north east of the block at **4036** that have much better defined edges and form a linear alignment with trends either side. These anomalies have magnetic values in the region of 3nT to 4nT and are likely to be archaeological. Looking at the 1841 tithe map for Fareham reveals that a road/track runs through this corner of the survey area and corresponds with these anomalies. They could have been created by the deposition of magnetically enhanced material to surface this route or from rubbish dropped here during its use. There are a number of trends scattered throughout the area, some are straight and may be ploughing trends and others are more complex in form and could be archaeological. The remaining anomalies are small positive magnetic anomalies that may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.12 **Area 12** was targeted as a control block to test whether this area was as empty of archaeological features as the scanning data suggested. The detailed survey revealed no anomalies of definite or probable archaeological interest. A small area of positive geological responses was identified at **4037** that are similar to those observed in **Area 11**. Some north-south aligned trends were observed that were interpreted as modern ploughing trends given their orientation with the present field system. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.13 **Area 13** was targeted around a very large ferrous anomaly identified in the scanning data that has been linked with the location of an old chalk quarry from map evidence. This detailed survey block aimed to identify any other smaller features associated with the large quarry pit. The pit is clearly visible on the surface as a significant depression that can easily obscure a standing person from view when standing in the base of it. The quarry pit is present at **4038** measuring approximately 45m in diameter with magnetic values that exceed the range limit of $\pm 100\text{nT}$ set for the Bartington systems used. This pit most likely contains material such as iron and ceramic objects in addition to a range of other waste materials possibly thrown in after the quarry pit ceased to operate serving as a landfill site for the local community. There

are several other weaker anomalies surrounding it at **4039**, **4040** and **4041** that are not ferrous; they have values ranging from -3nT at the negative halos surrounding them and up to around 3nT in the positive regions that make up the bulk of the anomalies. It is not clear whether these are the geological features that this quarry and others like it were seeking to target or whether these were gradual slopes cut to get the quarried chalk out from the base of the pit that subsequently silted up. Due to these uncertainties they have been termed probable archaeology rather than definite archaeology. The quarry is first mentioned on the 1898 edition OS map as an old chalk pit suggesting that the pit was disused by this date but it is not clear exactly when it was in use from the maps available.

3.3.14 There are some stronger positive anomalies to the south of the quarry pit that are thought to be definite archaeology; one lies south west of **4040** and the other at **4042**. The anomaly south-west of **4040** measures approximately 3.7m in length with magnetic values around 5nT , this is consistent with a cut feature such as a pit. The anomaly at **4042** is not as easy to explain as it is bipolar with a negative (white) reading at the centre of -100nT (beyond the range used) with a positive (black) halo with values starting at the maximum recorded value of 100nT dropping sharply as you move from the centre. On the surface this sounds like a description of a ferrous anomaly but this is unusual as the halo of a ferrous anomaly is usually negative not positive. Taken with the smooth profile seen in the XY plots this is suspected as an area of intense burning and has been classed as definite archaeology for this reason. To the east of **4042** are some small positive anomalies that may represent small pits and have been interpreted as probable archaeology. There are some other interesting anomalies further away to the north east of the pit including a group of positive and negative linear anomalies forming a rectangular shape at **4043** and a small sub-oval shaped well defined positive anomaly termed archaeology north of this. The arrangement of these weak trends may be coincidental but they should not be ruled out as being archaeological features; the positive anomaly (around 3nT) north of this is most likely to be a pit. There is one ploughing trend aligned NNE-SSW, this is not consistent with the direction of modern ploughing but runs in the same rough orientation as the field system visible in the 1841 Fareham tithe map. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.

3.3.15 **Area 14** was targeted over an area of enhanced magnetic values along with a concentration of ferrous anomalies. The detailed results revealed few clear archaeological features but with reference to the 1841 tithe map some of the anomalies link up with known features. The road/track observed in **Area 11** and linked to a feature on the tithe map continues into this area and the edges are defined as very faint positive and linear trends with concentrations of ferrous in places between these trends at **4044** and **4045**. These trends are so interrupted it would be impossible to identify it as a track without reference to the map evidence. The many ploughing trends observed running through this area are aligned NNE-SSW and are thought to relate to the earlier field systems illustrated in the tithe map rather than from modern ploughing. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological

features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.

- 3.3.16 **Area 15** was targeted on another chalk pit known from early mapping that showed on the scanning data as a large ferrous anomaly. This detailed survey block aimed to identify any other smaller features associated with the large quarry pit. The quarry pit is similar in size and form to the one in **Area 13** and can be seen as a ferrous anomaly at **4046**. Its pattern of use as a quarry followed by use as a convenient landfill site is probably similar also. To the north and north east of the pit are linear arrangements of ferrous anomalies flanked by faint positive and negative linear anomalies. These are considered to represent a continuation of the road/track marked on the 1841 tithe map that has been observed in **Areas 11** and **14** also; the ferrous material may represent small pieces of waste material that failed to make their way into the disused pit. As was the case at **Area 13** there are smaller positive anomalies (similar values) close to the main pit at **4047** and **4048** that are sub-oval in shape but unconnected measuring 22m in length. These may either be small exploratory pits dug to find the desired stone that were abandoned in favour of the main pit or are geological features. Due to this uncertainty they have been termed probable archaeology rather than definite archaeology.
- 3.3.17 There is a small positive anomaly at **4049** that may be archaeological but as its edges are a little diffuse has been interpreted as probable archaeology. There are more of the ploughing trends running through this area that are linked to an earlier ploughing regime as they are angled respecting the field boundaries on the 1841 tithe map instead of the modern boundaries. The remaining anomalies in this area are a small number of linear trends such as at **4050** and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.18 **Area 16** was targeted as a control block to test whether this area was as empty of archaeological features as the scanning data suggested. The detailed survey revealed no anomalies of definite or probable archaeological interest. A small area of positive geological responses was identified at **4051** along with some north-south aligned trends that were interpreted as modern ploughing trends given their orientation with the present field system. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.19 **Area 17** was targeted over a part of a large spread of ferrous with a couple of positive anomalies close by. The ferrous spread at **4052** was suspected as a possible quarry not recorded on the available maps but seems to be a simple spread of ferrous material close to a path. It bears few similarities to the spreads observed in **Areas 13** and **15** and has no associated broad positive anomalies that typically surround the known quarry sites. A positive anomaly observed nearby in the scanning data is shown to be definite archaeology in the detailed data at **4054**. It is sub-oval in shape and measures around 7m in length with magnetic values of around 5nT with a negative halo of -2nT at its strongest point to the north. This anomaly is

likely to be a large pit that is filled with magnetically enhanced material. Further north at **4053** is another positive anomaly (around 5nT) that may be the beginnings of a linear feature such as a ditch but as it runs out of the survey area to the north west it is difficult to provide a definitive interpretation. This anomaly did not show as a significant anomaly in the scanning data and certainly can't be seen as a long linear in this data. Other than some geological anomalies the remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.

- 3.3.20 **Area 18** was targeted on a concentration of small positive and ferrous anomalies. The detailed survey revealed no anomalies of definite or probable archaeological interest with the majority of it dominated by small ferrous anomalies that do not form significant patterns of distribution. The faint positive anomaly (1.5nT to 2.5nT) at **4055** has been interpreted as possible archaeology only as it bears some resemblance to geological anomalies encountered elsewhere but has a more regular form in plan. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.21 **Area 19** was targeted as a control block to test whether this area was as empty of archaeological features as the scanning data suggested. The detailed survey revealed no anomalies of definite or probable archaeological interest. An area of positive geological responses was identified to the north east with some north south aligned trends that were interpreted as modern ploughing trends and some others aligned NNE-SSW that are thought to relate to earlier ploughing. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.22 **Area 20** was targeted on a concentrated area of positive anomalies thought to be of archaeological potential. The detailed survey results revealed several anomalies of probable and possible archaeological interest. One of the more noticeable features is an area in the north-west of the block at **4056** with faint positive values across most of it around 2nT with stronger areas around 4nT. It is slightly stronger than other areas where it is classed as geology in **Area 19** but it is similar in form. This anomaly has been termed probable archaeology because it is so similar to the anomalies associated with known quarry pits; there is a possibility that they are geological formations that have been targeted in places by quarrying rather than quarries themselves. A faint linear anomaly runs down the centre of the survey area on a roughly north to south orientation at **4057**. It has positive values of around 1.5nT and has fairly diffuse edges; it is suspected it is geological but has been termed possible archaeology due to its linear form. A small area of positive geological responses was identified at **4058** along with some north south aligned trends that were interpreted as modern ploughing trends given their orientation. The remaining anomalies are linear trends and small positive magnetic anomalies, these may represent

archaeological features but as there is no clear pattern in their distribution they should be considered to be of possible archaeological interest.

- 3.3.23 **Area 21** was targeted on a concentrated area of positive anomalies thought to be of potential. The detailed survey results revealed several anomalies of definite and probable archaeological interest. An interrupted linear defined by a trend runs roughly north to south through the survey area at **4059** with typical magnetic values between 3nT and 4nT. The reasons for this appearance do not stem from any data processing steps as the anomaly looks like this in the raw data; this anomaly has been termed as archaeology at its strongest regions. To the south-east at **4060** is a strong positive anomaly (5nT to 12nT) with a weaker negative halo (-2nT) surrounding it. The survey has not fully defined the extents of this feature but it is suspected as a cut feature, possibly a pit. The remaining anomalies are linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.24 **Area 22** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed no anomalies of definite or probable archaeological interest. The only noteworthy group of anomalies are a group of small positive anomalies that appears to form an arc at **4061**; this arrangement may be coincidental but seems to form a circular shape in plan. The many ploughing trends observed running through this area are aligned NNE-SSW and are thought to relate to the earlier field systems given their orientation. The remaining anomalies are linear trends and small positive magnetic anomalies, these may represent archaeological features but as there is no clear pattern in their distribution they should be considered to be of possible archaeological interest.
- 3.3.25 **Area 23** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed no anomalies of definite or probable archaeological interest and many of the positive anomalies present in the scanning data turned out to be dipolar ferrous anomalies. The most noticeable anomaly is a weakly positive spread with a negative halo surrounding it at **4064**. It is roughly oval in shape measuring approximately 30m in length with magnetic values of 0.5nT across most of the anomaly with the strongest points measuring up to 5nT, the negative halo has values of -2nT. It is uncertain whether this represents a quarry pit that was backfilled with natural material rather than ferrous waste, or is a geological feature. There are no records of a quarry here on the available maps. The remaining anomalies are trends and small positive anomalies that are considered to be of possible archaeological interest; some trends such as **4062** and **4063** may be of greater interest due to their anomalous curvilinear form.
- 3.3.26 **Area 24** was targeted as a control block to test whether this area was as empty of archaeological features as the scanning data suggested. The detailed survey revealed no anomalies of definite or probable archaeological interest. Ploughing trends aligned NNE-SSW were interpreted as belonging to an earlier phase of agricultural activity given their orientation with the earlier field system depicted on the 1841 tithe map. The remaining anomalies in this area are a few linear trends and small positive magnetic anomalies such as **4065**, these may represent archaeological features but

as there is no clear anthropogenic pattern in their distribution they should be considered to be of possible archaeological interest.

- 3.3.27 **Area 25** was identified as containing the most promising anomalies identified from the scanning data. The largest block of detailed survey was targeted in this area to investigate these scanned anomalies along with targeting a possible ring ditch identified from aerial photography (WA 2012). The detailed survey revealed many anomalies of definite and probable archaeological interest but failed to find a magnetic anomaly corresponding to the recorded ring ditch. This survey area is effectively divided into two sections by a modern service that runs from the north west to the south east. The larger area to the west of the service contains a curvilinear that cuts across the north of the survey area at **4066**. This anomaly has variable magnetic values across its length of 6nT at its strongest with other areas only measuring 0.5nT. The feature lines up perfectly with the road/track observed in **Areas 11, 14** and **15** that has been linked to a track visible on the 1841 Fareham tithe map but in this case it is defined not by concentrations of ferrous but by positive readings. This difference in appearance may reflect the use of a different surfacing material along this section or could even be a case of better preservation in this area compared to others. South of this track are two sub-circular positive anomalies at **4067** and **4068** that are both about 5m in diameter with magnetic values around 2nT. These anomalies are likely to be cut features such as pits. Further west at **4069** and **4070** are two possible quarry pits, there are none recorded on any of the maps consulted for this location and it is not full of ferrous like the known quarry sites are but there is a noticeable depression at this point. The anomalies are irregular and sub-oval in shape and both measure roughly 25m in length with magnetic values around 5nT at their strongest points. These anomalies have been interpreted as probable archaeology, although a geological explanation is possible for them.
- 3.3.28 The clearest archaeological feature in the area is located at **4071** and consists of two linear positive anomalies, interpreted as ditches, aligned approximately east-west. The ditches are aligned near parallel next to one another, with the widest gap between the two at the eastern end. The ditches have magnetic values ranging between 2nT and 5nT and measure approximately 53m in length with the ditches spaced approximately 21m apart at the eastern end and 15m at the western end. There are two small sub-oval shaped positive anomalies located approximately 17m from the eastern end close to the centre region between the two ditches with values between 3nT and 8nT. These are very likely to be pits given their magnetic values with the larger of the two measuring approximately 3.3m in length and the smaller one measuring 1.2m in length; these pits may even relate to the ditches. A curved positive linear trend lies to the eastern end of the two ditches almost spanning the gap between them, with a ferrous anomaly located approximately 6.5m to the west of this in the area between the ditches. These two anomalies may not relate to the paired ditches but should not be discounted entirely. These ditches resemble a long barrow in terms of size and layout, and surveys over long barrows in the Wessex region have revealed very similar results (Bray 1997, Martin 2001a and 2001b).
- 3.3.29 South and south-east of this suspected long barrow are two more pit-like anomalies at **4072** and **4073**; the former closely resembles the two

anomalies at **4067** and **4068** and the latter is much better defined with stronger values (around 10nT). There are some faint positive trends in this area that appear to form regular shapes in places such as at **4074** and **4075**; these may prove to be archaeological. A line of ferrous anomalies is present at **4076** running from north to south through the entirety of the detailed area, it can be seen running further north of this in the scanning data (**4017**) and seems to stop close to the road/track recorded on the tithe map. It should be pointed out that a north-south anomaly cannot easily be traced in the scanning data as it could fall between the scanning lines. It seems to continue south in the scanning data towards the known quarry at **4014** and may represent a route taken from the road in the north down to the quarry in the south for the purposes of dumping. South-east of these anomalies at **4078** is a faint positive anomaly similar to **4064** with the addition of a concentration of ferrous in the centre of the anomaly, the spread measures approximately 25m in length. This is thought to be a quarry pit that was backfilled with ferrous material after it was disused like **4038** and **4046**. The anomaly did coincide with a noticeable depression and there is a possible quarry marked at this position as a bulge in a former field boundary on the 1841 Fareham tithe map. To the north-east of this at **4077** is a very well defined sub-oval positive anomaly that measures approximately 10m in length with magnetic values of around 15nT at the strongest points. This is considered to be a large pit that has been backfilled with magnetically enhanced material.

3.3.30 To the east of the modern service are a number of pit-like features with two types present; the first are positive anomalies with slightly diffuse edges (**4079** and **4080**) and the second are clearly defined positive anomalies with wide negative halos surrounding them (**4081** and **4082**). The first group, **4079** and **4080**, are sub-oval in shape and measure approximately 3m and 5m in length respectively with magnetic values around 7.5nT at their strongest. The second group, **4081** and **4082**, have irregularly shaped positive anomalies in the centre measuring 5.5m and 8m with magnetic values of around 15nT and 5nT respectively. These two anomalies are surrounded by negative halos that vary in strength, the stronger positive anomaly at **4081** is matched by a stronger negative measuring around 3.5nT with the halo around **4082** measuring around 1.5nT; the halos are irregular in shape and measure 20m long around **4082** and 13m long around **4081**. The positive cores have been termed as definite archaeology whereas the negative halos have been termed probable archaeology. Close to the ferrous shadow surrounding the service at **4083** are some sub-oval shaped positive anomalies with values around 3nT; they line up with the route of the road/track observed at **4066** and may be a part of it. These features have been termed as probable archaeology as much of the area is obscured by ferrous making interpretation difficult. The ploughing trends in this area are aligned NNE-SSW like others observed close by and are thought to date to an earlier period as the modern ploughing is aligned north-south in this area. The remaining anomalies are small irregular and sub-oval shaped with positive values such as those at **4084** and trends that are at a differing alignment from the dominant ploughing trends such as at **4085**; these may prove to be archaeological.

3.3.31 **Area 26** was targeted on a concentrated area of positive anomalies thought to be of potential. The detailed survey results revealed only one anomaly of definite archaeological interest located at **4086**. This anomaly is a slightly

irregular sub-oval shaped positive anomaly with a negative halo measuring 12m in length with values of around 15nT with -4nT recorded for the negative surrounding it. This anomaly is likely to be a large pit that is filled with magnetically enhanced material. The ploughing trends visible are a mix of the modern north-south and the earlier NNE-SSW trends. There is a weakly positive geological anomaly at **4087** with values around 1nT with very diffuse edges. The remaining anomalies are small irregular and sub-oval shaped with positive values such as those at **4086** and trends that are at a differing alignment from the dominant ploughing trends; these may prove to be archaeological.

