October 3, 2019

Mr. Chad Staniszewski
Mr. Eugene Melnyk
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203

OU-3 Sheen LIF Survey Data Report
NYSDEC Site No. C915201D

Dear Mr. Staniszewski & Mr. Melnyk:

On behalf of Elk Street Commerce Park, LLC, Amec E&E PC (Amec) prepared a Work Plan to address the release of a sheen to the Buffalo River emanating from the former Babcock Street Property Area (BSPA). The Work Plan was dated May 3, 2019 and was approved by the New York State Department of Environmental Conservation (NYSDEC) on May 8, 2019. The Work Plan detailed the subsurface condition survey in the area of the sheen. The subsurface condition survey included a Laser-induced fluorescence (LIF) survey to delineate the presence of separate phase liquid (SPL) in the subsurface. This report presents the findings from the survey has been prepared for NYSDEC's review. On June 6, 2019, Amec presented the results of the LIF survey to NYSDEC on a conference call.

Based on information provided, NYSDEC expressed concern regarding detected SPL at depth and felt a monitoring well may be necessary to characterize that material. Evaluation of the results of the LIF Survey results are presented in this report supporting Amec's position that such monitoring wells are unnecessary.

1.0 LIF Survey Reference

Prior to conducting the LIF survey, Amec provided Dakota Technologies (Dakota) a sample of SPL recovered from a monitoring well at the Site, to conduct a LIF reference analysis. Dakota uses a sample from the site to determine the ultraviolet (UV) source to conduct the survey and to develop a type response for that SPL. Multiple concentrations of SPL are mixed into a test sand to determine whether the UVOST or the TarGOST system is more appropriate for the survey. In general, the UVOST is more appropriate for petroleum products such as gasoline, diesel fuels, and light refined petroleum products and TarGOST is more appropriate for tars, creosotes, and heavy petroleum hydrocarbons containing a large ration of heavy polycyclic aromatic hydrocarbons to aromatic hydrocarbons such as naphthalene. Low, medium, and high concentration samples and a NAPL-saturated sample were prepared for evaluation. Preparation of the low, medium and high samples consists of filling three vials with approximate equal amounts of sand and adding 2 to 5 drops of SPL to the low sample, 20 to 50 drops to the medium sample, and much more than 50 drops (but less than saturation quantity) for the high

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sample. The NAPL-saturated sample contains enough SPL to exceed soil capacity and produce free product in the sample. The samples are shaken and run on both UV sources (TarGOST and UVOST) to compare results. When a phenomenon called fluorescence quenching occurs, a heavy hydrocarbon or tar is indicated and the TarGOST UV source is selected for the survey. In this type of SPL, TarGOST will produce a signal that trends upward with increasing concentration of SPL. **Figure 1** below is a clip from **Attachment A** illustrating the response of the TarGOST UV source to SPL from the site in the low, medium, high, and NAPL samples.

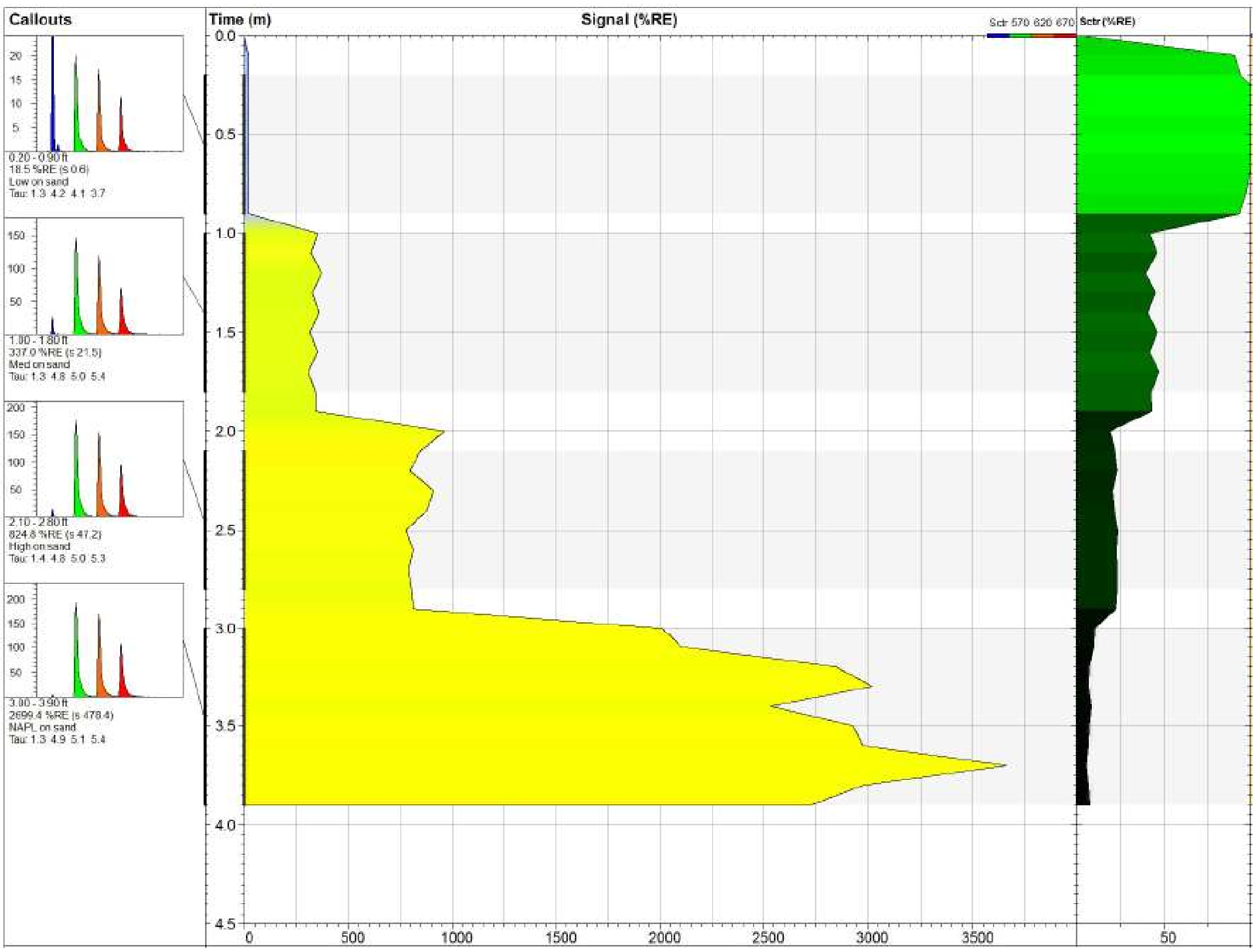


Figure 1 – Oil Sample Series Fluorescence Response

Three important characteristics are identified in the above responses. First, in the call out graphs at the left, each SPL sample produces the same characteristic green, orange, red peaks pattern with nearly a straight line of the peak values although each at a different scale. The green, orange and red peaks represent yellow, orange and red fluoresced light returned to the detector from the sample. Each curve rises sharply, peaks, falls sharply, then trails off over approximately the second half of the curve period. These trail-off portions of the curves are indicative of time decay of fluorescence and are indicative of petroleum hydrocarbons, likely in a weathered state. Lack of such trail-off may be indicative of creosote, bunker oil, or other organic material such as buried logs. From top to bottom, these represent the low, medium, high, and

NAPL samples. The blue peak indicates scattered fluorescence and the intensity of that peak indicates the total scatter of the green laser light in the sand with the given concentration of SPL. Low concentrations of SPL produce greater scatter because more of the green laser light is reflected where more highly concentrated SPL returns less green light and more fluorescent yellow, orange and red bands of light.