- 3.3.32 **Area 27** was targeted as a control block to test whether this area was as empty of archaeological features as the scanning data suggested. The detailed survey revealed no anomalies of definite or probable archaeological interest. Some modern ploughing trends were observed along with a dense concentration of ferrous along the south of the block. The remaining anomalies are trends and small positive anomalies such as at **4089** that are considered to be of possible archaeological interest.
- 3.3.33 **Area 28** was targeted on an area with a dense concentration of ferrous anomalies and some broad positive anomalies observed from the scanning data. The detailed survey revealed no anomalies of definite or probable archaeological interest; the broad positive anomalies were revealed to be weakly positive geological features (**4090**) with magnetic values no higher than 1.5nT and had very diffuse edges. The remaining anomalies were a mix of ploughing scars, trends and small positive anomalies of possible archaeological interest.
- 3.3.34 **Area 29** was targeted over the location of two services identified in the scanning data because the scanning data suggested that some archaeological anomalies were present close to these services. The detailed survey revealed anomalies of definite and probable archaeological significance. The services are clearly visible at **4092** but a fairly substantial anomaly of definite archaeological interest was identified at **4091**. This feature is irregular and rounded in shape measuring approximately 7.5m x 4m with magnetic values around the 5nT to 8nT range. This anomaly is likely to be a large pit that is filled with magnetically enhanced material. To the west of **4091** are some smaller sub-oval shaped anomalies with values around 2nT to 3nT; these have been classed as probable archaeology. The remaining anomalies were a mix of ploughing scars, trends and small positive anomalies of possible archaeological interest.
- 3.3.35 **Area 30** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed no anomalies of definite or probable archaeological interest and many of the positive anomalies present in the scanning data turned out to be dipolar ferrous anomalies. There is one noticeably large positive anomaly at **4093** that has been classed as geology; it has values around 2.5nT and has fairly diffused edges. It was classed as geology because of its diffuse form but given it is relatively strong compared to other geological features encountered so far it may yet prove to be archaeological. The remaining anomalies are a mix of ploughing scars, trends and small positive anomalies of possible archaeological interest.

- 3.3.36 **Area 31** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed a few anomalies of probable archaeological interest. Three noticeable positive anomalies were observed at **4094** and **4095**; they are sub-circular in shape with the largest measuring a diameter of 6.5m with magnetic values of 6nT at the strongest point. These anomalies have very diffuse edges which make them appear geological but given their strength the strong points in the centre have been defined as probable archaeology and the outer regions as possible archaeology. These features are likely to be cut features with a gentle shallow profile but could conceivably be tree throws. The remaining anomalies are a mix of ploughing scars, trends and small positive anomalies of possible archaeological interest.
- 3.3.37 **Area 32** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed a few anomalies of definite and probable archaeological interest. A large irregular shaped anomaly of definite interest is present at **4096** that measures approximately 11.75m x 8.7m with magnetic values ranging between 5nT and 15nT. This anomaly is likely to be a large pit that is filled with magnetically enhanced material. Close to this pit is a dense concentration of ferrous anomalies near to the field edge. Another positive anomaly is located at **4097** which is sub-oval in shape measuring 5.5m in length with magnetic values between 3nT and 5nT; this is classed as probable archaeology as its edges are slightly diffuse. The remaining anomalies are a mix of geological features, ploughing scars, trends and small positive anomalies of possible archaeological interest.
- 3.3.38 **Area 33** was targeted on an area with several positive anomalies of possible archaeological interest. The detailed survey revealed a few anomalies of definite and probable archaeological interest. Another potential quarry site was identified at **4098** and looks fairly similar to the example at **4064** in **Area 23**; this has been classed as archaeology as it seems to have slightly stronger magnetic values (around 2nT). Further south at **4099** are some diffuse edged positive anomalies with magnetic values around 2.5nT; these anomalies have been classed as possible archaeology due to their diffuse form. The biggest concentration of archaeological features is to the south where there are a series of linear positive anomalies along with a number of smaller anomalies that form noticeable patterns in their distribution. There are some small but strong positive anomalies at **4100** and another to the east of this; the two largest of these anomalies are sub-oval and C-shaped and both measure around 3m in length with magnetic values between 3nT and 5nT. These anomalies have clearly defined edges and are likely to be cut features such as pits. A number of linear positive anomalies oriented on NNE-SSW and WNW-ESE alignments are seen forming what appears to be three rectilinear enclosures set within one another at **4101**, **4102**, **4103** and **4104**. These anomalies are not clearly defined across their full lengths with magnetic values ranging from around 4nT to less than 1nT or even disappear into the background in places. There is a pit-like response at **4102** that lies along the line of this linear with values around 3nT. The smallest of these possible enclosures lies at **4104** and measures approximately 14m across although it is not very well defined all around. In addition to these linear features are a number of small positive anomalies, some of which form regular patterns in their distribution; they have been interpreted as probable and possible archaeology depending on their strength and layout in

plan This survey block has not fully defined the extent of these features and it is not clear whether they belong to contemporary periods or are simply agricultural features. The remaining anomalies are a mix of ploughing scars, trends and small positive anomalies of possible archaeological interest.

4 CONCLUSION

4.1 Introduction

4.1.1 The gradiometer survey has been successful in identifying anomalies of definite, probable and possible archaeological interest across the Site, along with a number of modern services and magnetic trends.

4.2 Conclusions

4.2.1 The survey has identified numerous anomalies that have been linked to known features from mapping but some potential early remains including a possible long barrow (**4071**) and associated pits have been discovered. The interpretation of these features is based on examination of surveys undertaken over known long barrows such as the West Kennett long barrow (Martin 2001b). Although this possible long barrow is much shorter than West Kennett and shows little evidence of chambers it displays similarities in terms of the layout and orientation of its quarry ditches. In addition a possible track at **4028** and a concentrated area of ditches at **4101-4104** have been detected that are not marked on any of the available maps.

4.2.2 As has been mentioned above many features marked on the 1841 Fareham tithe map have been detected in the survey data including tracks (**4066**), quarries (e.g. **4038** and **4046**) and even indirect evidence of the former field systems in the form of ploughing trends aligned to the earlier field system (**Areas 14, 15, 23, 24** and **25**). A number of possible quarries not recorded on maps have also been detected such as at **4064, 4069, 4070** and **4098**; these anomalies are not associated with ferrous like the known quarries but their form is similar to those that are observable at known quarries. The difficulty in interpreting them is the possibility that these regions are not quarries but are indicative of a change in geology that quarry workers were seeking to exploit. The interpretation presented here has erred towards them being quarries but this interpretation needs to be tested with some trial excavation. The known quarries are filled with a large quantity of ferrous material and this is no doubt related to landfill activity in the years following the closure of the pit. The largest recorded quarry at **4014 (Figure 3)** is covered with a great quantity of ferrous and ceramic material that was visible at the surface that would certainly obscure any responses created by weaker features related to the actual extraction process.

4.2.3 The scanning survey has successfully defined areas with definite and probable remains that were subsequently targeted by detailed survey; **Area 25** is good evidence for this. There have however been instances where the scanning results have suggested the presence of archaeological remains but detailed survey have shown these areas to be dominated by geological responses; **Area 10** is a good example of this. The scanning survey will have revealed the largest and strongest anomalies associated with large ditches and extended areas of human activity but it should be noted that

very ephemeral remains such as those from structures built from small timber posts cannot be discerned from scanning data.

- 4.2.4 Conclusive interpretation has been hampered in regions of magnetic disturbance and variable geological responses. Weaker anomalies that are the result of archaeological features therefore may have been masked by these strong magnetic variations.

5 REFERENCES

5.1 Bibliography

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Martin, L. 2001a. *Two Long Barrows, Nr Avebury, Wiltshire: Report on geophysical survey, December 2000*. Unpublished survey report: English Heritage.

Martin, L. 2001b. *West Kennet Long Barrow: Report on geophysical survey, January 2001*. Unpublished survey report: English Heritage.

Wessex Archaeology. 2012. *Fareham Major Development Area, Hampshire: Archaeological Desk-Based Assessment*. Client report ref. 85580.01

5.2 Cartographic Sources

1841 Fareham Tithe map (HRO ref. 21M65/F7/86/2)

Ordnance Survey maps:

1870 6" (HRO ref. OS 1st Edition sheet 74)

1870 6" (HRO ref. OS 1st Edition sheet 75)

1898 6" (HRO ref. OS 2nd Edition sheet 74NE)

1898 6" (HRO ref. OS 2nd Edition sheet 75NW)

1910 6" (HRO ref. OS 3rd Edition sheet 74NE)

1910 6" (HRO ref. OS 3rd Edition sheet 75NW)

1931 6" (HRO ref. OS map sheet 74NE)

1931 6" (HRO ref. OS map sheet 75NW)

British Geological Survey

<http://www.bgs.ac.uk/discoveringgeology/geologyofbritain/viewer.html>

Soil Survey of England and Wales, 1983. *Sheet 6, South East England*. Ordnance Survey, Southampton.

6 APPENDIX 1: SURVEY EQUIPMENT AND DATA PROCESSING

Survey Methods and Equipment

The magnetic data for this project was acquired using a Bartington 601-2 dual magnetic gradiometer system. This instrument has two sensor assemblies fixed horizontally 1m apart allowing two traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation, and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.

The gradiometers have an effective resolution of 0.03nT over a ± 100 nT range, and measurements from each sensor are logged at intervals of 0.25m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.

Wessex Archaeology undertakes two types of magnetic surveys: scanning and detail. Both types depend upon the establishment of an accurate 20m or 30m site grid, which is achieved using a Leica Viva RTK GNSS instrument and then extended using tapes. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02m in real-time and therefore exceed the level of accuracy recommended by English Heritage (2008) for geophysical surveys.

Scanning surveys consist of recording data at 0.25m intervals along transects spaced 10m apart, acquiring a minimum of 80 data points per transect. Due to the relatively coarse transect interval, scanning surveys should only be expected to detect extended regions of archaeological anomalies, when there is a greater likelihood of distinguishing such responses from the background magnetic field.

The detailed surveys consist of 20m x 20m or 30m x 30m grids, and data are collected at 0.25m intervals along traverses spaced 1m apart. These strategies give 1600 or 3600 measurements per 20m or 30m grid respectively, and are the recommended methodologies for archaeological surveys of this type (EH, 2008).

Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and

ephemeral features. Data may be collected at up to 0.125m intervals along traverses spaced up to 0.25m apart, resulting in a maximum of 28800 readings per 30m grid, exceeding that recommended by English Heritage (2008) for characterisation surveys.

Post-Processing

The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.

Typical data and image processing steps may include:

- Destripe – Applying a zero mean traverse in order to remove differences caused by directional effects inherent in the magnetometer;
- Destagger – Shifting each traverse longitudinally by a number of readings. This corrects for operator errors and is used to enhance linear features;
- Despike – Filtering isolated data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings (generally only used for earth resistance data)

Typical displays of the data used during processing and analysis:

- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies.
- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.

7 APPENDIX 2: GEOPHYSICAL INTERPRETATION

The interpretation methodology used by Wessex Archaeology separates the anomalies into two main categories: archaeological and unidentified responses.

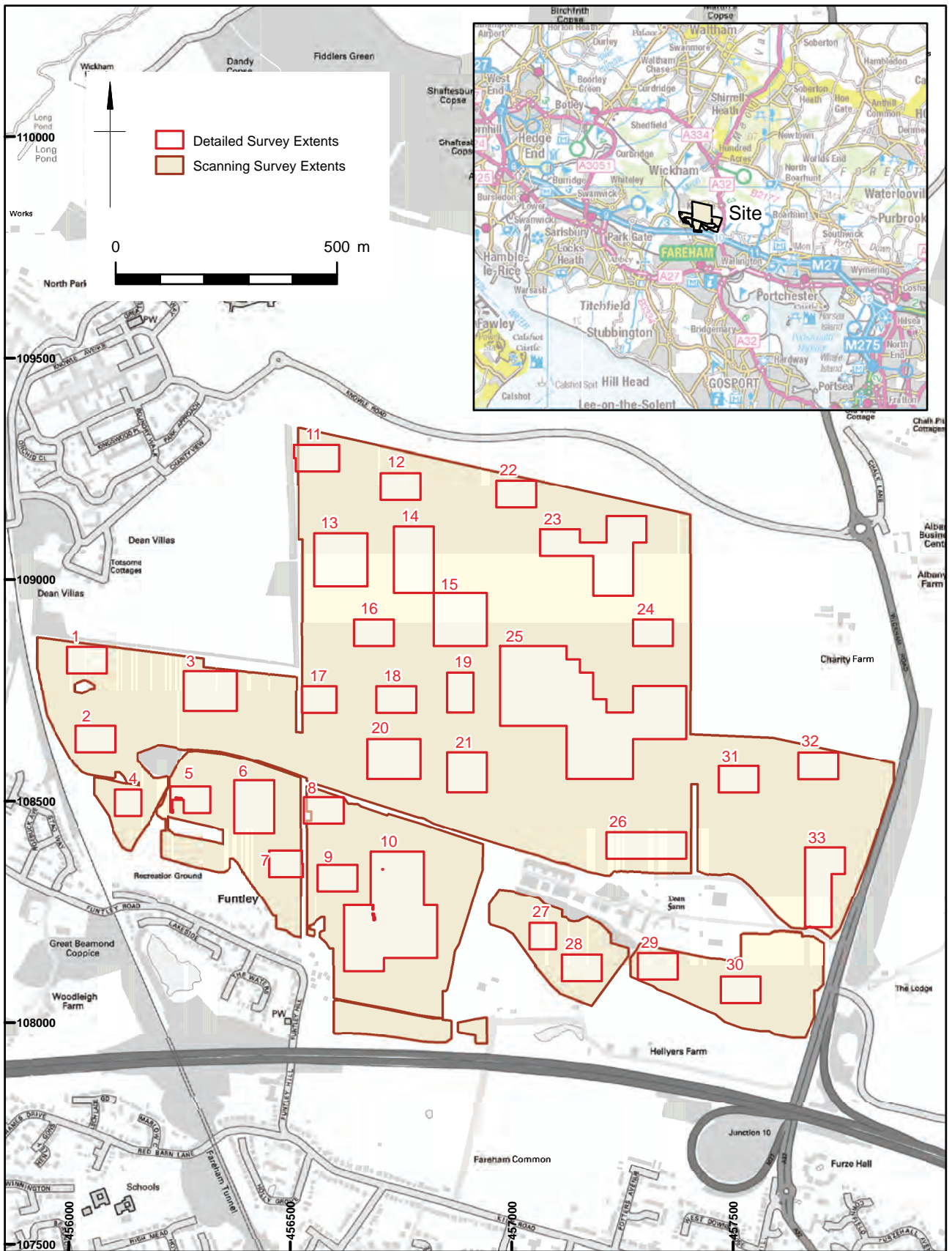
The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:


- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Probable archaeology – used for features which give a clear response but which form incomplete patterns.
- Possible archaeology – used for features which give a response but which form no discernable pattern or trend.

The unidentified category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:

- Increased magnetic response – used for areas dominated by indistinct anomalies which may have some archaeological potential.
- Trend – used for low amplitude or indistinct linear anomalies.
- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.

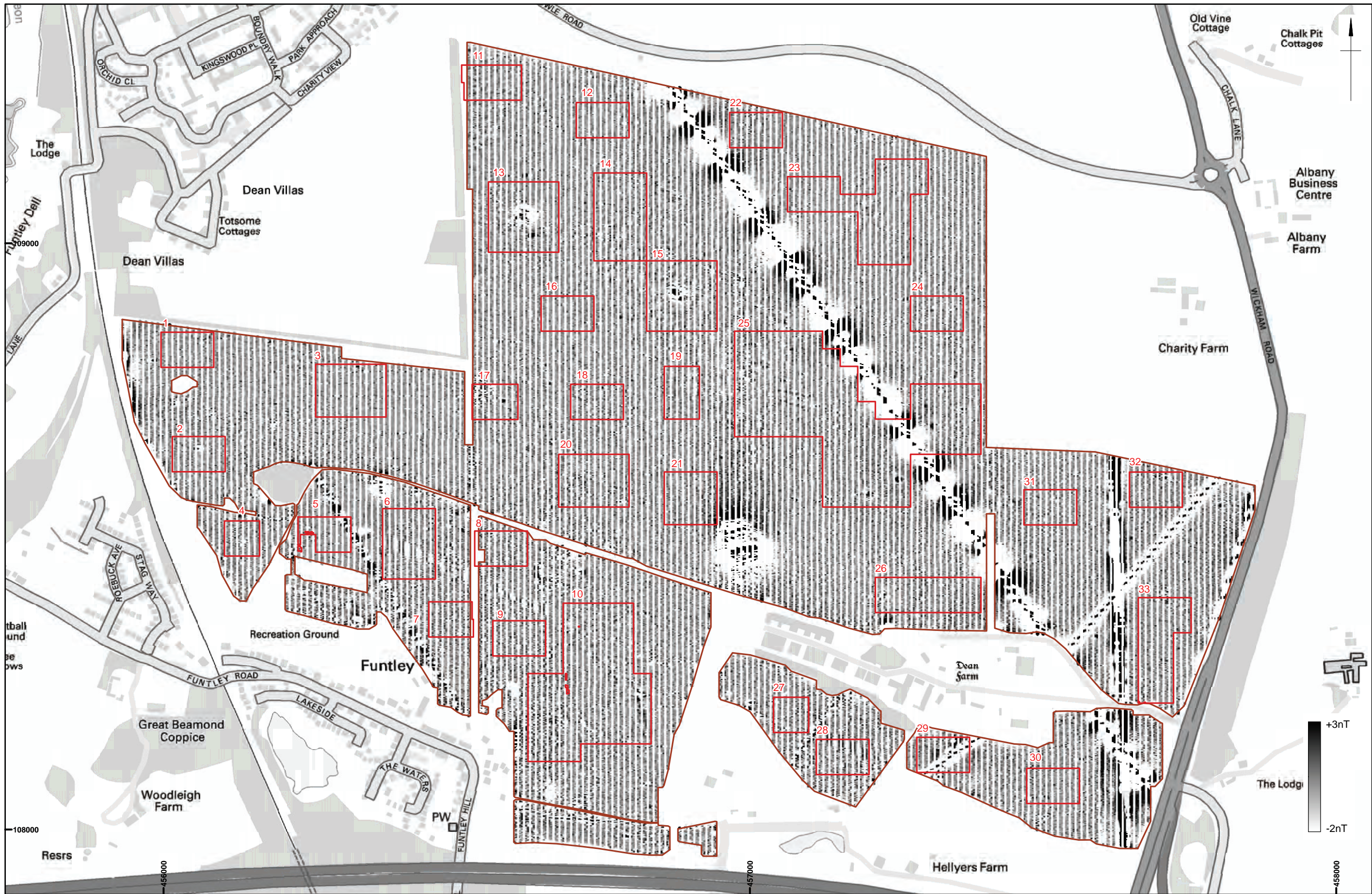
Finally, services such as water pipes are marked where they have been identified.






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Site location

Figure 1





 Detailed Survey Extents
 Scanning Survey Extents

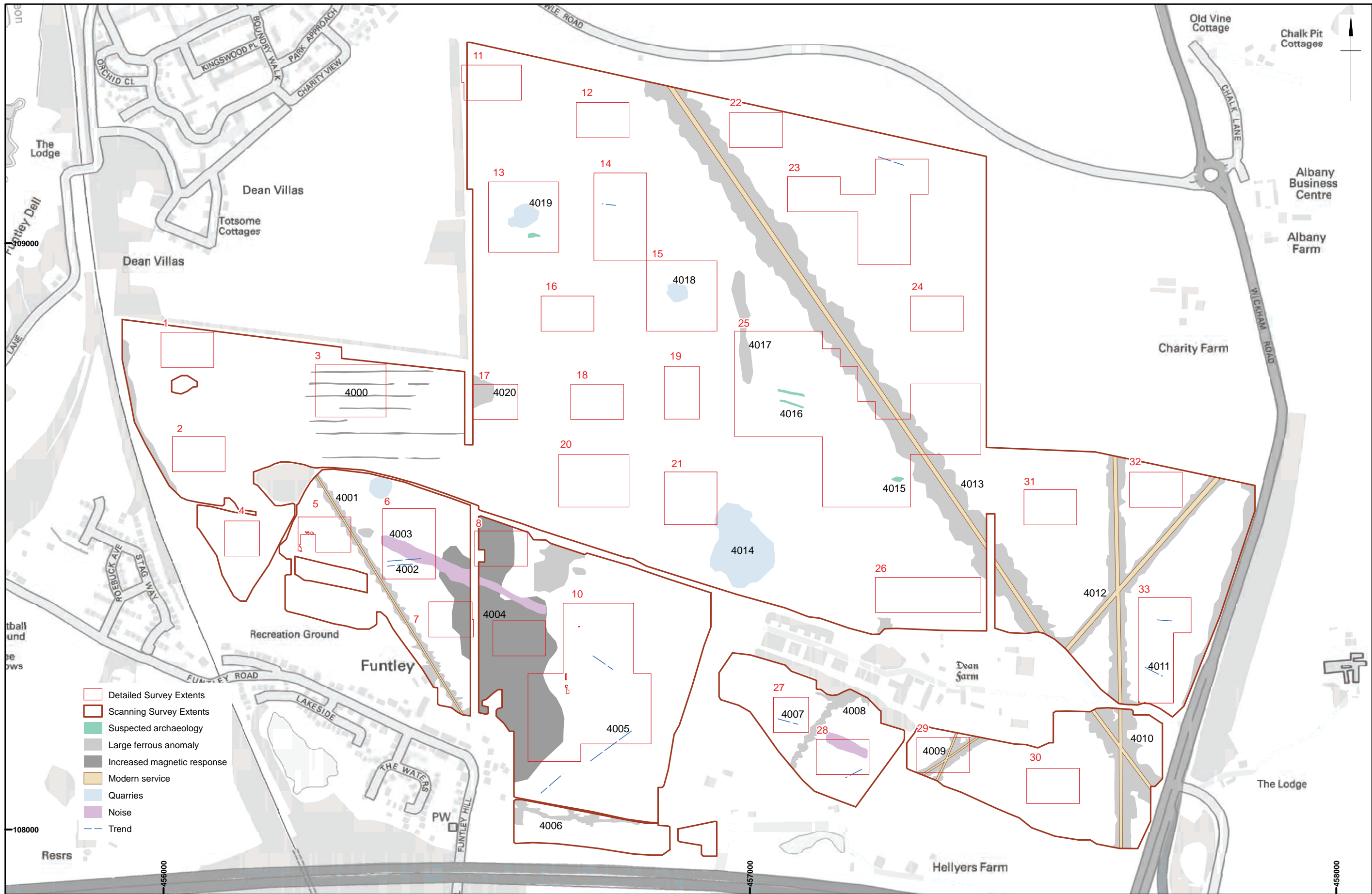


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Scanning Survey results

Figure 2



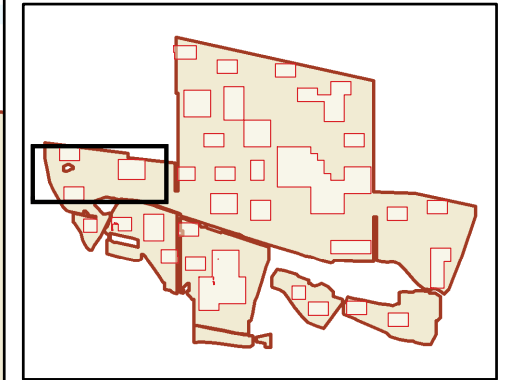

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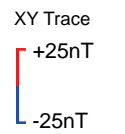
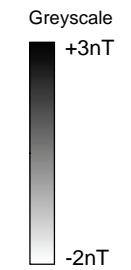
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Scanning Survey interpretation

Figure 3

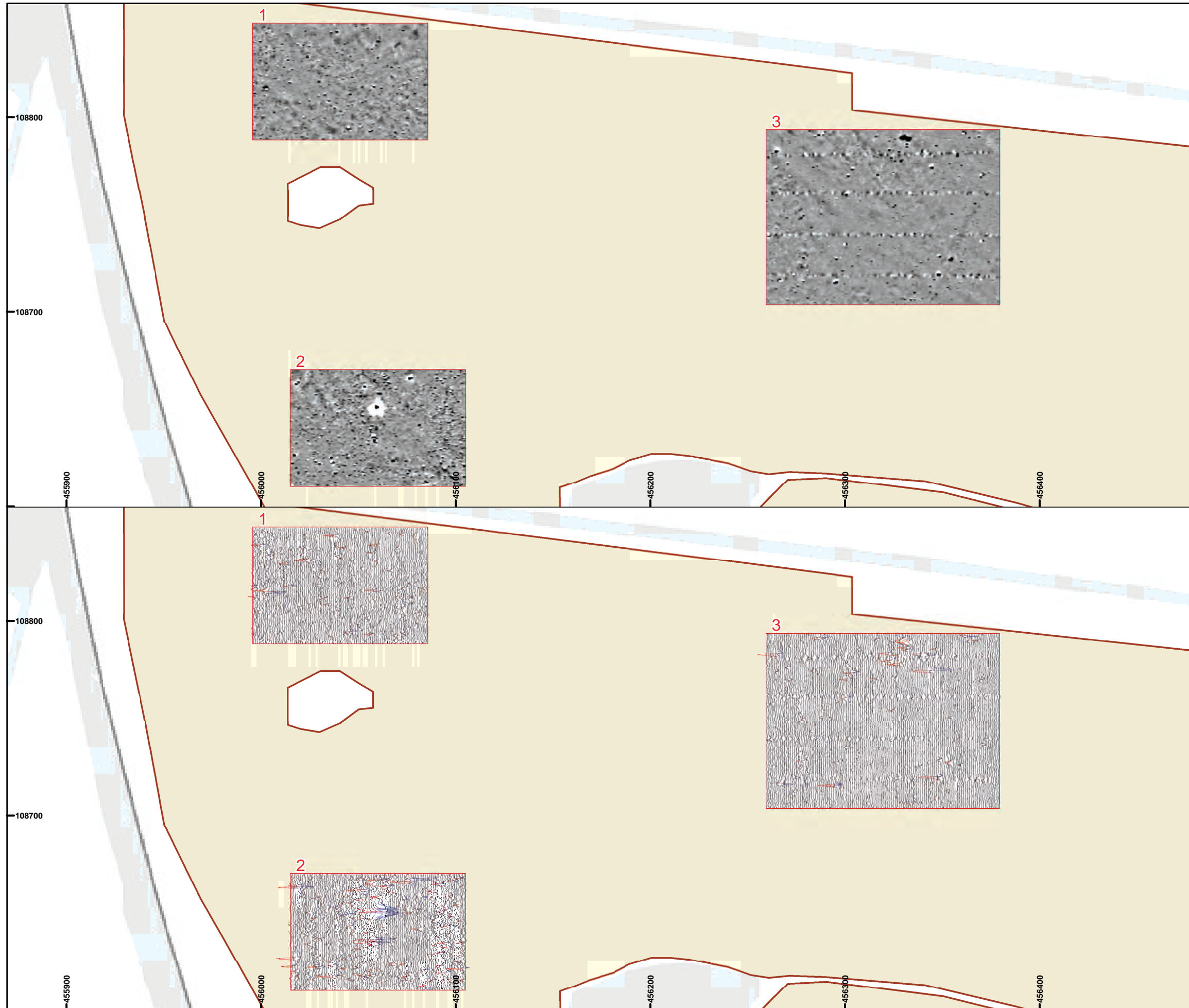


- Detailed Survey Extents
- Scanning Survey Extents



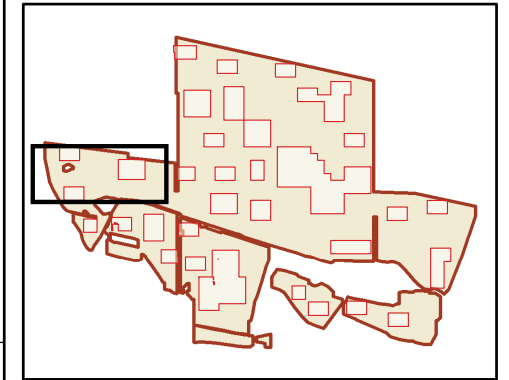
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Greyscale and XY Trace: Areas 1-3

Figure 4

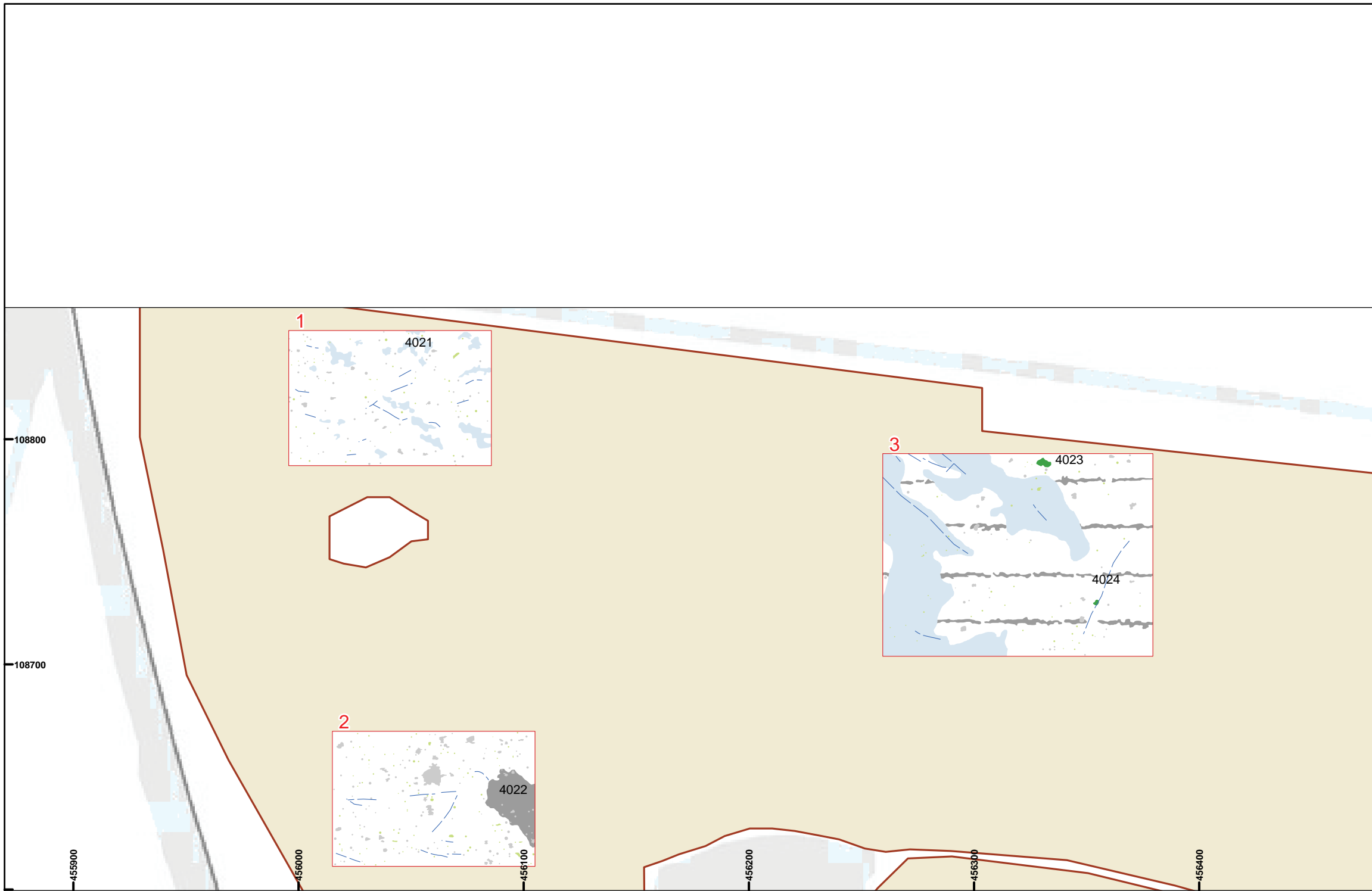


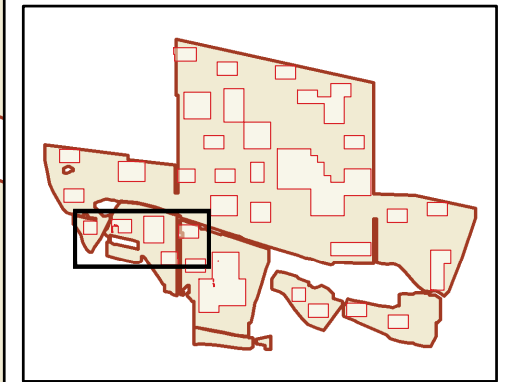
- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing



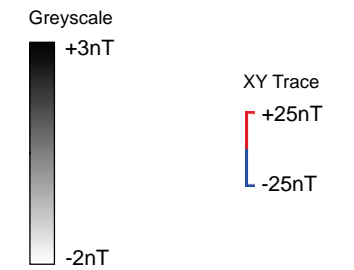
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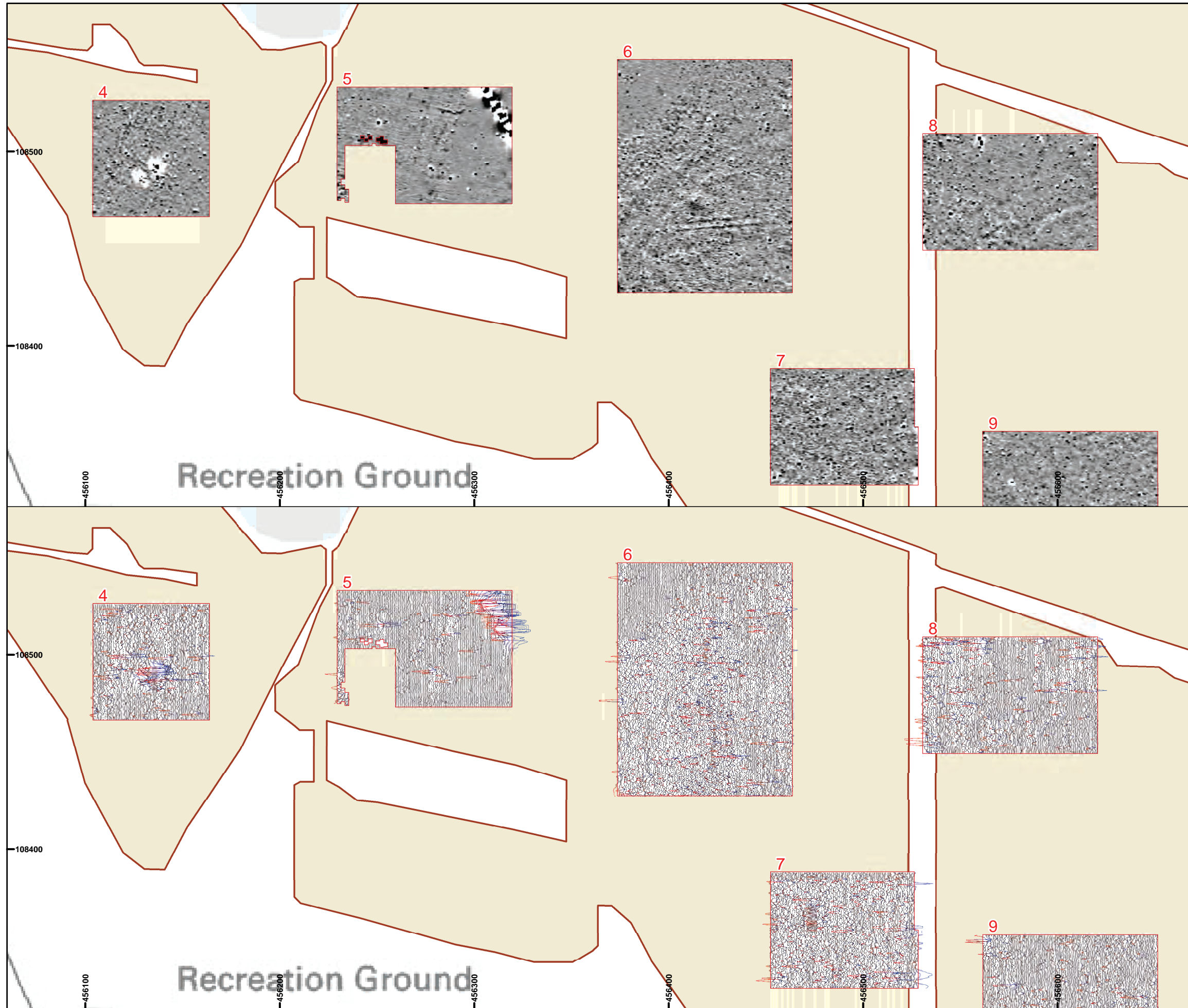