Second, the Signal plot in the center of the figure shows a log of the returned light as Response Level (RL) of the reference emitter (RE) at the source. This Response Level is a signal that is recorded in the units of %RE. The source laser cover is coated with a reference emitter that is colored according to the fluorescence expected from the target SPL. The intensity of the individual yellow, orange, and red bands of light returns are summated and compared to the RE and plotted as a %RE. The value is more or less analogous to concentration and increases with increasing concentration of SPL. The sample that was identified as NAPL has logged RL exceeding 2000% RE, the high sample has logged RL exceeding 750% RE, the medium sample RL is approximately 300% RE and the low sample RL is approximately 20% RE.

The third plot shows the scatter for each of the samples. In this plot, the scatter has been arbitrarily color coded as bright green for high end scatter and dark green for low end scatter. Scatter is essentially the measure of reflected green laser light back to the detector. As the sand grains of the low sample, which are not coated with hydrocarbons, reflect the laser back to the detector, scatter is recorded as high. Conversely, less green light is reflected back in a sample with NAPL because much of the laser energy is converted to fluorescence that returns as yellow, orange, and red hues, and scatter is low. A downward trend in scatter is observed from the low to the high sample end points. In many cases, fluorescence is detected in a sample along with high scatter. Many of those cases are typical of non-hydrocarbon, fluorescent materials such as limestone gravel or other false positives. Typically, when scatter decreases or disappears and fluorescence increases, a hydrocarbon is indicated.

2.0 LIF Survey

Twenty-one LIF survey borings were installed with a Geoprobe™ to the east and west of the Buffalo Sewer Authority (BSA) storm water outfall located on Babcock Avenue. The borings were each located in the area of the infrastructure dead-man concrete anchors and the concrete headwall structure. Thirteen LIF borings were installed west of the storm water pipe and eight borings were installed east of the pipe as illustrated on **Figure 2**. The borings were advanced to depths between 14 and 26 feet below ground surface. Subsequent to the completion of the survey, a sheet pile hanging wall was installed to a depth of 22 feet on both the east and west side of the BSA sewer and extended 50 feet along the western property line.

2.1 Survey Results West Side of BSA Storm Pipe

Borings TG-01, TG-02, TG-03, TG-04, TG-17, TG-18, TG-19, and TG-20 were installed to the west of the storm pipe. The LIF for those borings are attached to this letter as **Attachment B**. Logs of each boring indicate minor fluorescence in the upper three to ten feet of the boring that is a typical return of limestone of a non-hydrocarbon fluorescence. The fluorescent signals from this horizon indicate very high scatter typical of reflected light returning from crystalline media with no PAHs to absorb the laser energy.

A very short-lived fluorescence is detected in the boring for TG-17 at a depth of 23.1 to 23.3 feet coupled with a relatively high scatter. This material is dissimilar to the SPL obtained from the on-site monitoring well and cannot be identified with certainty. The characteristics of the fluorescent signature are similar to that which may be obtained from a bunker oil or other organic matter. The log indicates the thickness over which the material was detected in soil was approximately 0.2 feet.

The log for boring TG-18 indicates the detection of a hydrocarbon substance at a depth of 14.2 to 14.9 feet, which is similar to the SPL from the site. The log indicates a very small fluorescence response accompanied by a decrease in scatter, indicative of hydrocarbons. However, the intensity of the response and the presence of the blue channel indicating significant green laser light returning to the detector are indicative of very small concentrations of SPL in the detected zone.

The log for boring TG-20 detected two fluorescent sources at depth. The first at 19.9 to 20.3 feet appears similar to the SPL from the site and the RL (approximately 180% RE) is analogous to a point approximately halfway between the low and medium samples analyzed in the laboratory prior to conducting the survey. The second detected fluorescent (RL approximately 50% RE) between 21.2 and 21.5 feet is more similar to the unknown material detected in TG-17 and also indicates a material confined to a very thin zone (approximately 0.25 feet).

2.2 Survey Results East Side of BSA Storm Pipe

Borings TG-05, TG-06, TG-07, TG-08, TG-09, TG-10, TG-11, TG-12, TG-13, TG-14, TG-15, TG16, and TG-21 were installed to the west of the storm pipe. The LIF for those borings are attached to this letter as **Attachment C**. Logs of borings TG-05, TG-06, TG-07, TG-11, TG-12, TG-15, TG-16, and TG-21 indicate minor fluorescence in the upper five to ten feet of the boring that is a typical return of limestone of a non-hydrocarbon fluorescence. The fluorescent signals from this horizon indicate very high scatter typical of reflected light returning from crystalline media with no PAHs to absorb the laser energy. Logs from borings TG-08, TG-09, and TG-10 detected a fluorescence at the surface that was dissimilar to any other materials detected in the survey. A note included on the log for boring TG-10 identified “Marking Paint” and may be related to the responses detected in these borings. Borings TG-13 and TG-14 appear to have detected residual levels of oil in very thin bands associated with limestone fill.

Borings TG-05, TG-11, TG-12, TG-13, and TG-14 are located within approximately 20 feet of each other. The detected fluorescence at boring TG-05 indicates a thin band of SPL at a depth of approximately 13.4 to 13.6 feet similar to the SPL collected from the site and tested prior to the survey. The RL at TG-05 was logged at 200% RE, which would be analogous to the medium sample analyzed prior to the survey. A very minor detection (less than 25% RE) of a similar SPL was recorded at 19.4 to 19.6 in TG-05. Although responses were smaller (and consequently concentrations lower), similar materials were detected in the log of TG-13 at depths of 14.4 and 18.2 to 18.8 feet. When comparing TG-13 and TG-14, the deeper response was the only one detected and it was recorded at smaller levels in TG-14 than TG-13. SPL detected in TG-12 at 19.8 to 20.4 feet and that detected in TG-13 at 18.2 to 18.8 appear to match with the intensity of the response at TG-12 being greater than the other borings for this SPL at this depth. at the RL at TG-12 was logged less than 125% RE, which is well below the analogous value for the medium sample analyzed prior to the survey. An additional fluorescent return was logged 17.9 to 18.15 feet in TG-12, which appears to have a comparable result in the log for TG-11 at 17.5 feet. This fluorescent response is dissimilar to the site SPL and is likely representative of a heavy hydrocarbon (bunk oil or tar) or organic matter (tree residue or similar matter) in the soil and is characterized by the very short-lived fluorescent returns.

Borings TG-06, TG-07, TG-08, and TG-09 each provide similar logs of hydrocarbon in soil that is similar to the SPL collected from the site, but at residual levels. TG-07 and TG-09 both appear to have detected the product at shallow levels, 14.3 to 14.6 feet and 10.8 feet, respectively. Each of the four borings has also detected the SPL at residual amounts (RL below 50% RE) at depths of approximately 18.2 to 20 feet.

Borings TG-10, TG-15, and TG-16 each illustrate similar logs showing a band of hydrocarbon similar to the SPL collected from the site of approximately 18.5 to 20 feet. In borings TG-10 and TG-15, the RL ranges 75% to 95% RE, which is lower than the response analogous to the medium sample analyzed prior to the survey. In boring TG-16, the fluorescence RL is approximately 25% RE, which is analogous to the low sample analyzed prior to the survey. A residual detection of hydrocarbons was identified at the approximate water table in boring TG-10, but the fluorescence was likely smeared over more than two feet of soil and significant blue channel returns indicate that much of the soil scattered the fluorescence, indicating very little hydrocarbon is present. Two very thin responses were logged at approximately 10 feet in boring TG-16, likely indicating the pathway SPL had occupied as it migrated to the release point during the previous months when the release produced sheens.