- Detailed Survey Extents
- Scanning Survey Extents



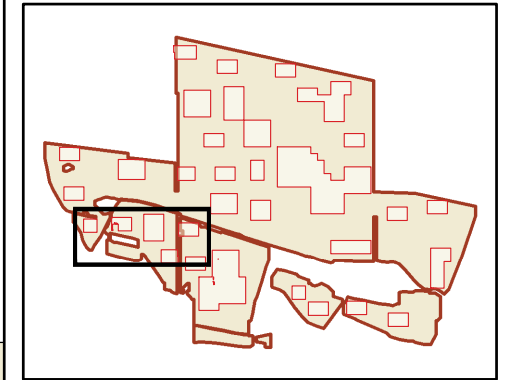
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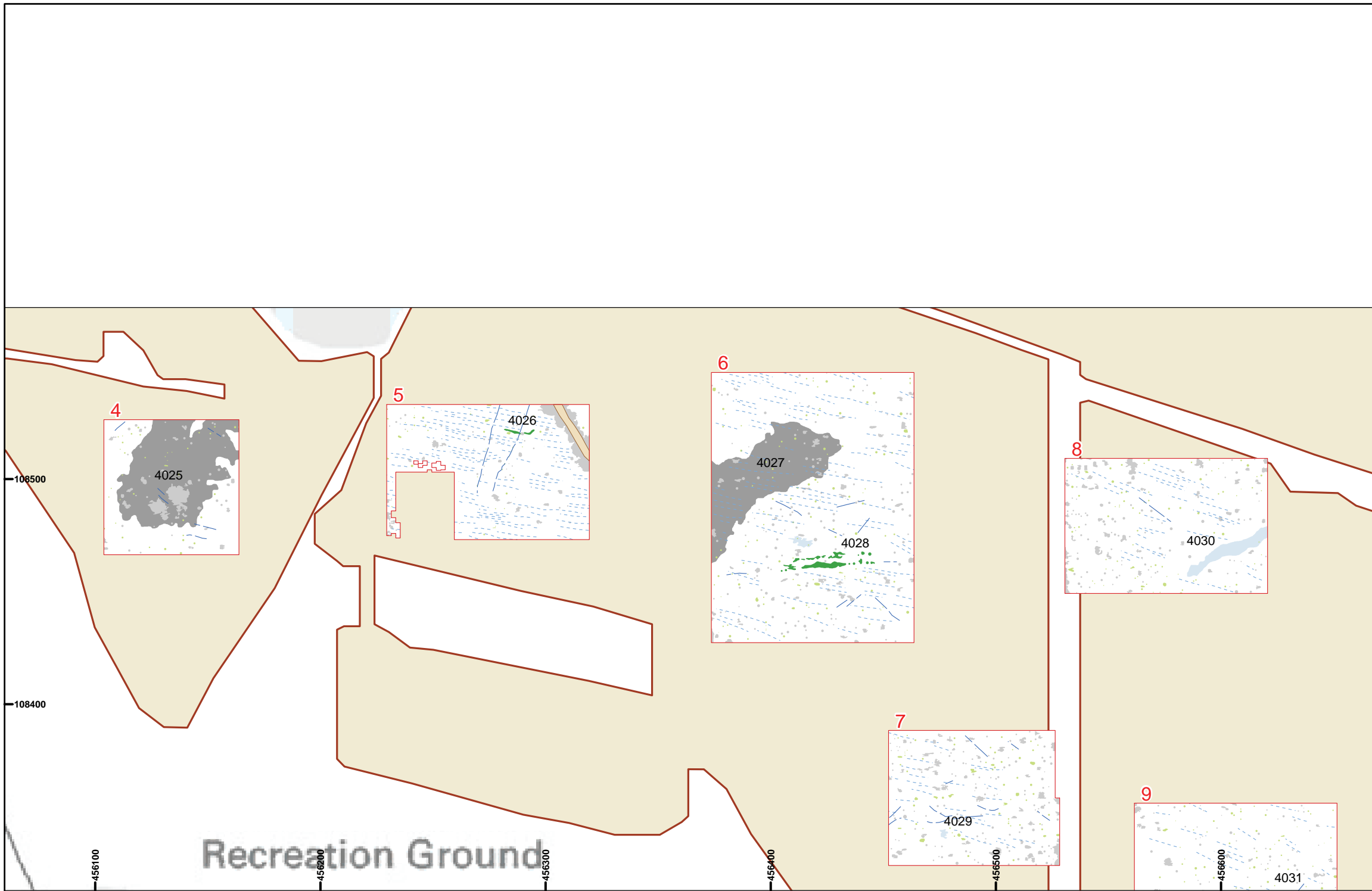


Greyscale and XY Trace: Areas 4-8

Figure 6

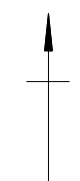
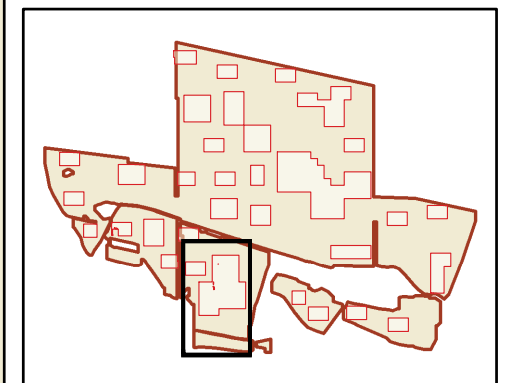
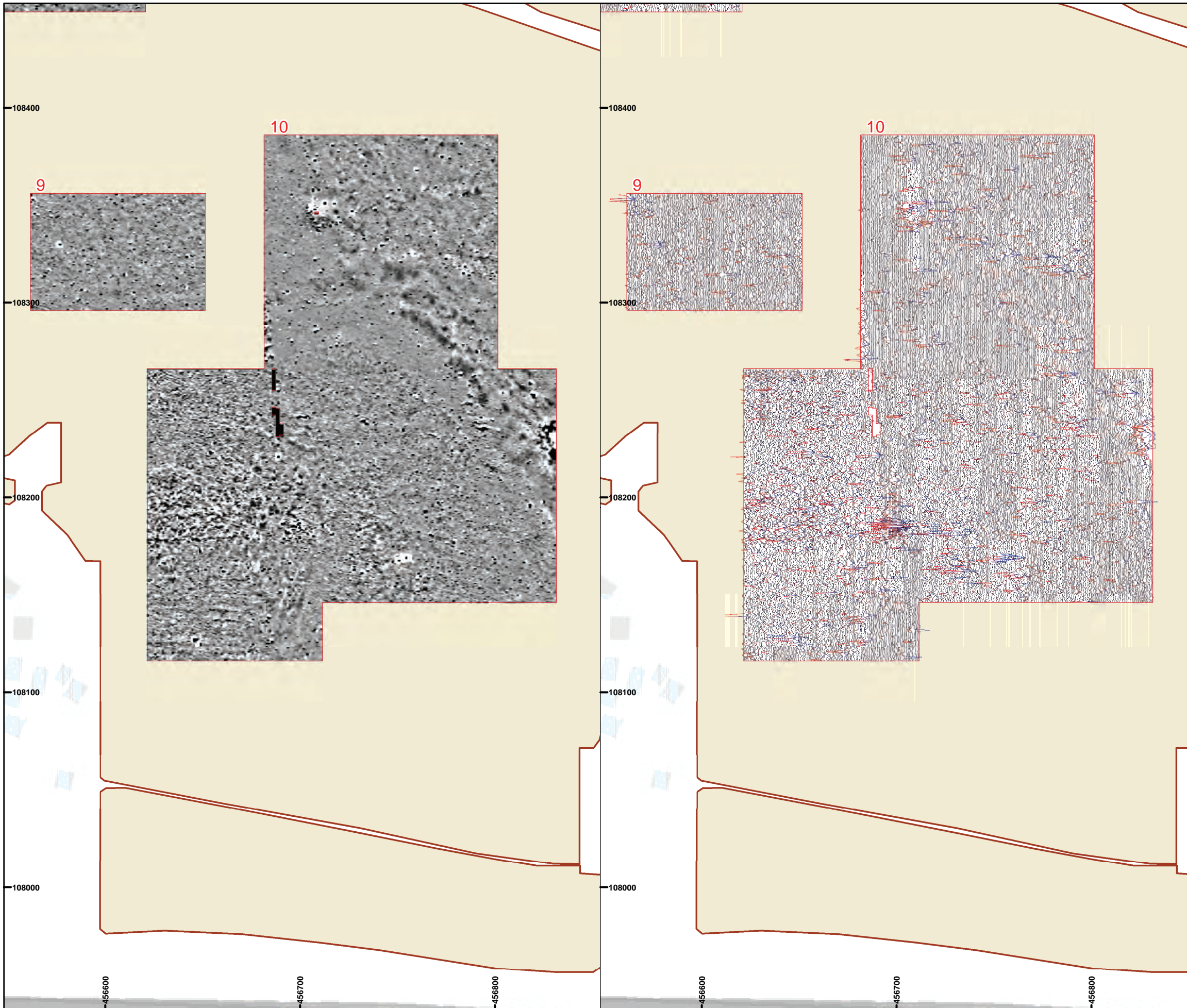


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing

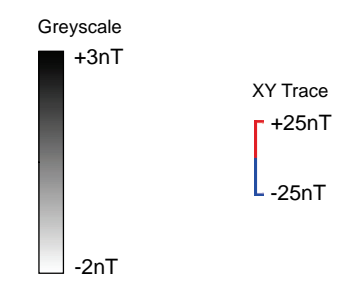


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- Detailed Survey Extents
- Scanning Survey Extents

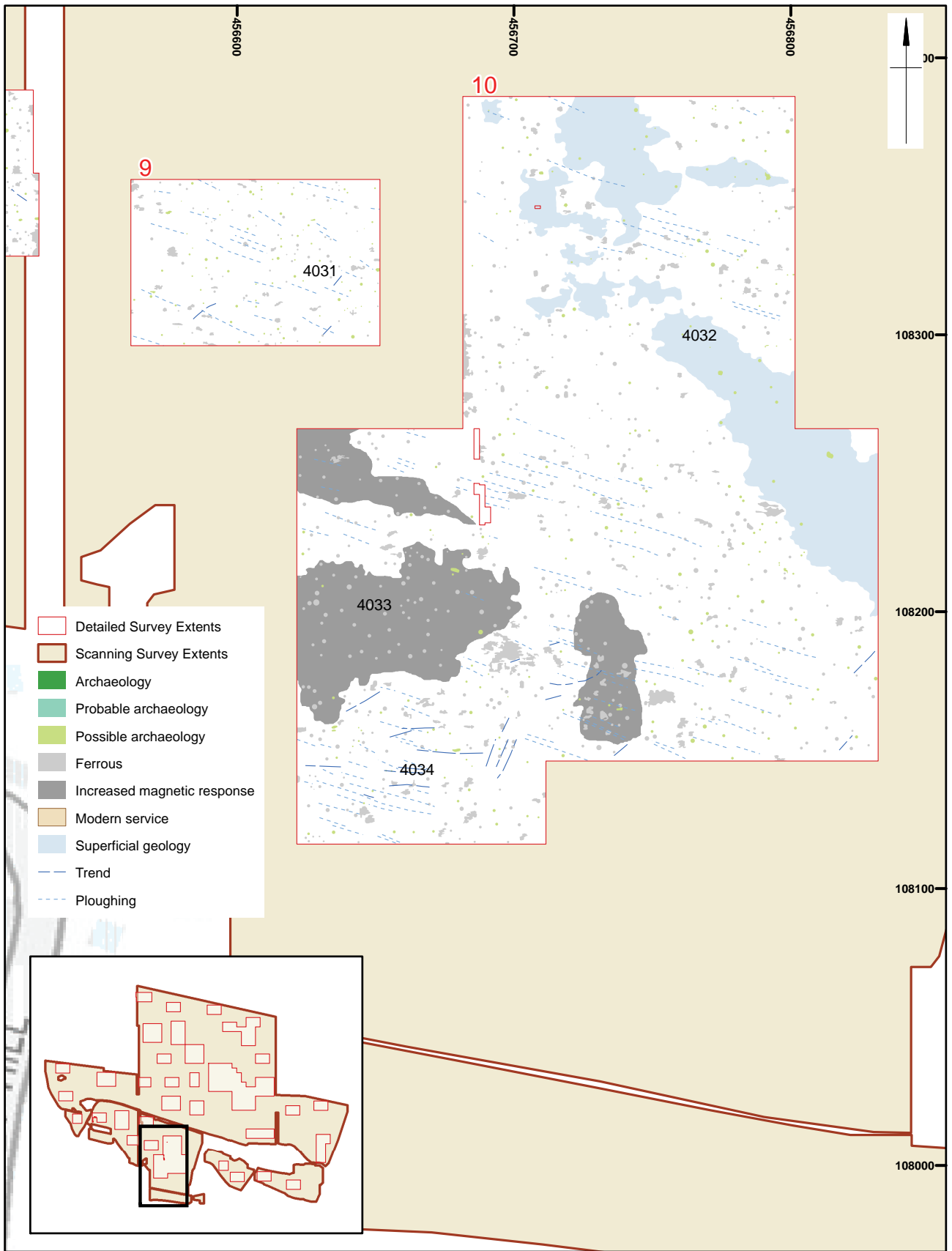


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Greyscale and XY Trace: Areas 9-10

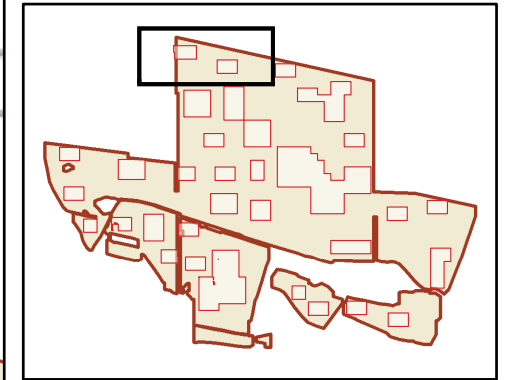
Figure 8



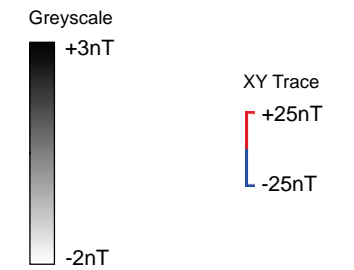
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Interpretation: Areas 9-10