Boring TG-21 produced a log that indicates a material similar to the SPL collected from the site was detected at depths of 9.2 to 10.2 feet in distinct bands and 19.2 to 20.0 feet. The upper zone appears to be consistent with the water table and is likely the result of SPL occupying this pathway as it migrated to the Buffalo River under slightly different groundwater stages or washed back into the open space as result of River stage changes. The lower zone appears to contain SPL at the highest levels recorded in the survey. The maximum fluorescence return recorded in this boring between 19.2 and 20.0 feet occurred at approximately 19.8 feet and the RL exceeded 500% RE. That level is below the high sample concentration analyzed prior to the survey but may have exceeded that threshold to release sheen to the water prior to implementation of the installation of additional seals on the bulkhead.

2.3 Three-Dimensional Data Presentation

Figure 3 is a three-dimensional diagram illustrating the individual borings and the signal response at each boring. The three-dimensional diagram was provided by Dakota as model capable of evaluating the survey data by orienting in any selected manner and by filtering responses by selecting a RL. The three-dimensional model was oriented to align a view up the BSA storm water outfall line from a low elevation. The approximate location of the storm water pipe was included on the diagram for additional perspective.

A representative RL of 50% RE was selected because it was the highest value provided for the Model and represents a concentration of SPL which remains analogous to the low level samples prepared before the survey was conducted. The control low level sample produced a RL of approximately 20% RE and the medium control sample produced a RL of 300% RE. Neither of those control samples contain enough SPL to be mobile.

The data illustrated on Figure 3 provide evidence of minor residual quantities of SPL in the soil and illustrate that those accumulations are discontinuous. With exception to the SPL detected at TG-21, whose interpretation is confounded because the data point is located at the edge of the model where additional data do not exist to interpret boundaries, each occurrence of a RL exceeding 50% RE is confined to a very small area. These residual amounts of SPL in the soil are also shown to be of low response levels which are not mobile.

3.0 Conclusions

Data gathered during the LIF survey have provided ample information to characterize the remaining SPL near the BSA Infrastructure. That information indicates that residual levels of hydrocarbons matching those present on site are trapped in sediment adjacent to the Buffalo River at depths of approximately 20 feet (approximately 12 feet below mean river level). Use of the TarGOST UV Source was determined based on the analysis of SPL collected at the site and development of a screening system that provides increasing response with increasing concentrations of a known contaminant in the environment. Test cases of the contaminant (i.e., low, medium, and high sample levels) do not constitute NAPL levels of the SPL in sand and survey results did exceed the results produced by those test cases. Comparison of filed results conclude that the residual quantities of SPL detected in the subsurface at the site are not mobile. This position is further supported by the fact that sheens have not been observed on the Buffalo River since the sheen abatement project was completed, which installed additional barriers to identified potential release pathways.

Installation of a monitoring well would not be practical to monitor the occurrence of SPL in this setting because the product is trapped within a porous medium, approximately 10 to 12 feet below the water table. Such configuration would require the installation of a monitoring well with a submerged screen, which would be highly unlikely to gather SPL, if the SPL were mobile and migrating. Such construction of monitoring wells would be impractical to make any evaluation of a SPL plume body, which has been fully evaluated by the LIF survey described in this letter. Furthermore, after completion of the LIF survey a hanging sheet pile was installed approximately 40 feet north of the river across Babcock Street. The hanging wall was physically connected to the sheet pile return wall that makes up a portion of the western hydraulic barrier for the site. Based on the results of the LIF survey, the hanging wall, originally designed to extend to 20 feet below ground surface, was installed to 23 feet. In addition, pressure grouted columns were installed at the interface of the western sheet pile return wall and the existing Babcock Street Sewer bulkhead. The grout columns were installed to address the immediate location where sheen appeared to be released to the river. Since the installation of the pressure grout columns and the hanging wall, no sheen has been observed emanating from the Babcock Street Sewer area.

Continued...

We trust that this letter meets with your satisfaction. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,
AMEC E&E, PC

Richard Egan

Richard Egan, P.E.
Associate Geotechnical Engineer

John W Petersen

With permission for:

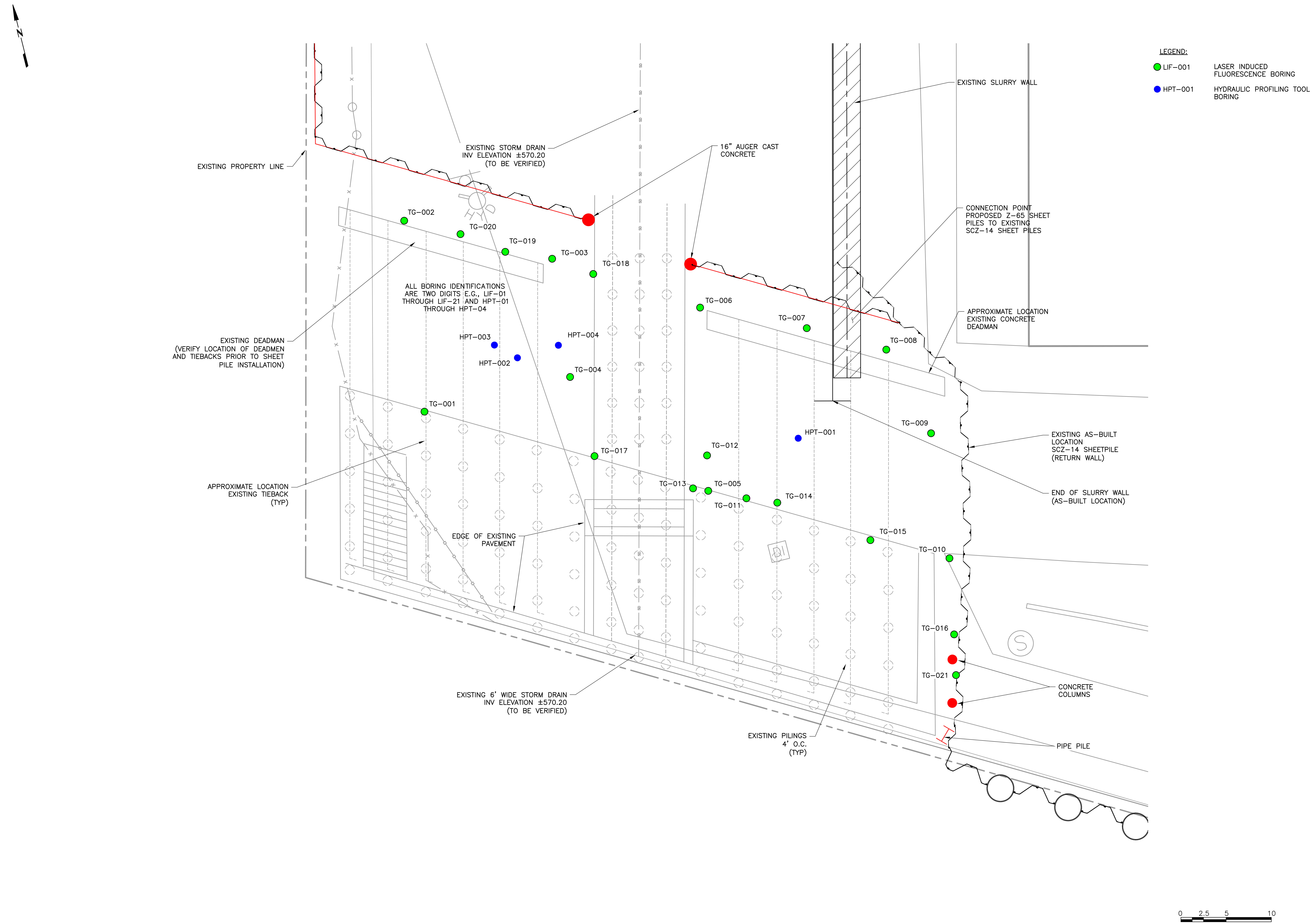
Dayne Crowley
Principal Hydrogeologist

Attachments

cc: Paul Neureuter ESCP
Arnie Cubins Krog
Ben Genes Krog
John Petersen Amec

P:\PROJECTS\Krog_Buffalo NY\OU-3 River Sheen\OU-3 LIF Survey Report.docx

FIGURE



NO.	DATE	REVISION	BY	APVD
A	8/26/19	DRAFT REVIEW	BRT	JWP

DSGN J. Luttinger | DR B. Tomic | CHK D.Crowley | APVD J.Peterson

OU3 REMEDIAL DESIGN
ELK STREET COMMERCE PARK, LLC
625 ELK ST., BUFFALO, NEW YORK

DRAWING STATUS
ISSUED FOR CONSTRUCTION

CIVIL
LIF SURVEY
SITE PLAN

amec
E & E, PC
511 Congress Street
Portland, Maine 04101
(207) 775-5401

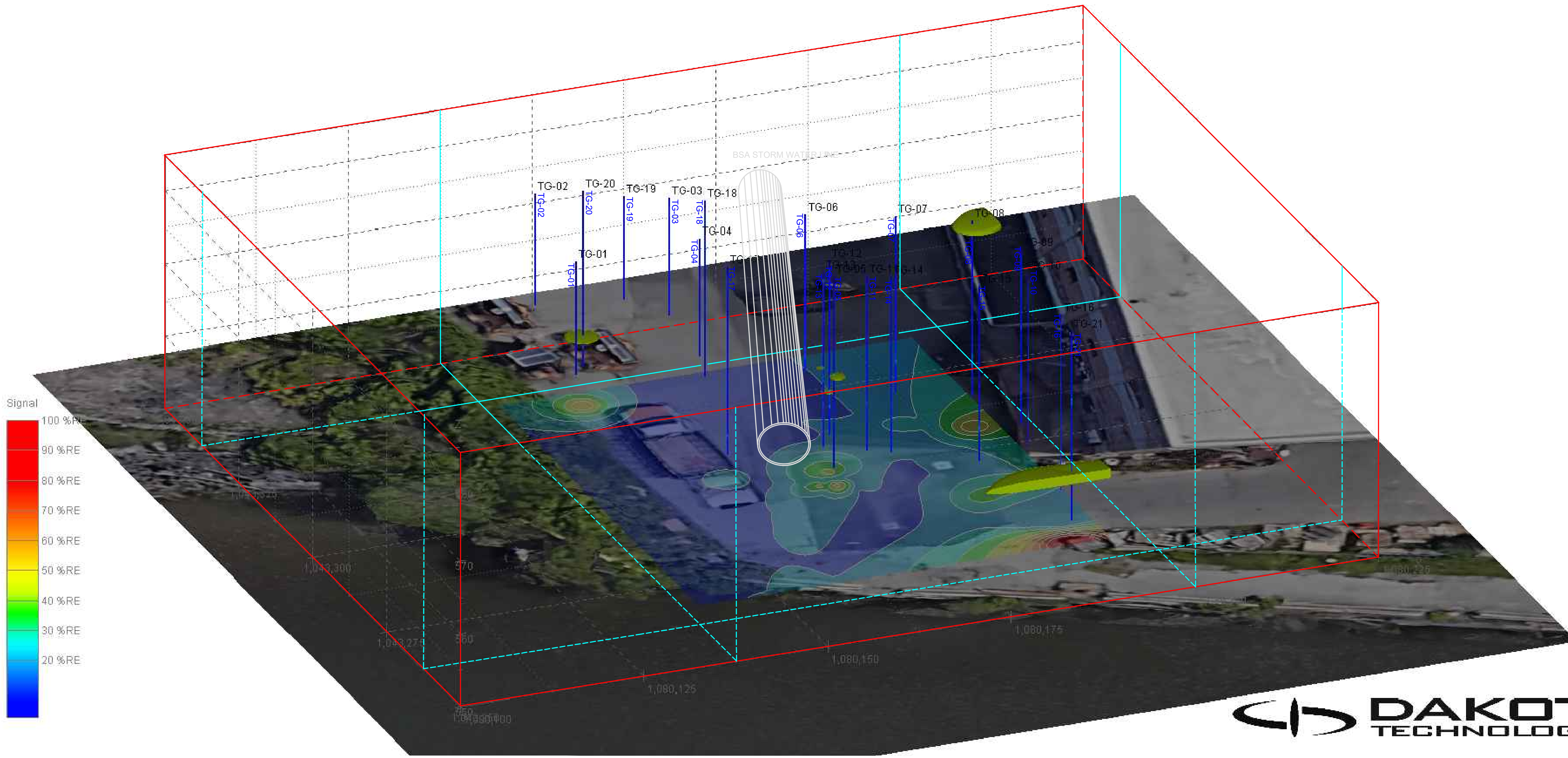
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE AUGUST 2019
PROJ 3617-16-7397
DWG FIGURE 2

FILE NAME: Z:\Projects\ExxonMobil-KROG-Elk Street\OU3 Design\Figures\Fig-2_LIF SURVEY SITE PLAN.dwg PLOT DATE: Tue, 27 Aug 2019 PLOT TIME: 11:45 AM