Figure 9

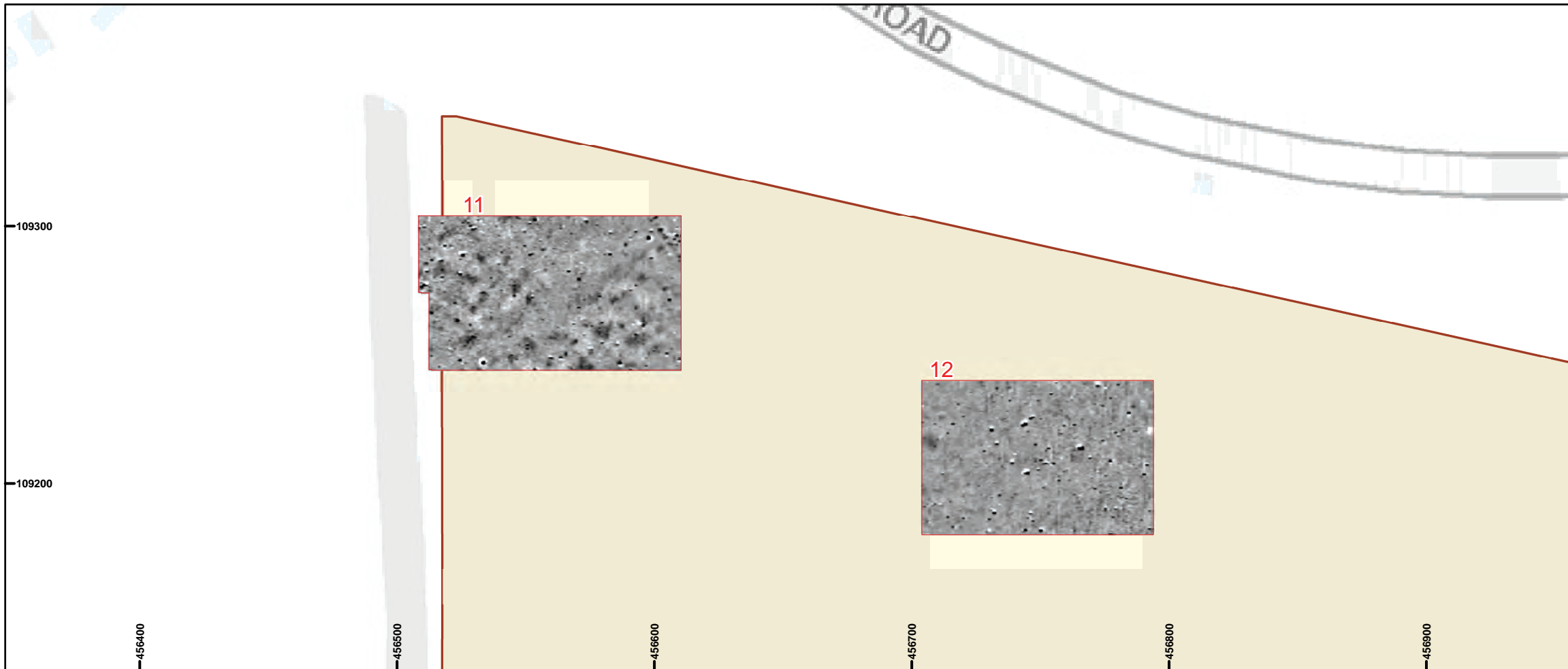


- Detailed Survey Extents
- Scanning Survey Extents



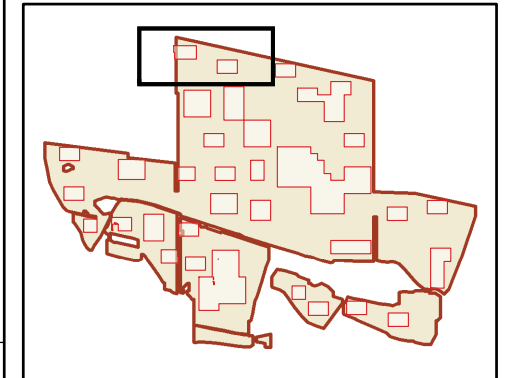
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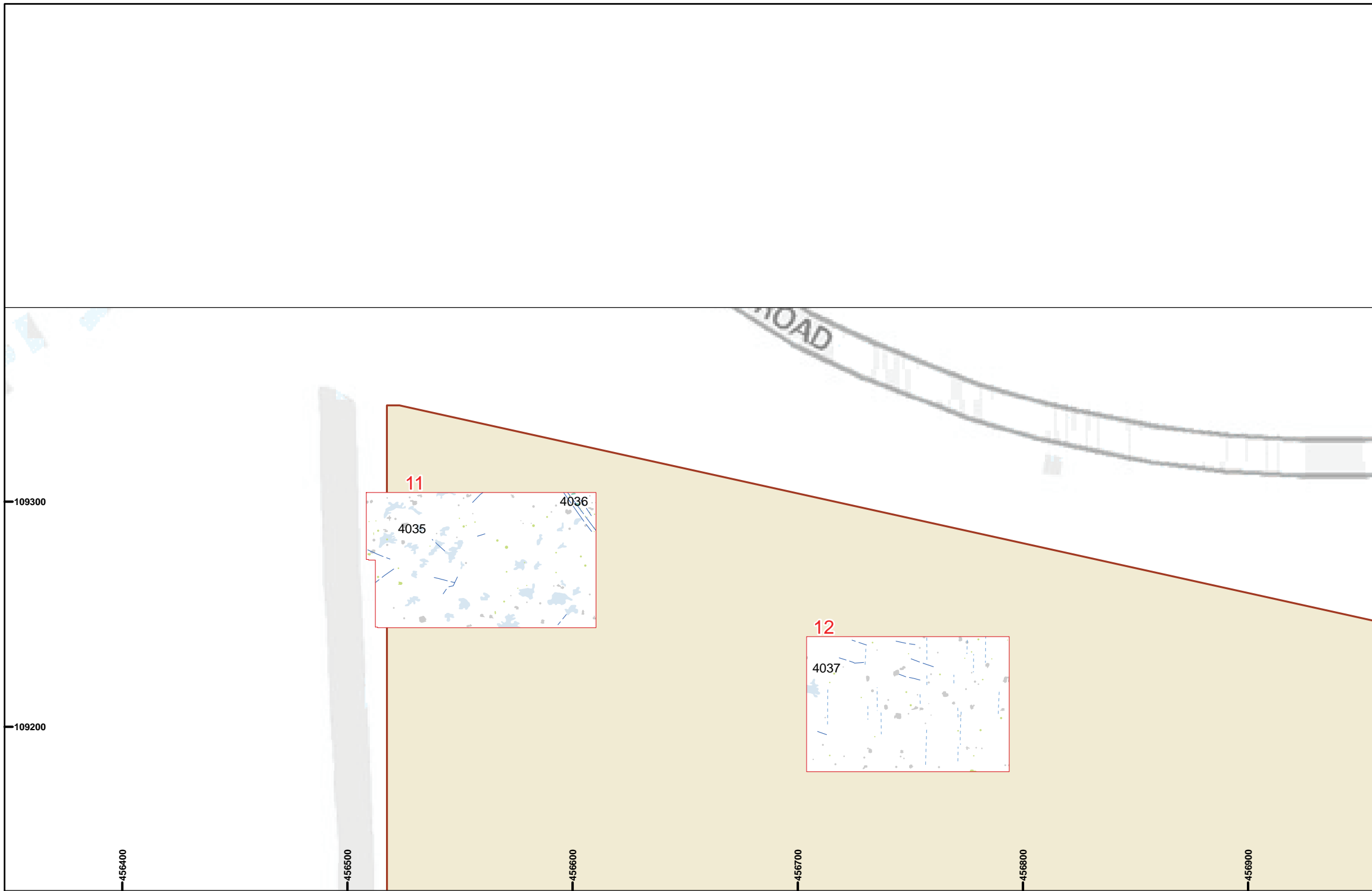


Greyscale and XY Trace: Areas 11-12

Figure 10

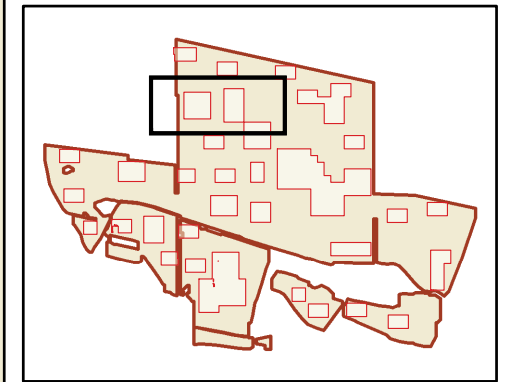


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing

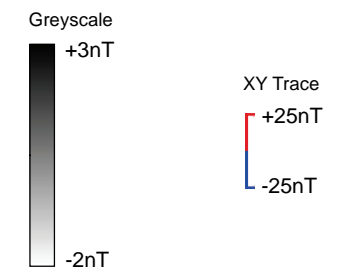


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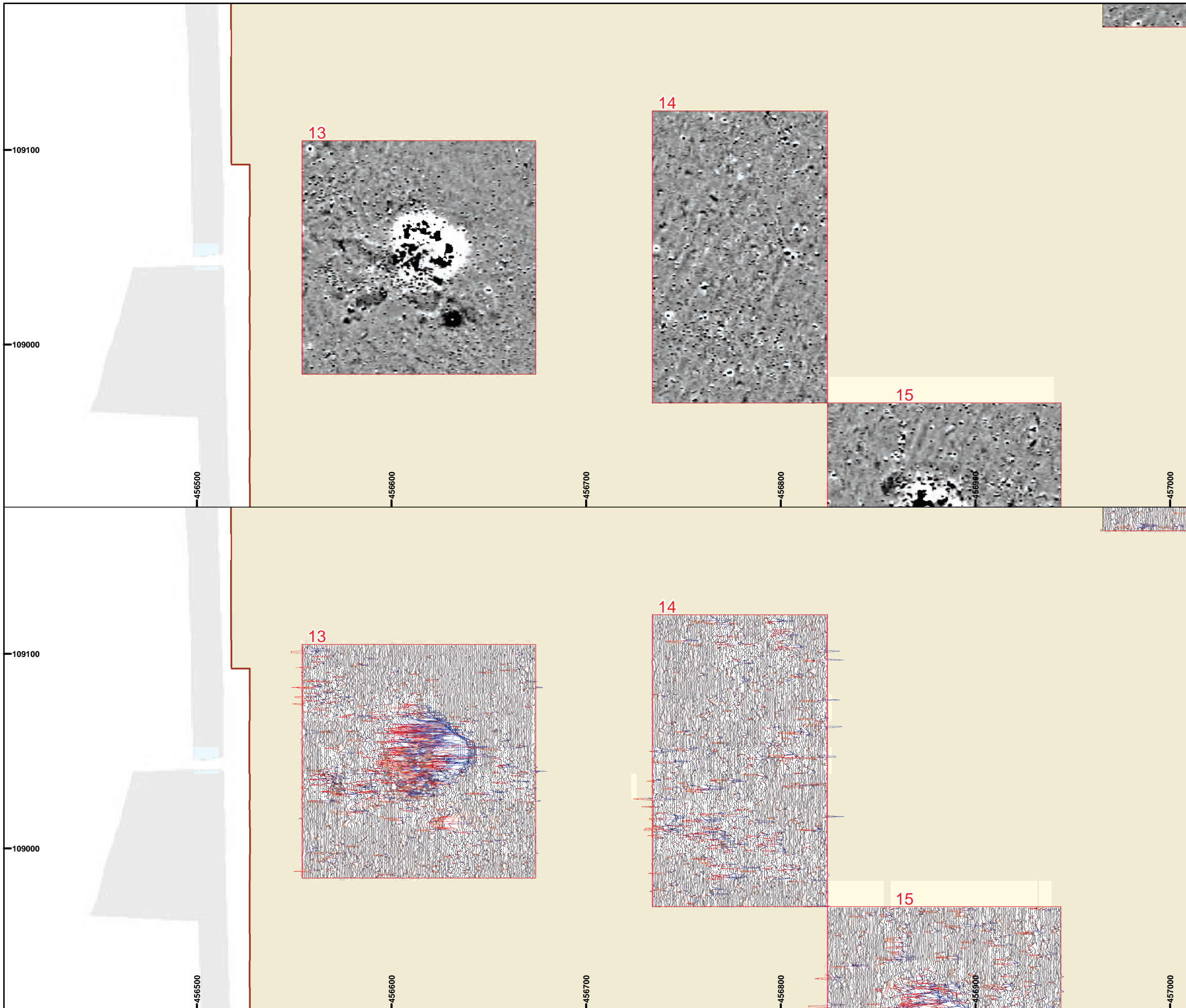


- Detailed Survey Extents
- Scanning Survey Extents



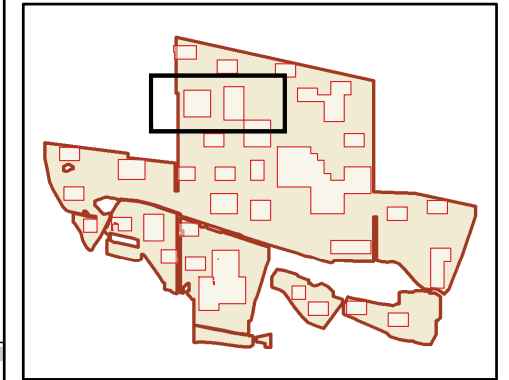
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Greyscale and XY Trace: Areas 13-14

Figure 12

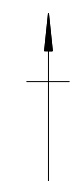
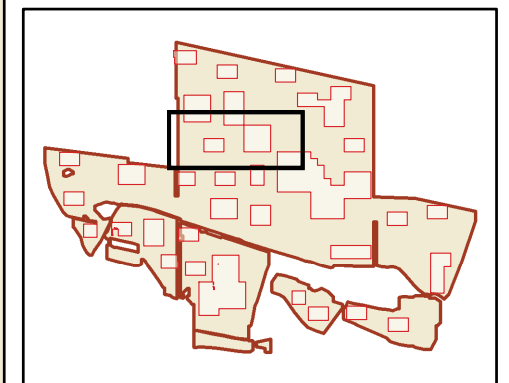


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing

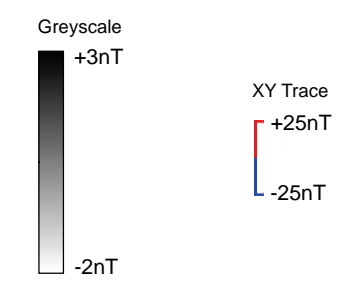


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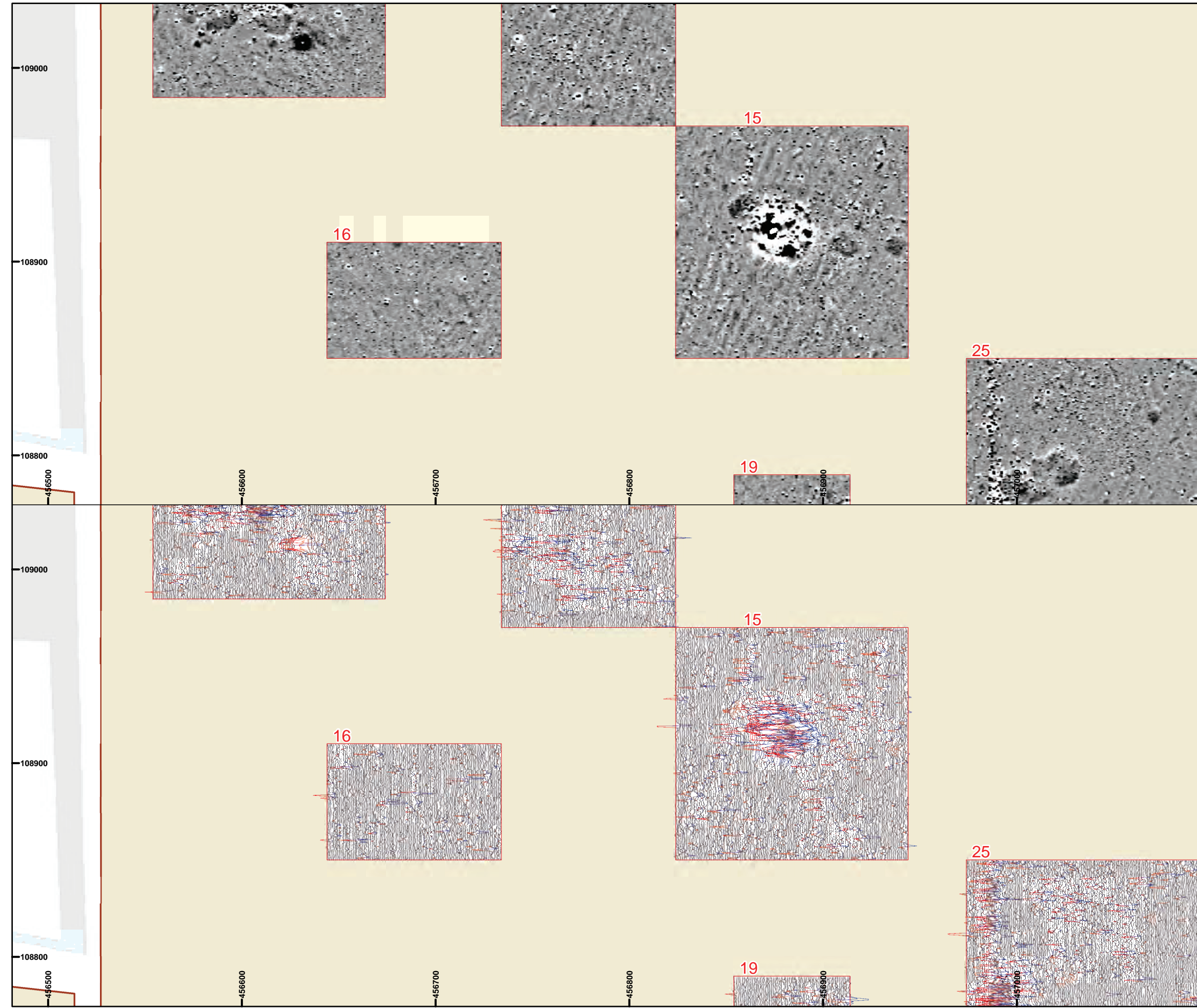


- Detailed Survey Extents
- Scanning Survey Extents



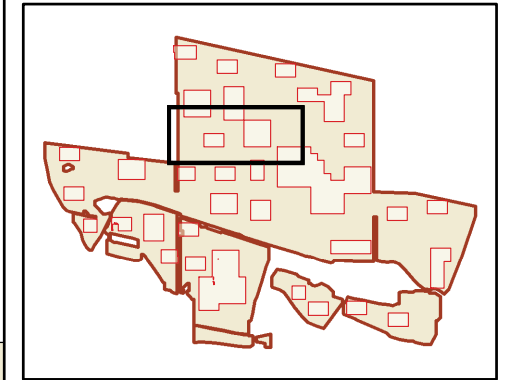
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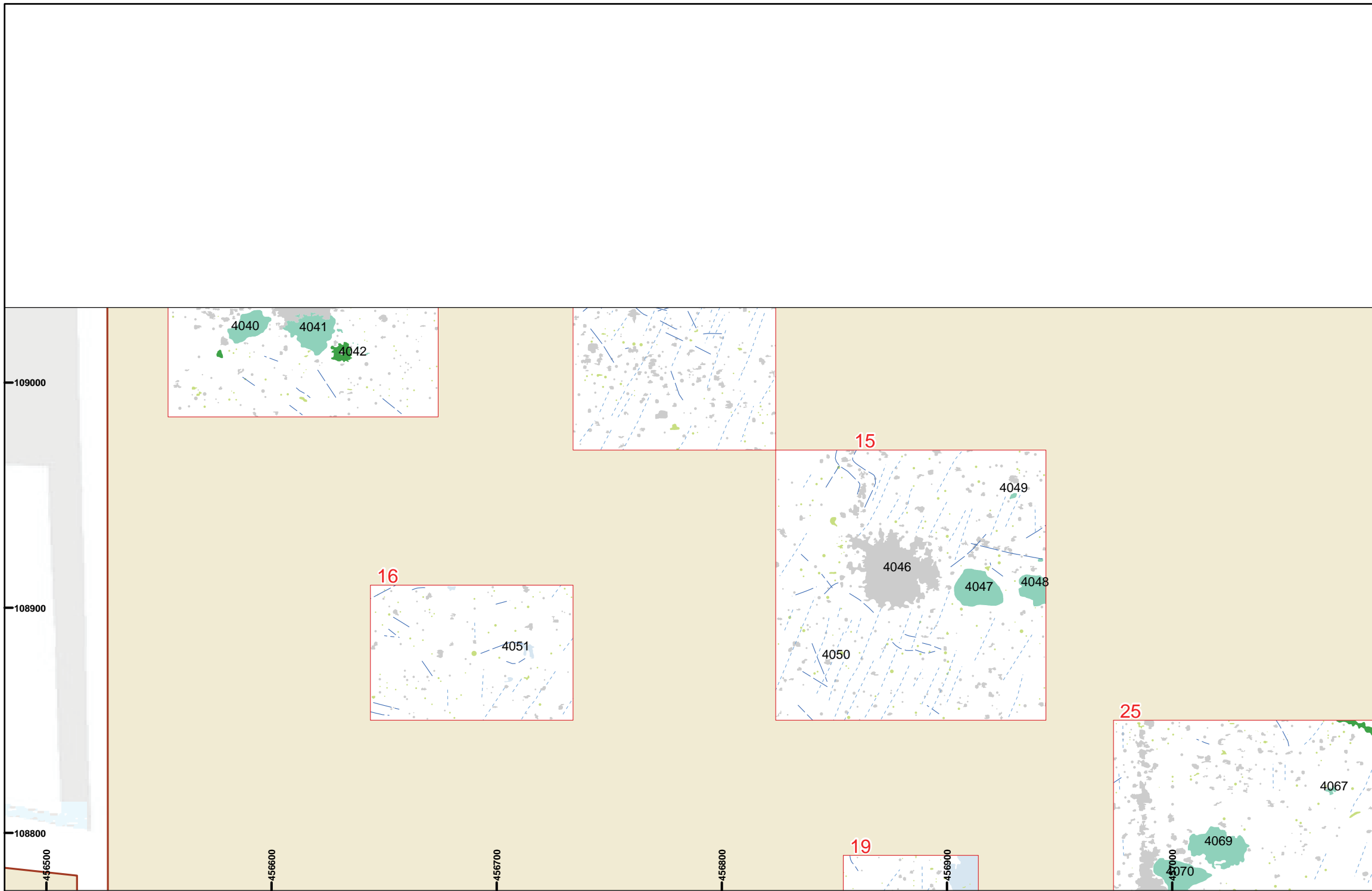