Z Exaggeration: None

Response Level: 50.0 %RE



Prepared/Date: WJW 9/25/19
Checked/Date: RSE 9/25/19

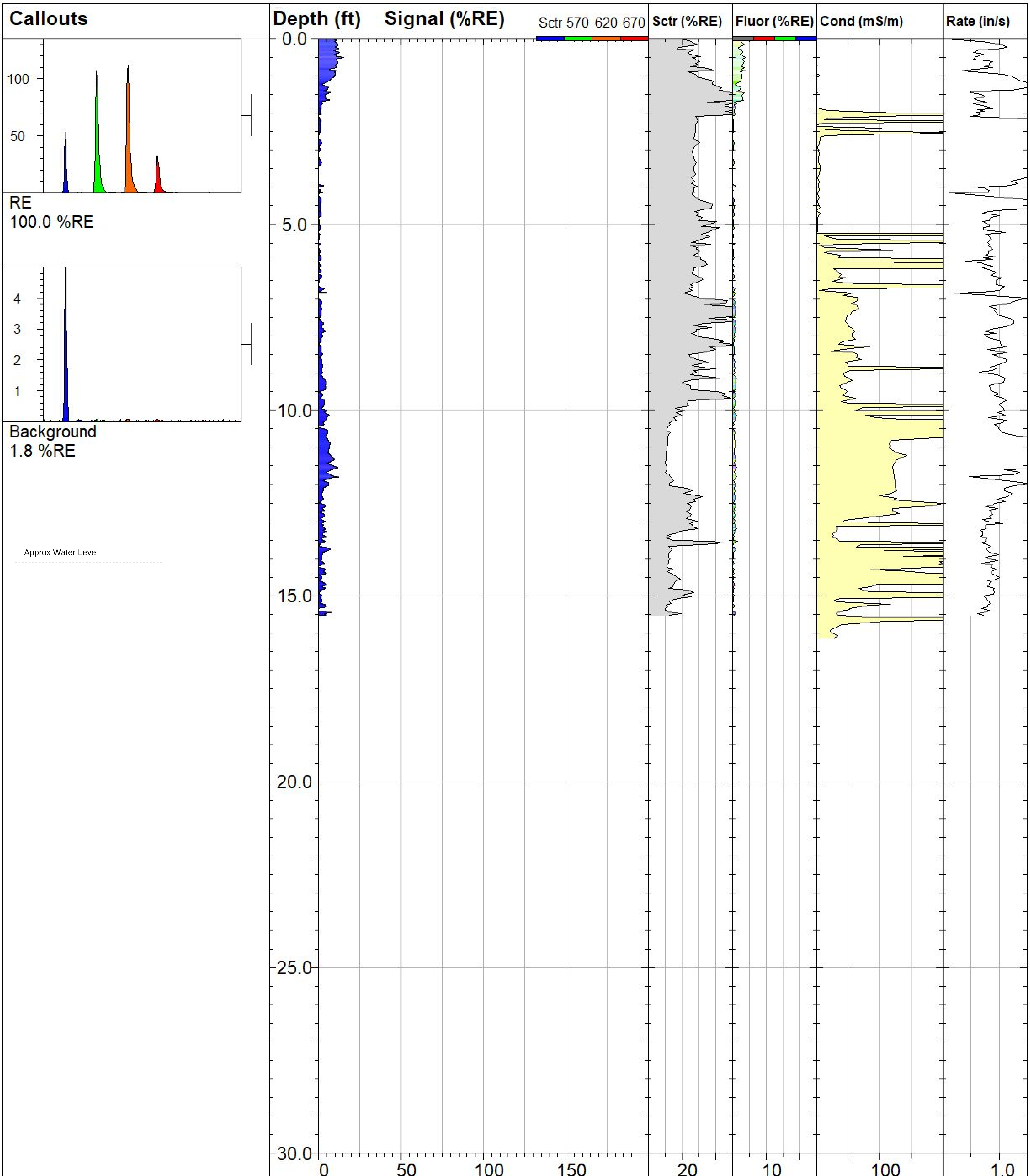
Elk Street Commerce Park, LLC 600 Elk St., Buffalo, NY	amec	LIF REPORT BSA Outfall Contamination Survey Project 3617-16-7397 LIF - FIG - 3

ATTACHMENT A

Oil sample series TarGOST		TarGOST® By Dakota www.DakotaTechnologies.com
Site: **Krog**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **3.90 ft**
Client / Job: **Wood /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3664.5 %RE @ 3.70 ft**
Operator / Unit: **T. Rudolph / TG1099**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-10 11:00 CDT**

DAKOTA TECHNOLOGIES
WWW.DAKOTATECHNOLOGIES.COM

ATTACHMENT B



TG-01

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **15.52 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **15.4 %RE @ 0.51 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 07:36 CDT**

DAKOTA TECHNOLOGIES
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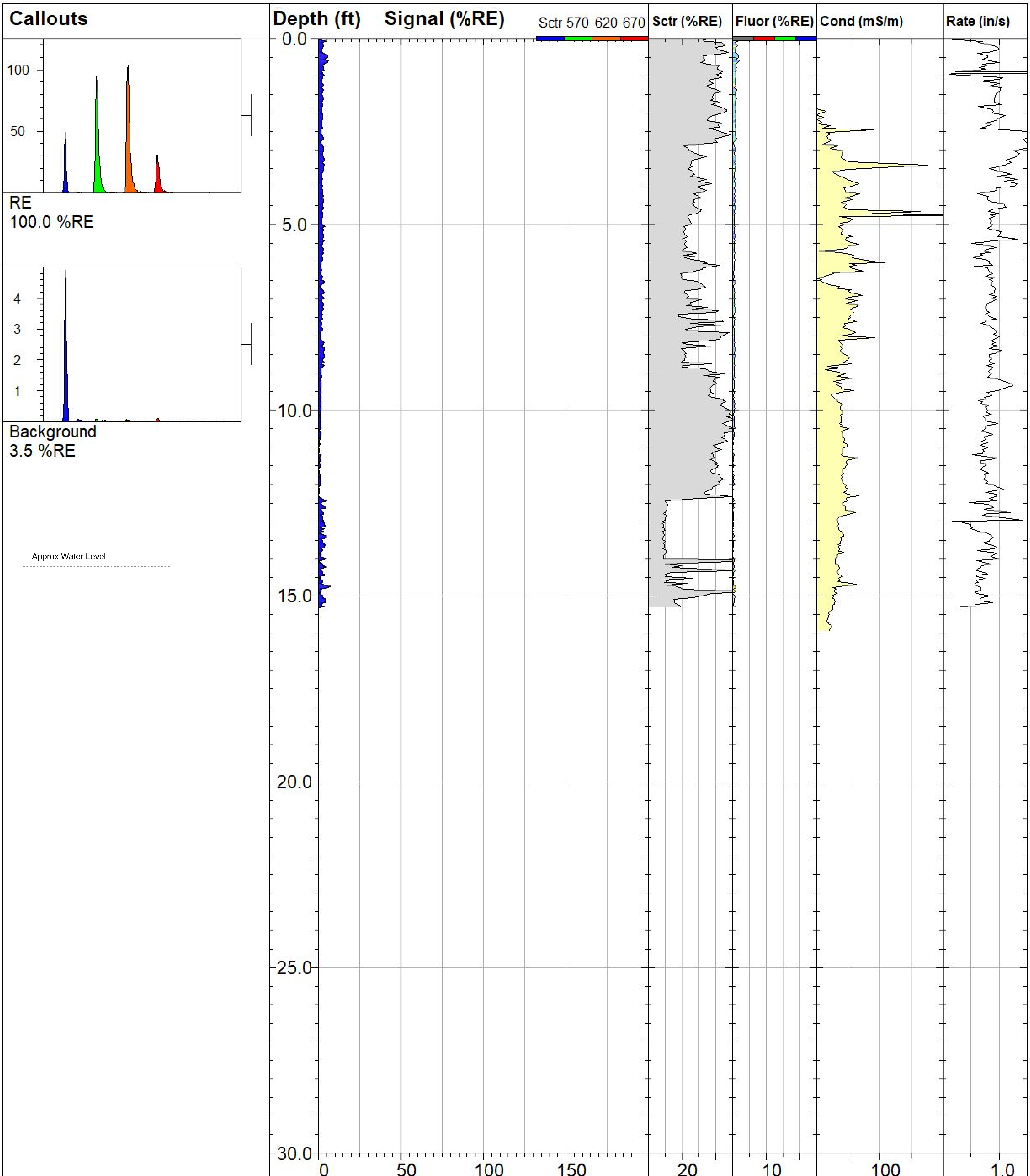

TG-02

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **15.30 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.1 %RE @ 14.74 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 09:32 EDT**