Greyscale and XY Trace: Areas 15-16

Figure 14

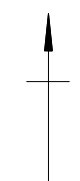
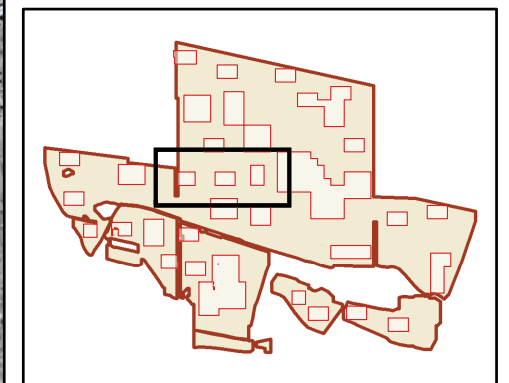


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing

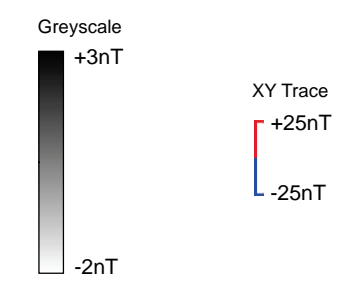


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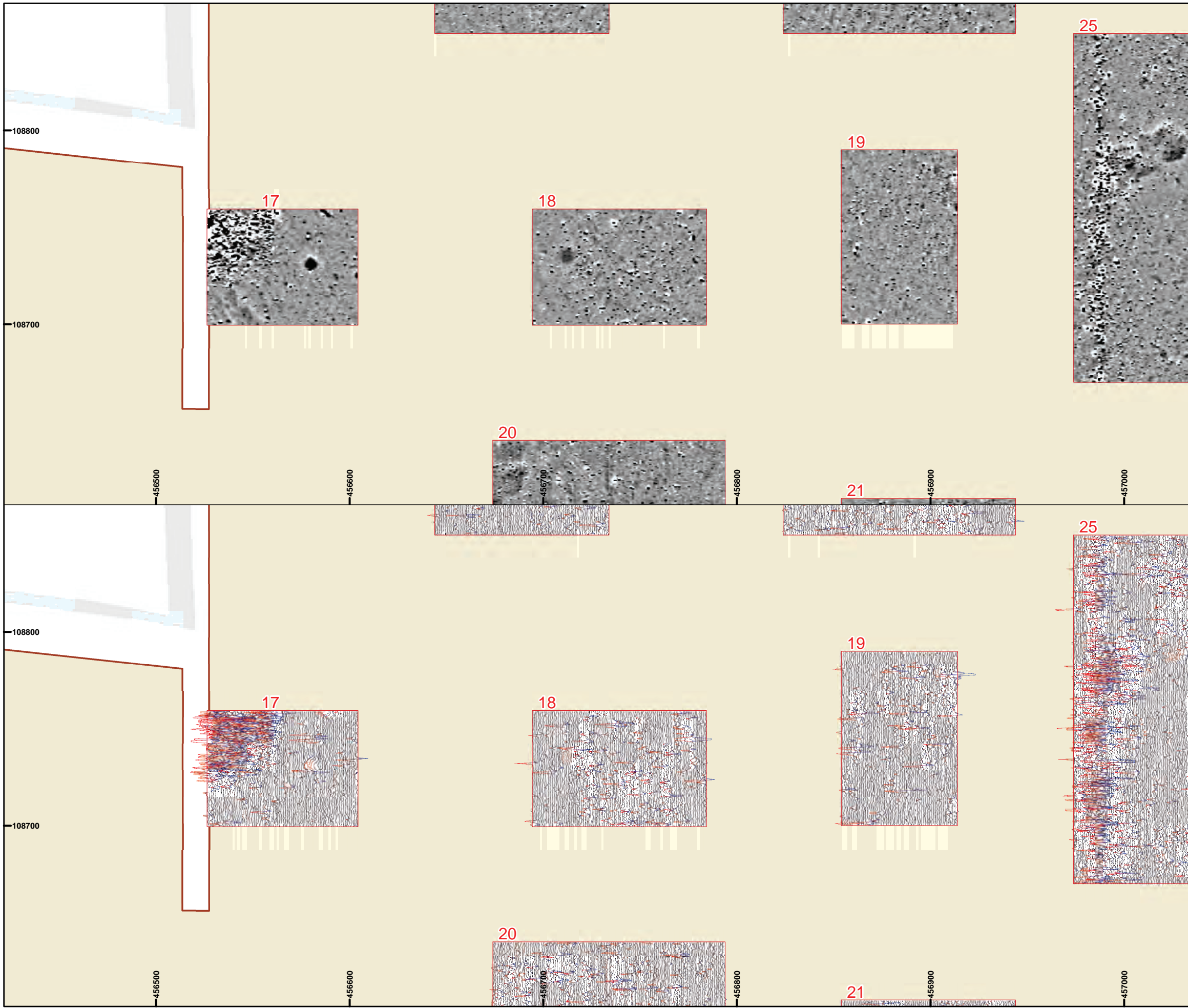


- Detailed Survey Extents
- Scanning Survey Extents



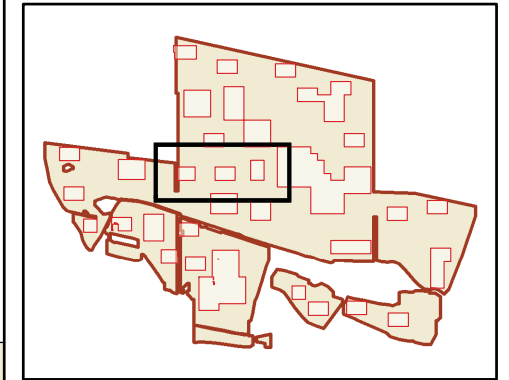
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Greyscale and XY Trace: Areas 17-19

Figure 16



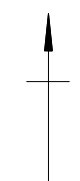
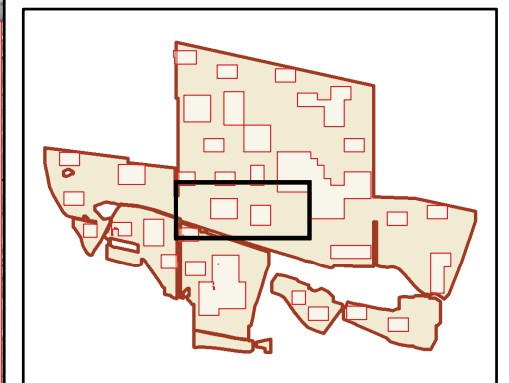
- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing



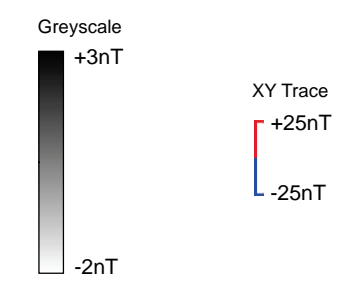
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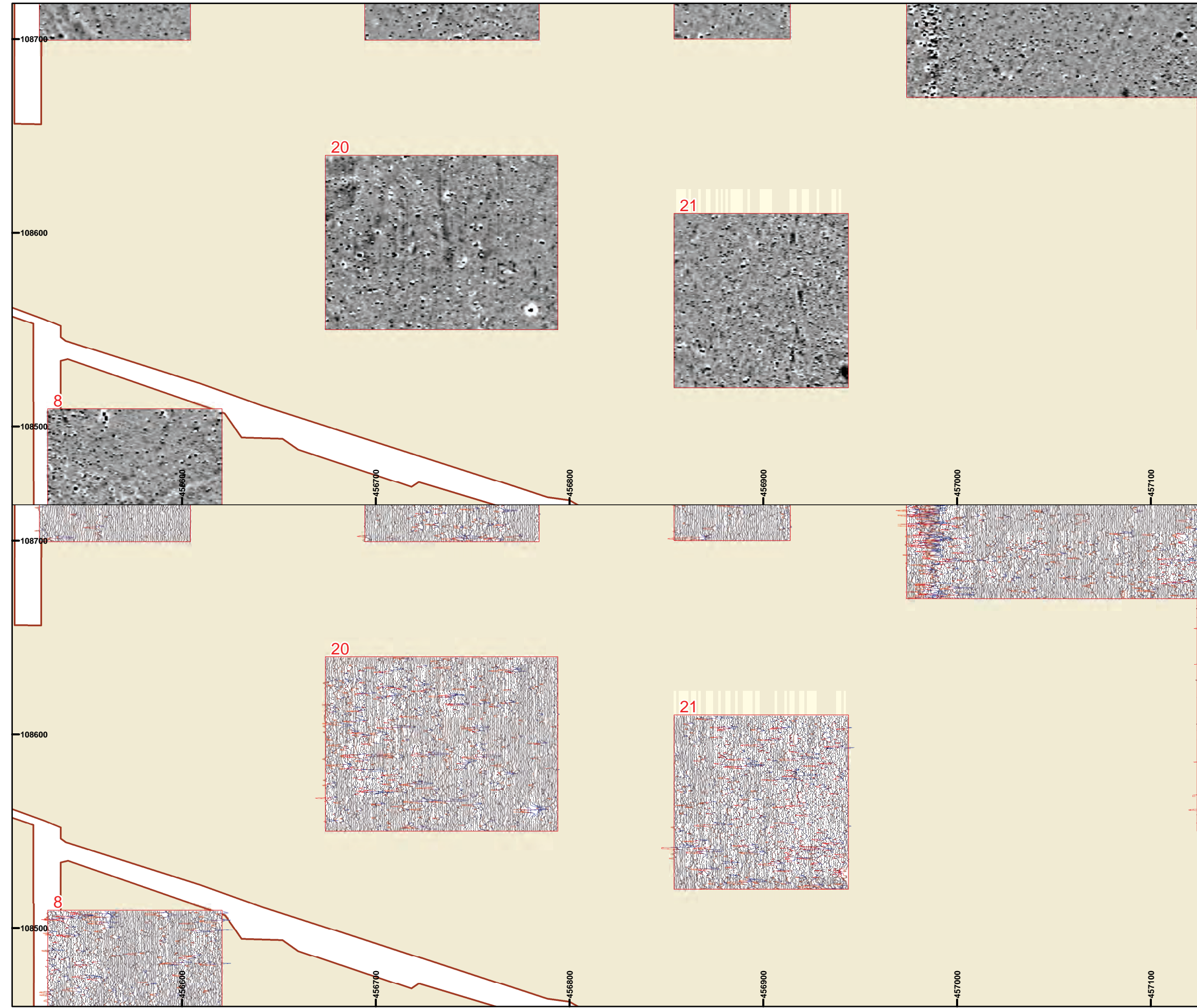


- Detailed Survey Extents
- Scanning Survey Extents



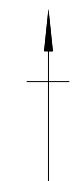
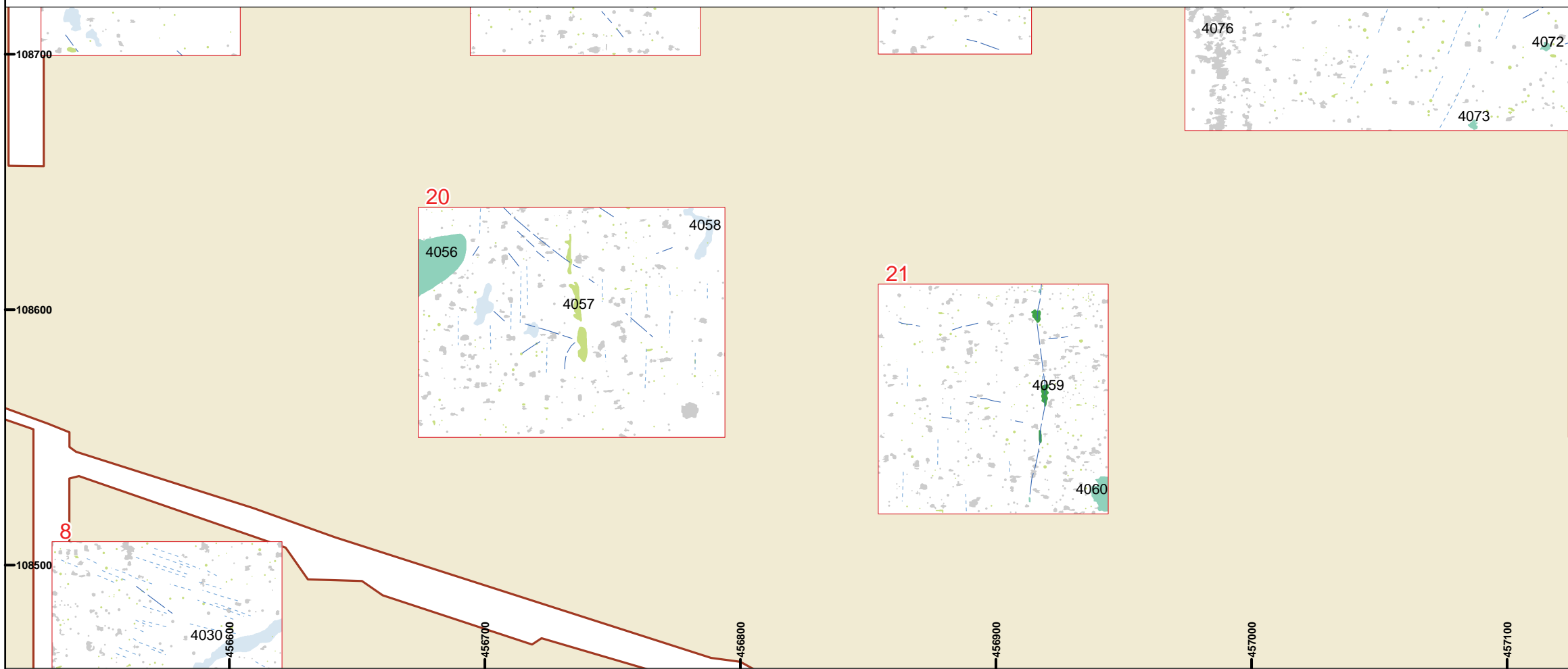
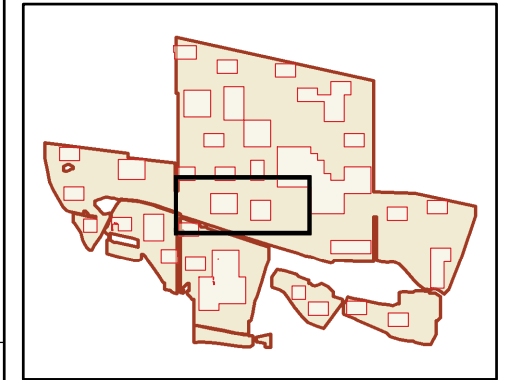
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Greyscale and XY Trace: Areas 20-21

Figure 18




- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing






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 Detailed Survey Extents
 Scanning Survey Extents

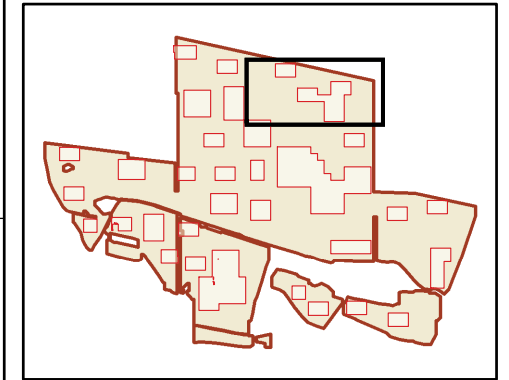


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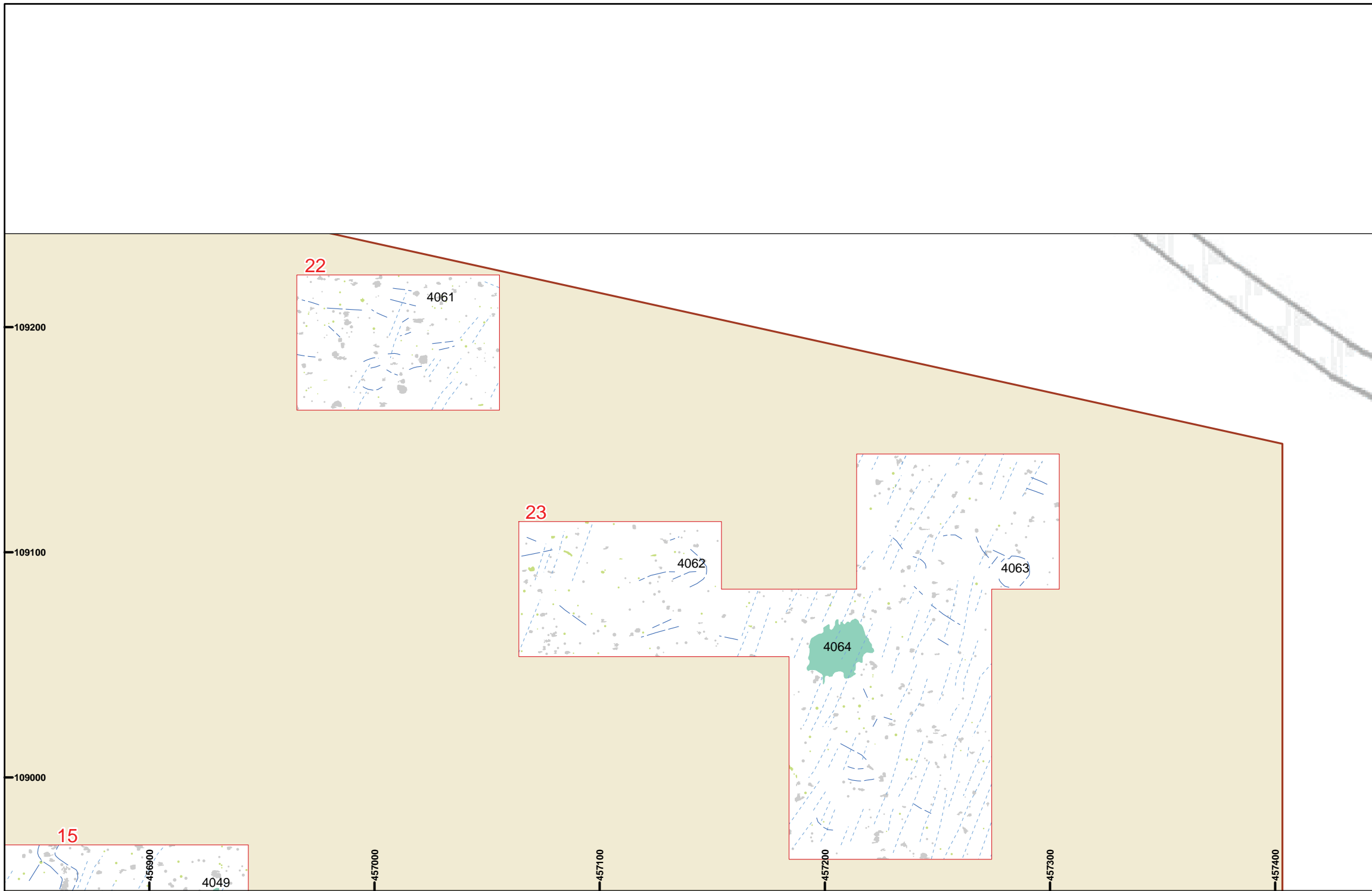
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Greyscale and XY Trace: Areas 22-23

Figure 20

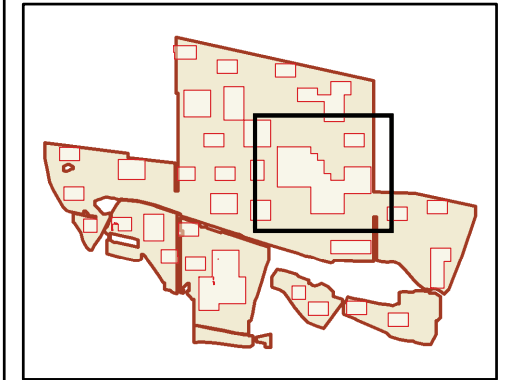


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing



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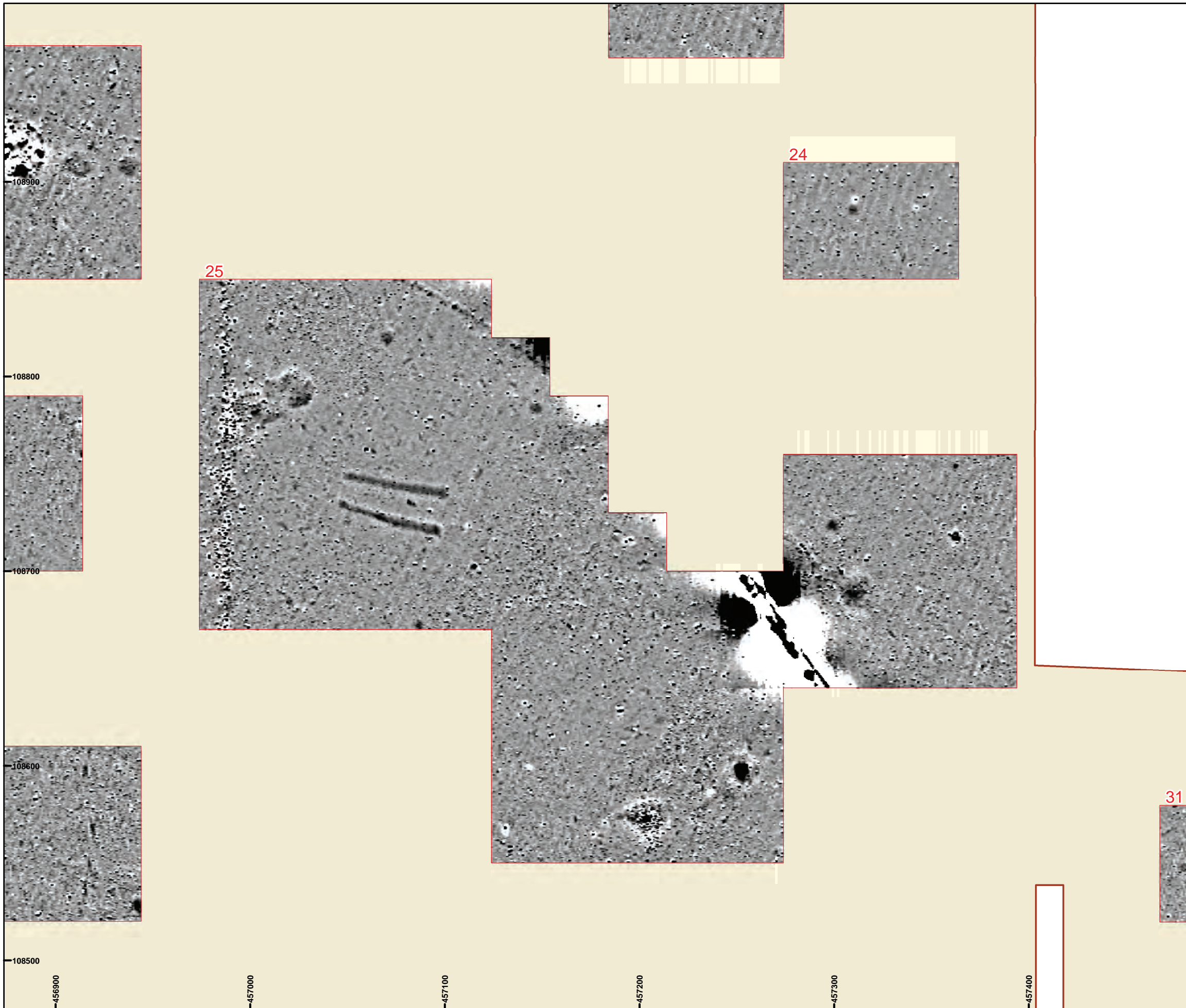


- Detailed Survey Extents
- Scanning Survey Extents



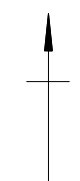
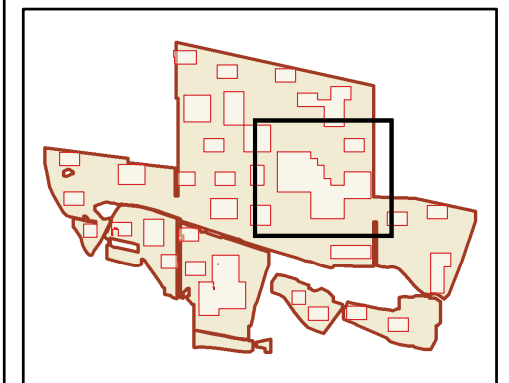
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Greyscale: Areas 24-25

Figure 22



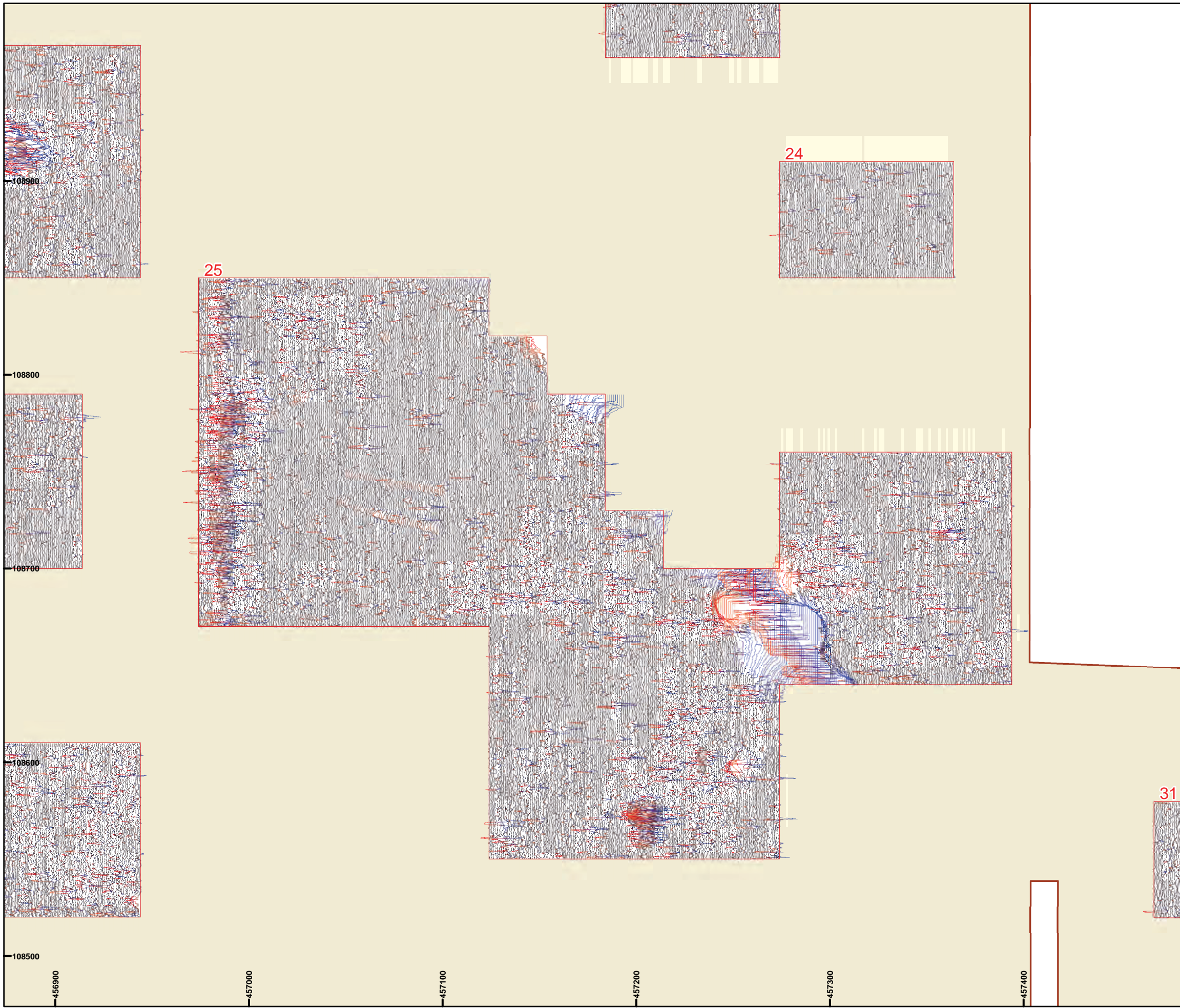
- Detailed Survey Extents
- Scanning Survey Extents

XY Trace
| +25nT
| -25nT



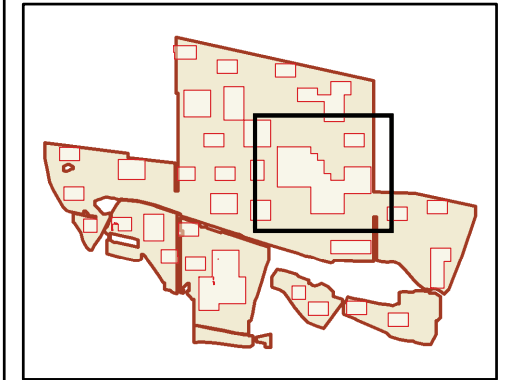
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XY Trace: Areas 24-25

Figure 23

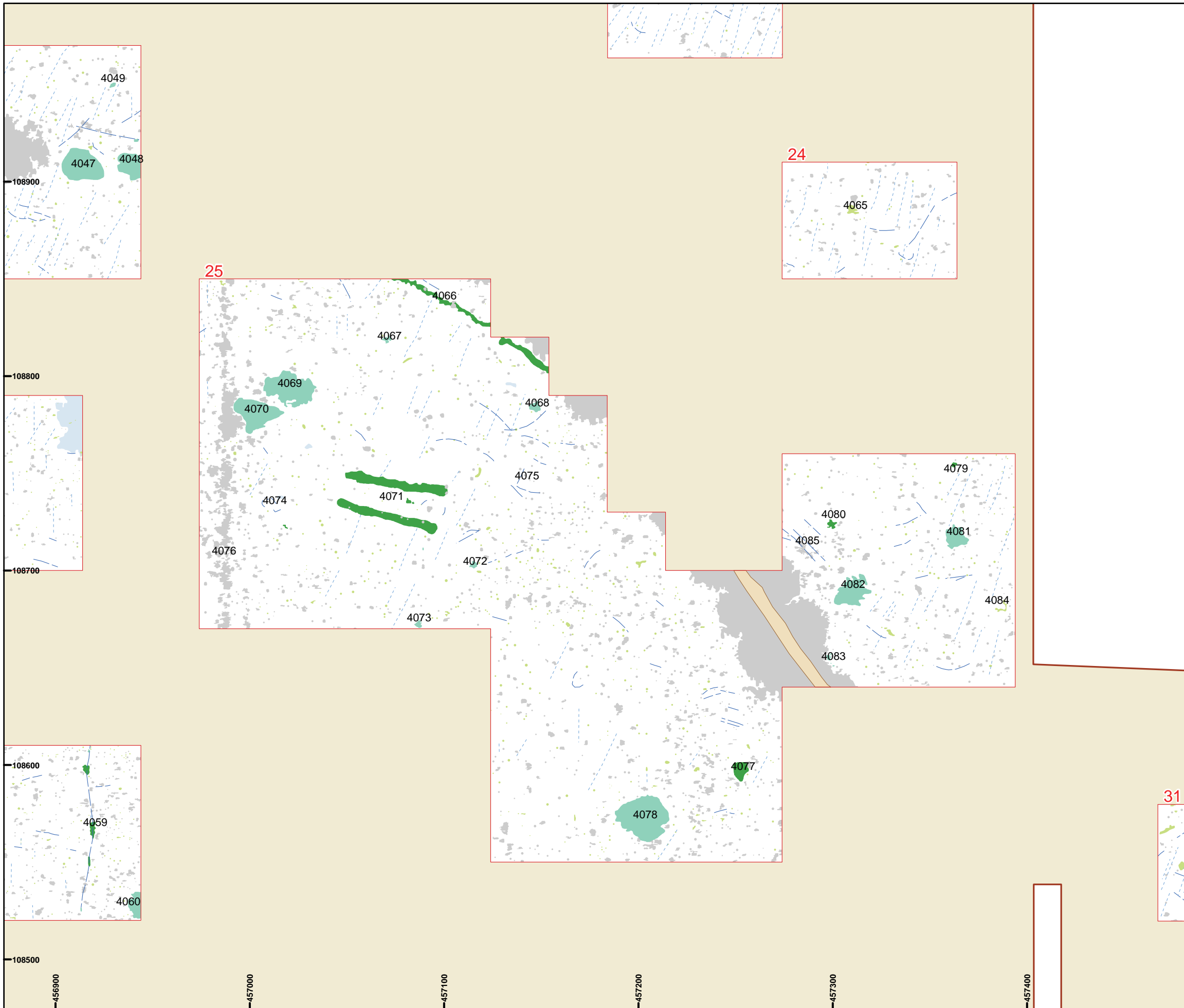


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing



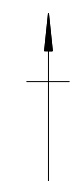
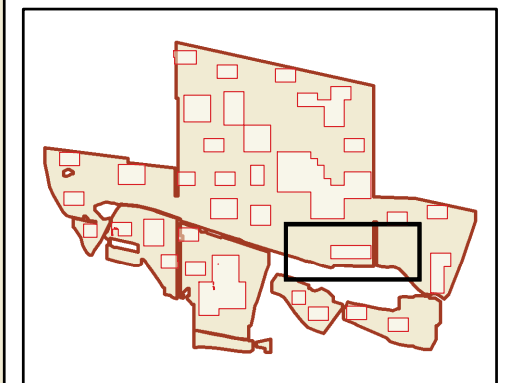
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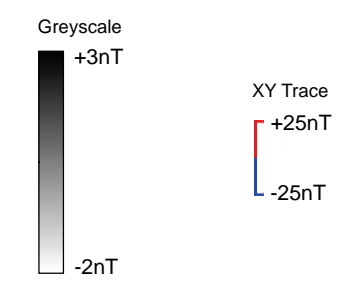