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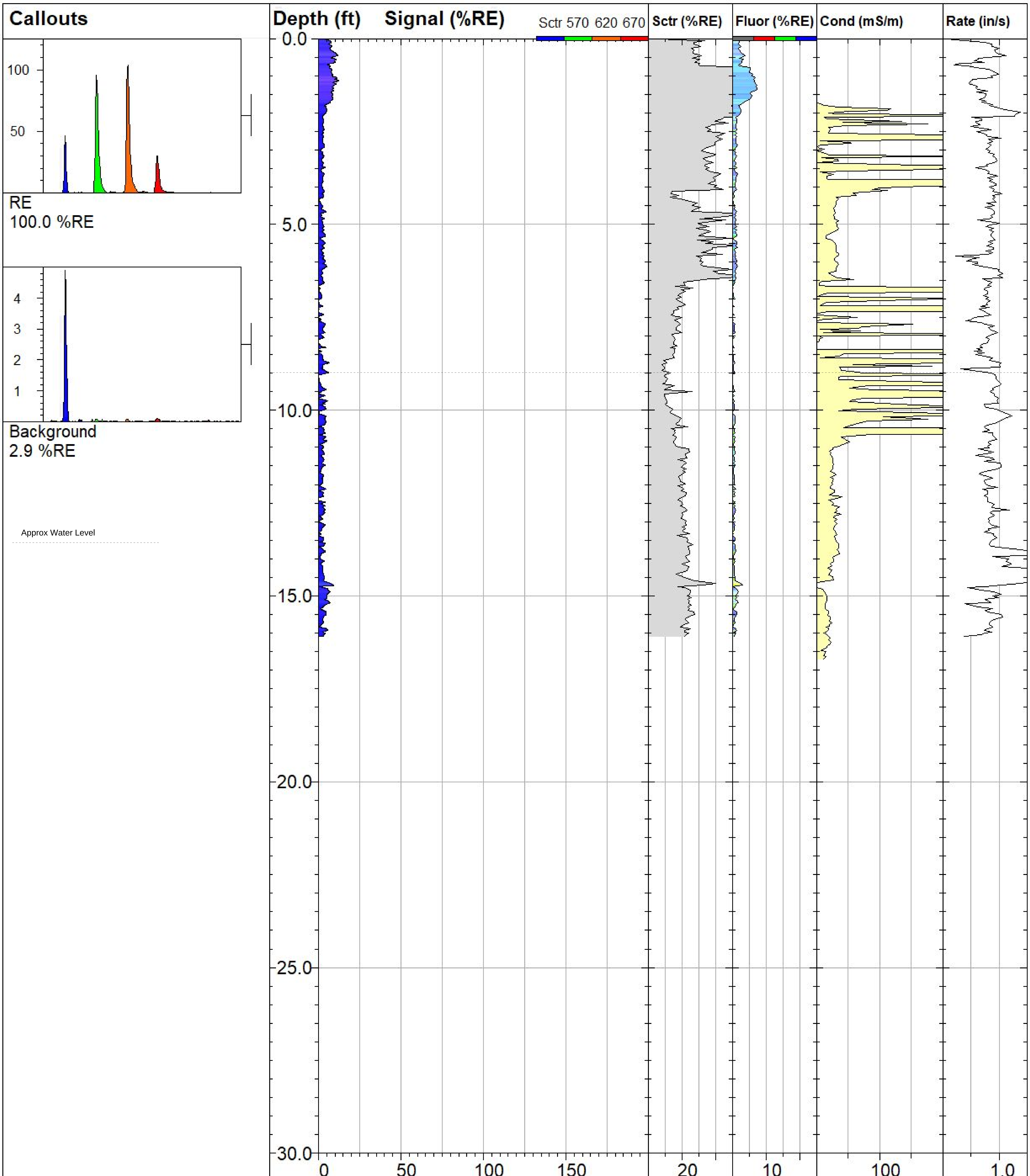

TG-03		**TarGOST® By Dakota** www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **16.09 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **12.4 %RE @ 1.12 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 09:58 EDT**

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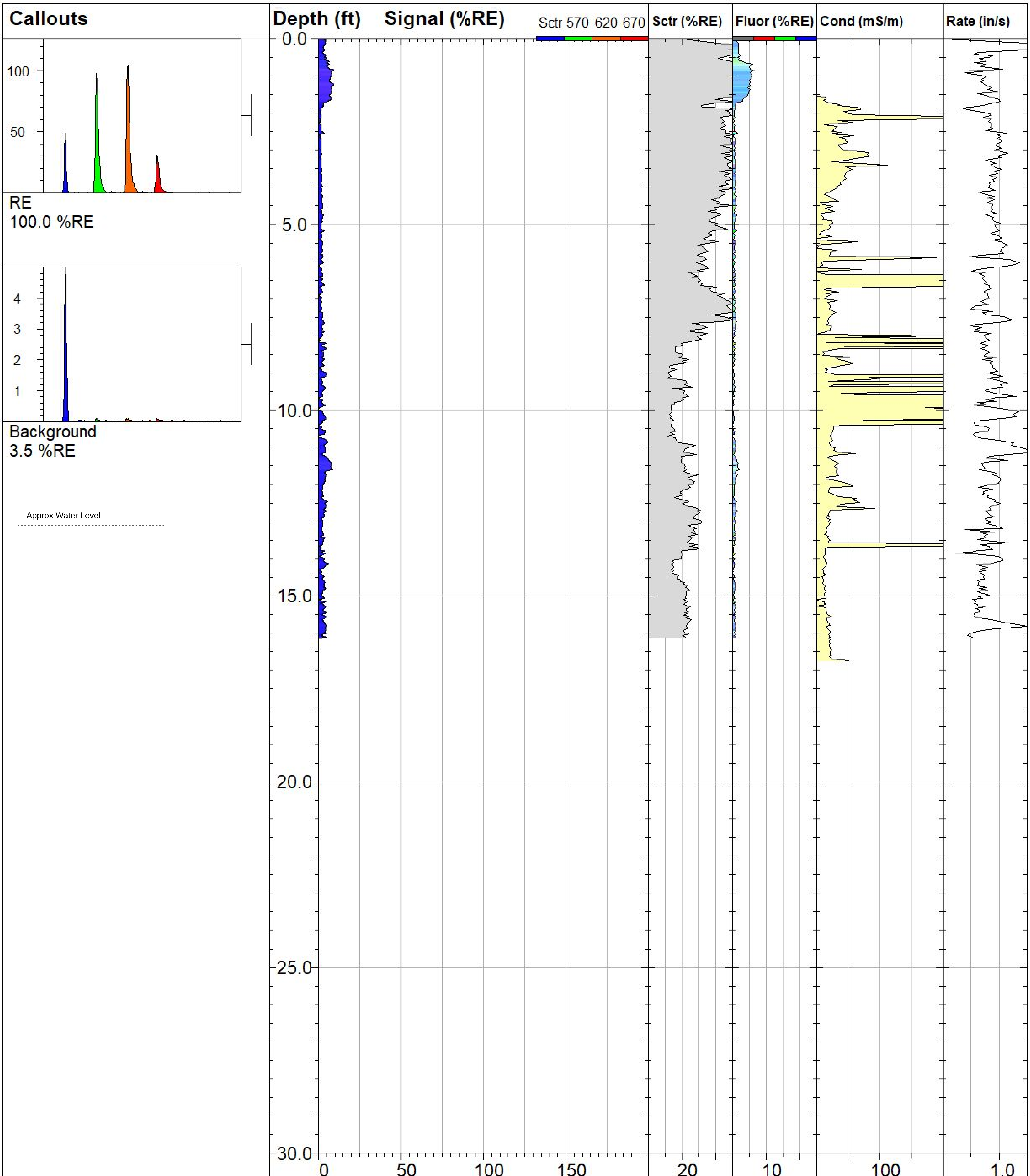

TG-04		TarGOST® By Dakota www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **16.12 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **9.3 %RE @ 1.23 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 10:44 EDT**