Interpretation: Areas 24-25

Figure 24



- Detailed Survey Extents
- Scanning Survey Extents



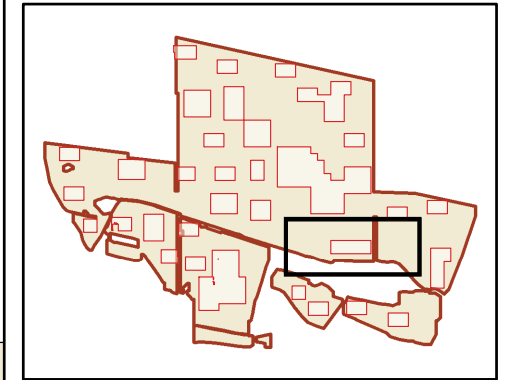
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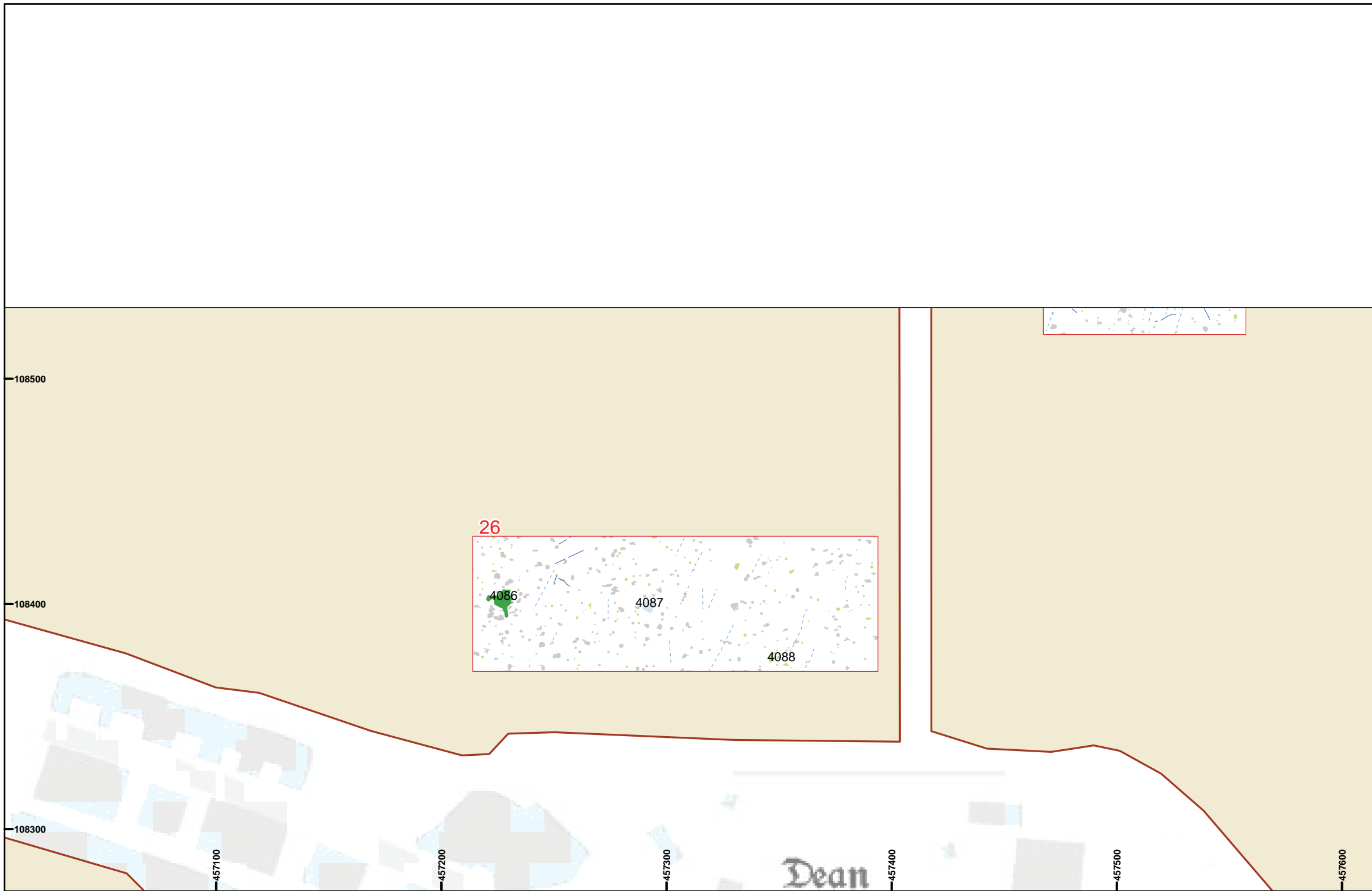


Greyscale and XY Trace: Area 26

Figure 25

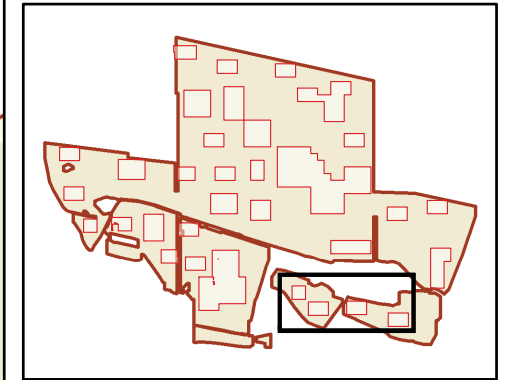


- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing

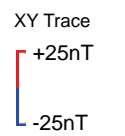
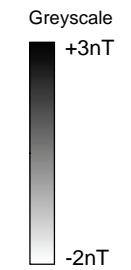


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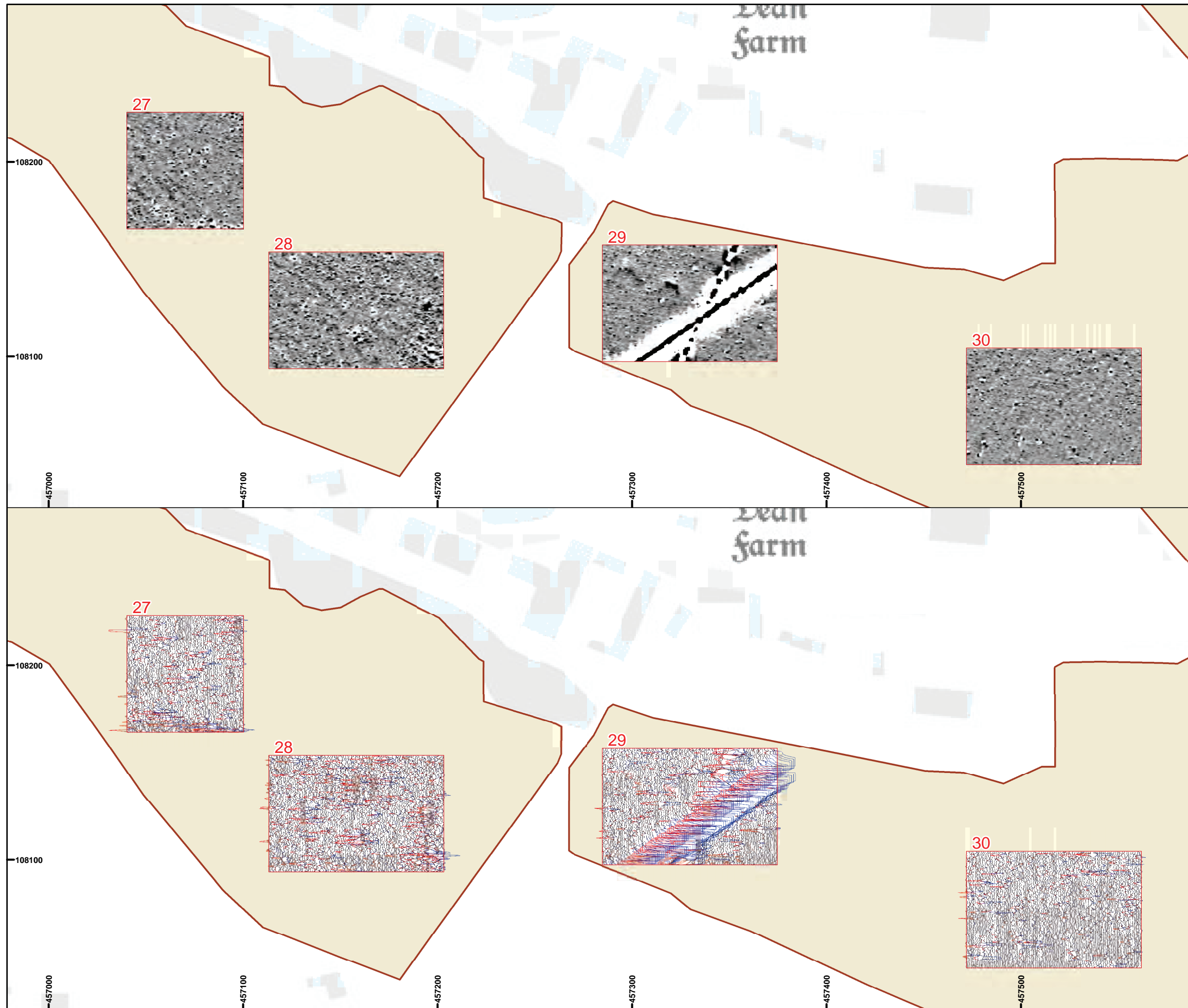


- Detailed Survey Extents
- Scanning Survey Extents



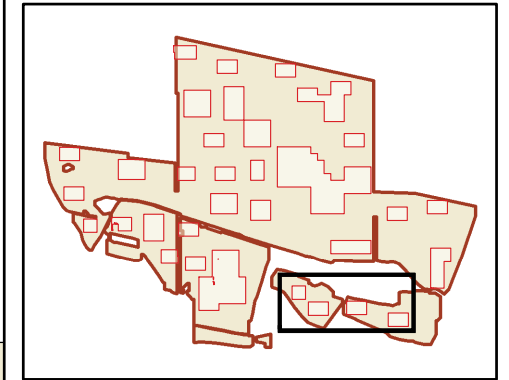
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Greyscale and XY Trace: Areas 27-30

Figure 27



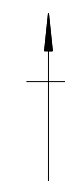
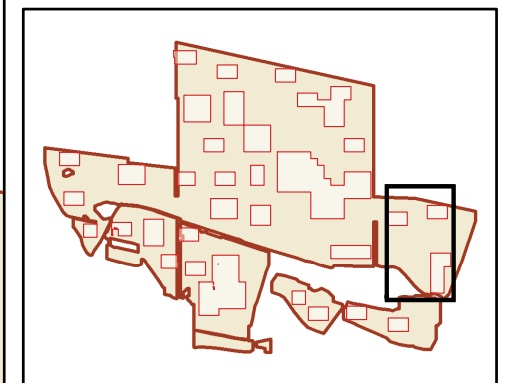
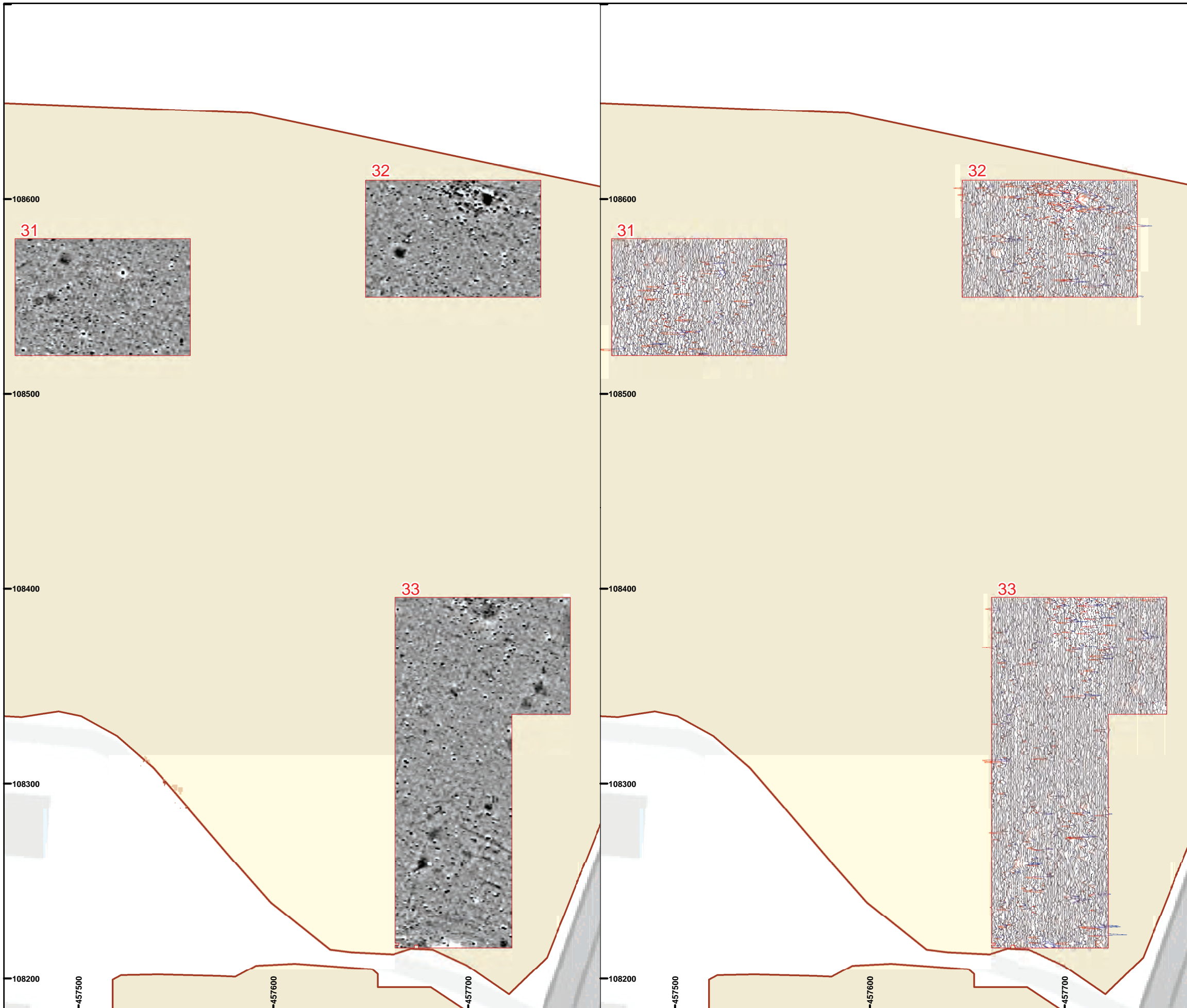
- Detailed Survey Extents
- Scanning Survey Extents
- Archaeology
- Probable archaeology
- Possible archaeology
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology
- Trend
- Ploughing



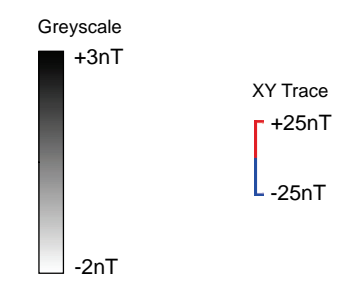
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- Detailed Survey Extents
- Scanning Survey Extents

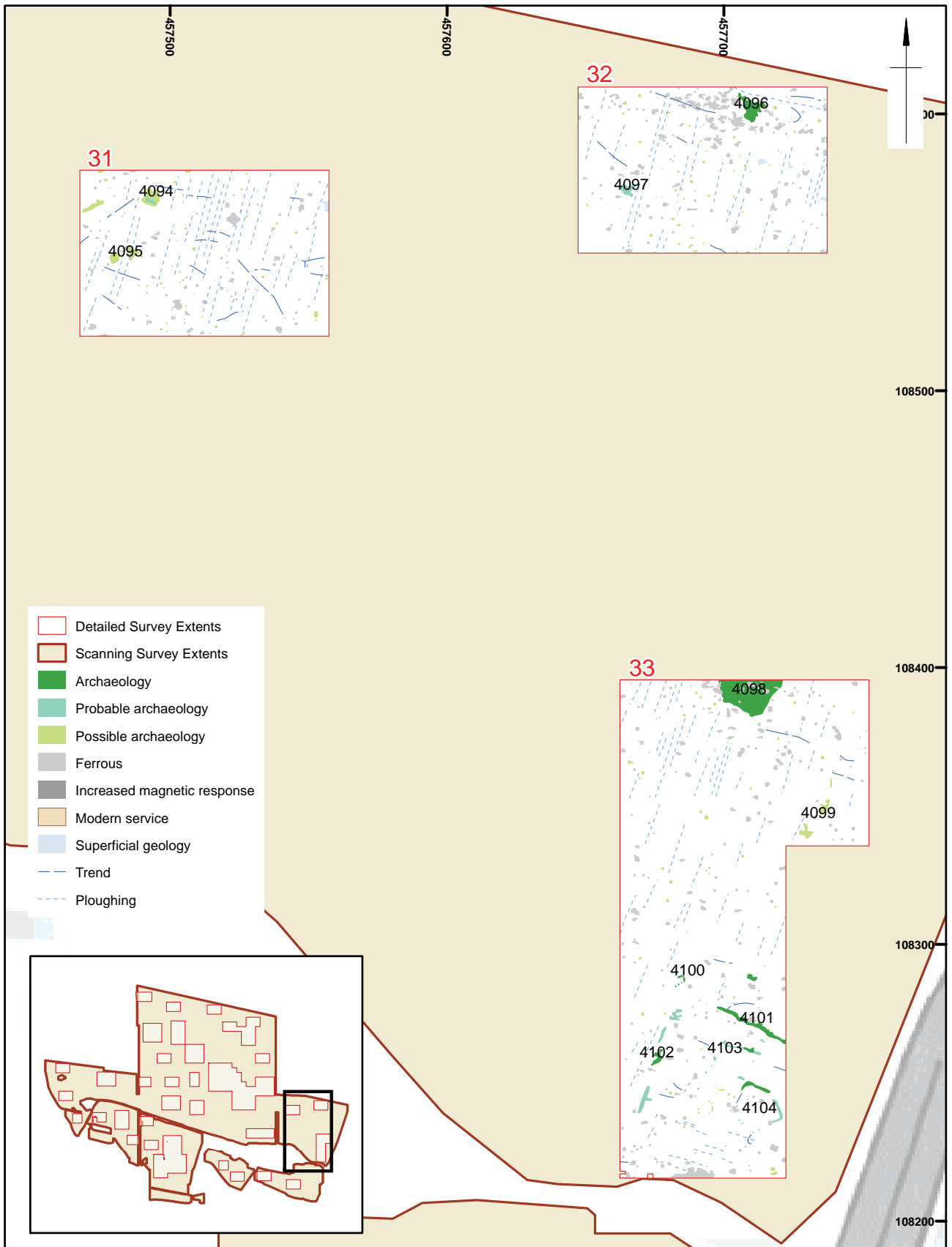


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Greyscale and XY Trace: Areas 31-33

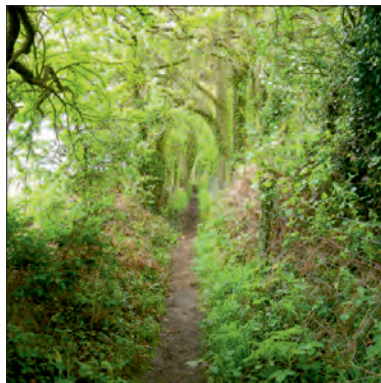
Figure 29



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Interpretation: Areas 31-33

Figure 30



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