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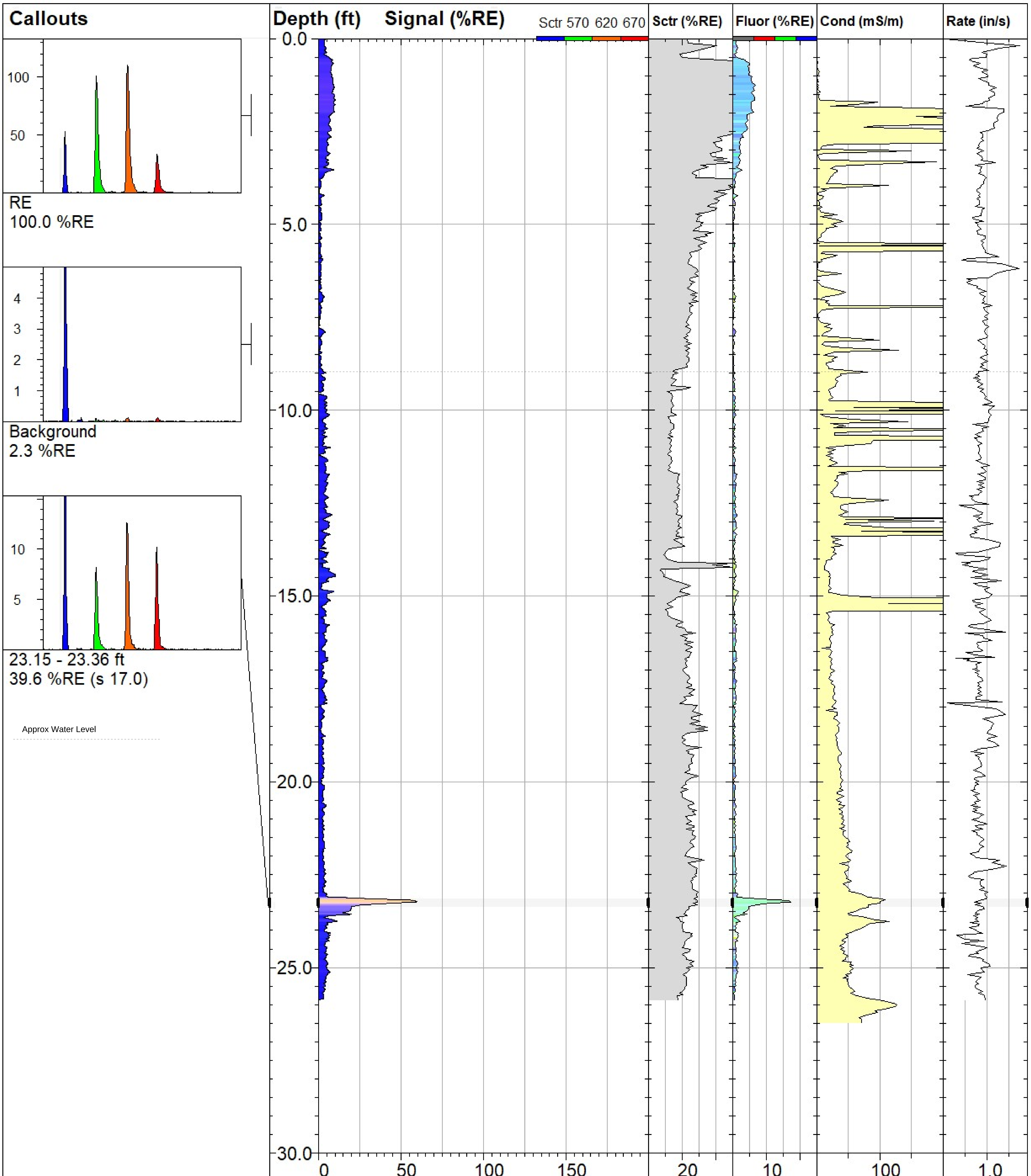

TG-17		TarGOST® By Dakota www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.86 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **59.6 %RE @ 23.23 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 10:28 EDT**

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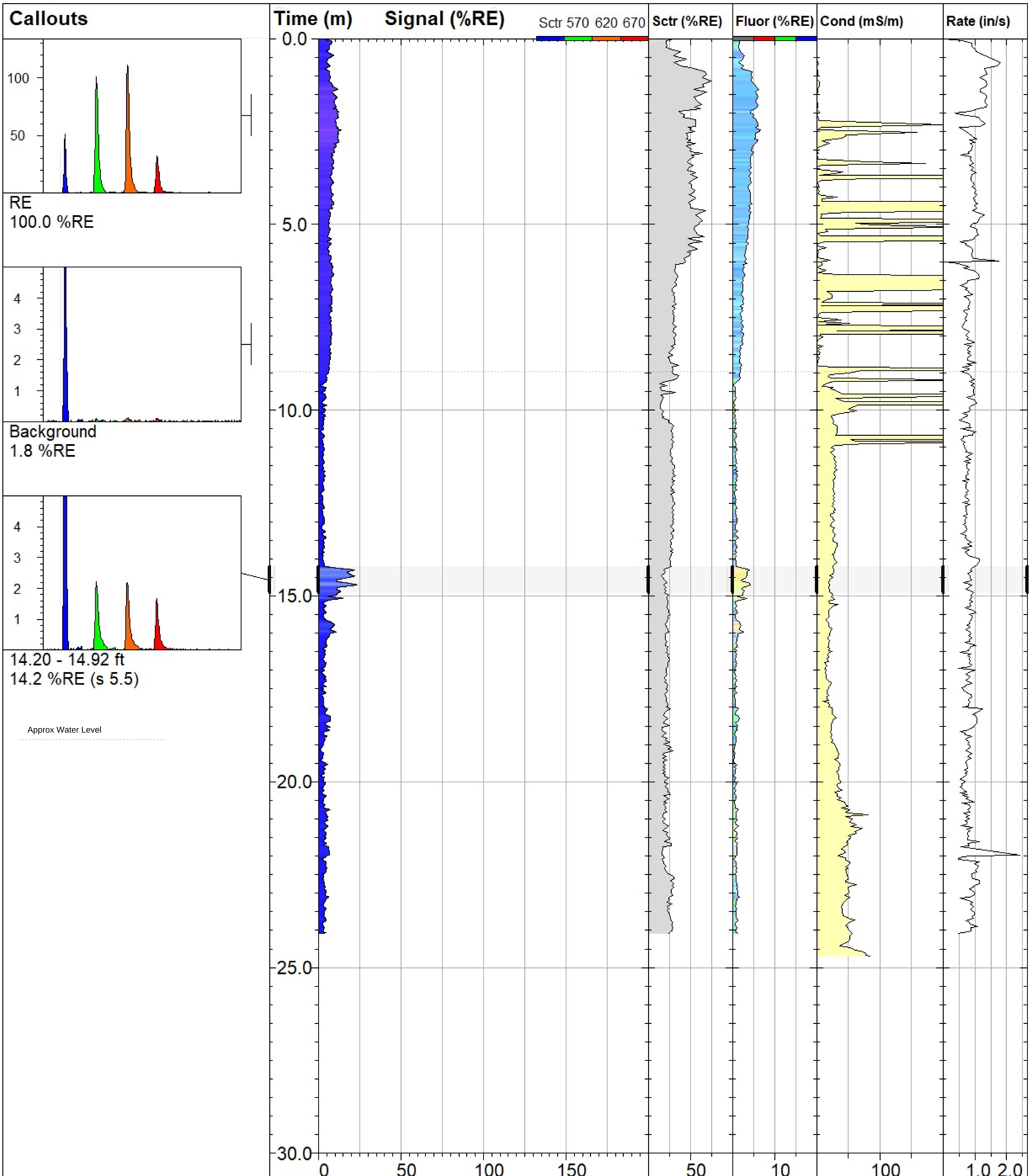

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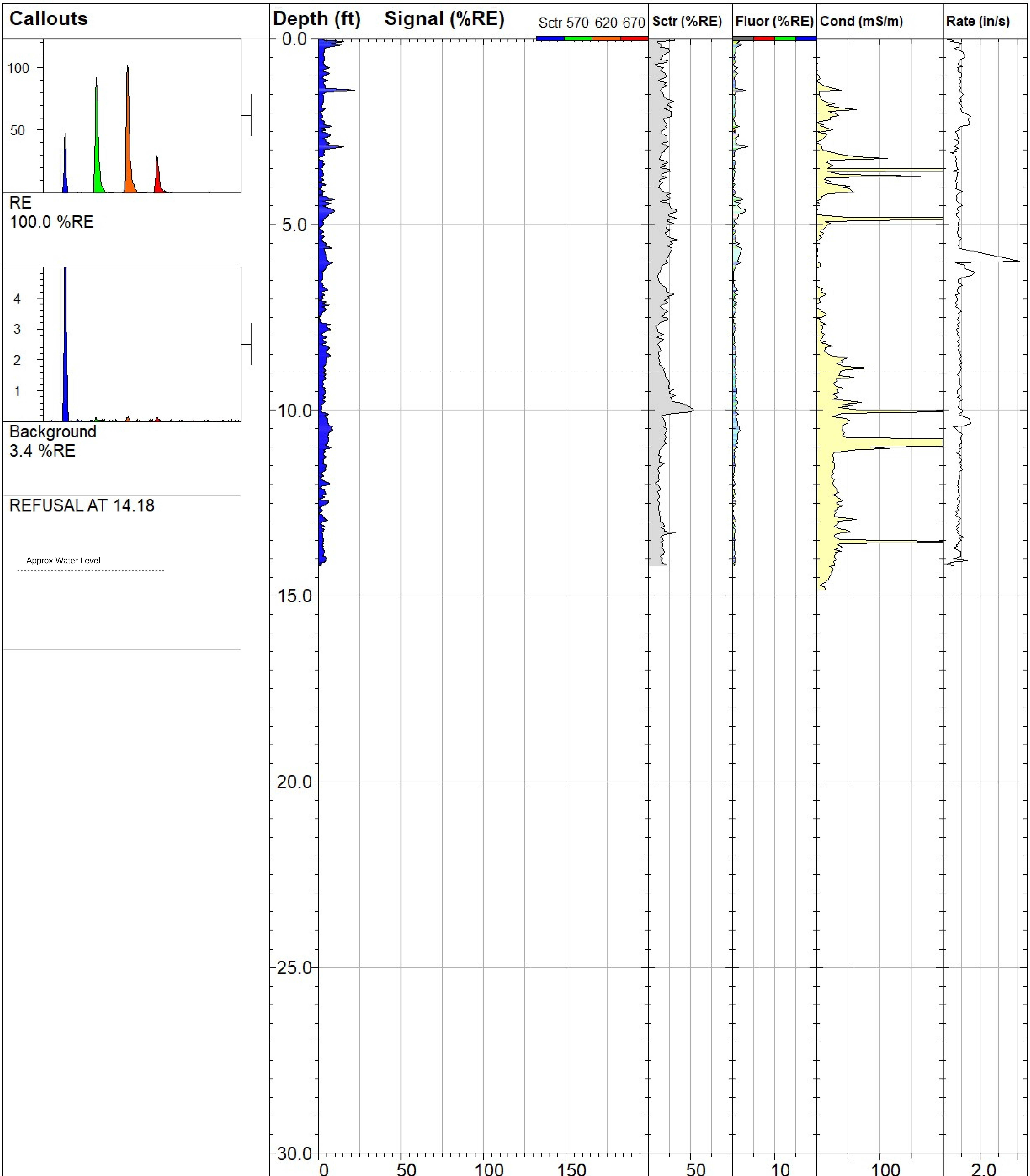
TG-18		**TarGOST® By Dakota** www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.08 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **23.8 %RE @ 14.70 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 10:53 EDT**



TG-19

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **14.18 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **21.9 %RE @ 1.39 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 11:25 EDT**

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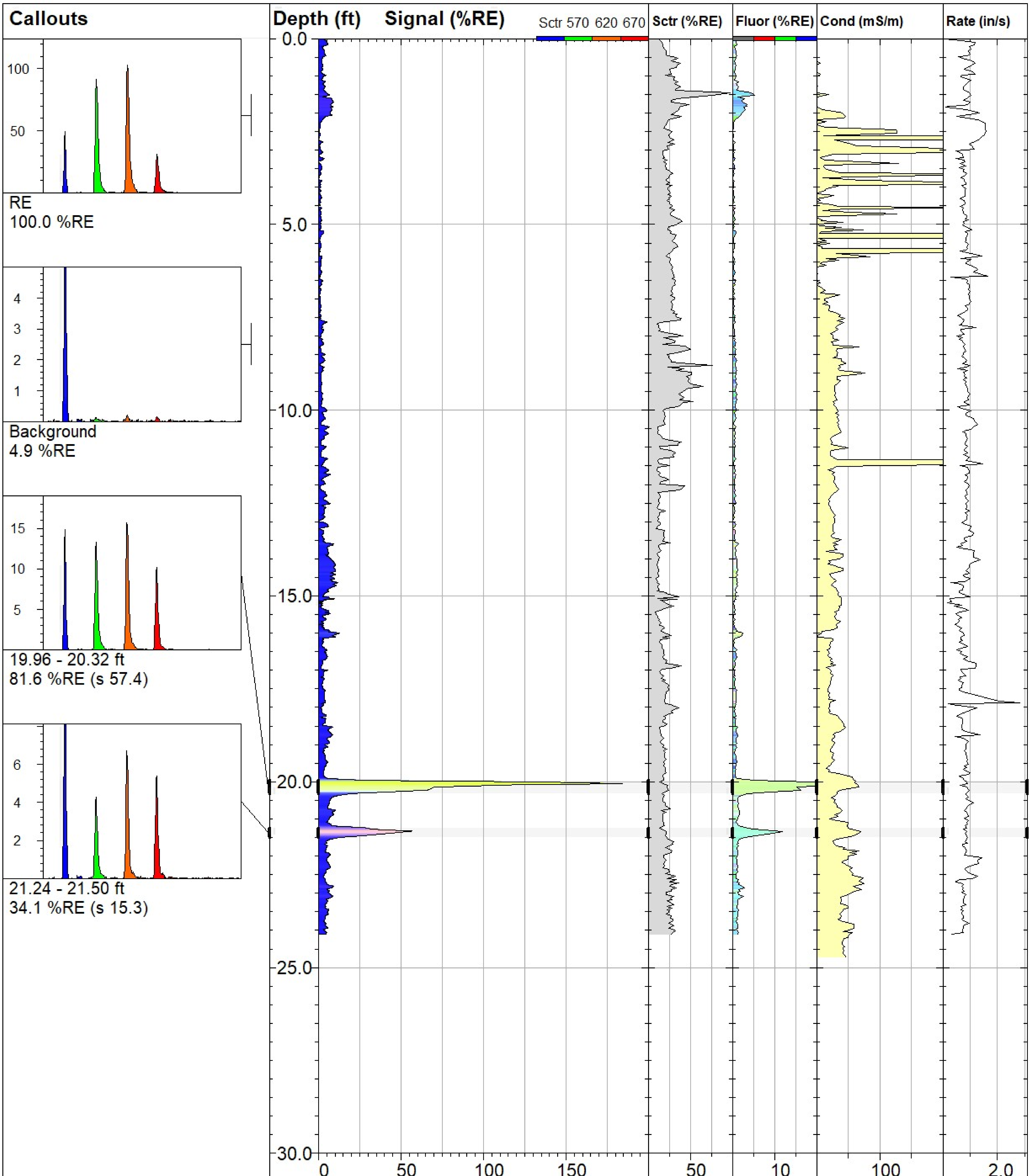

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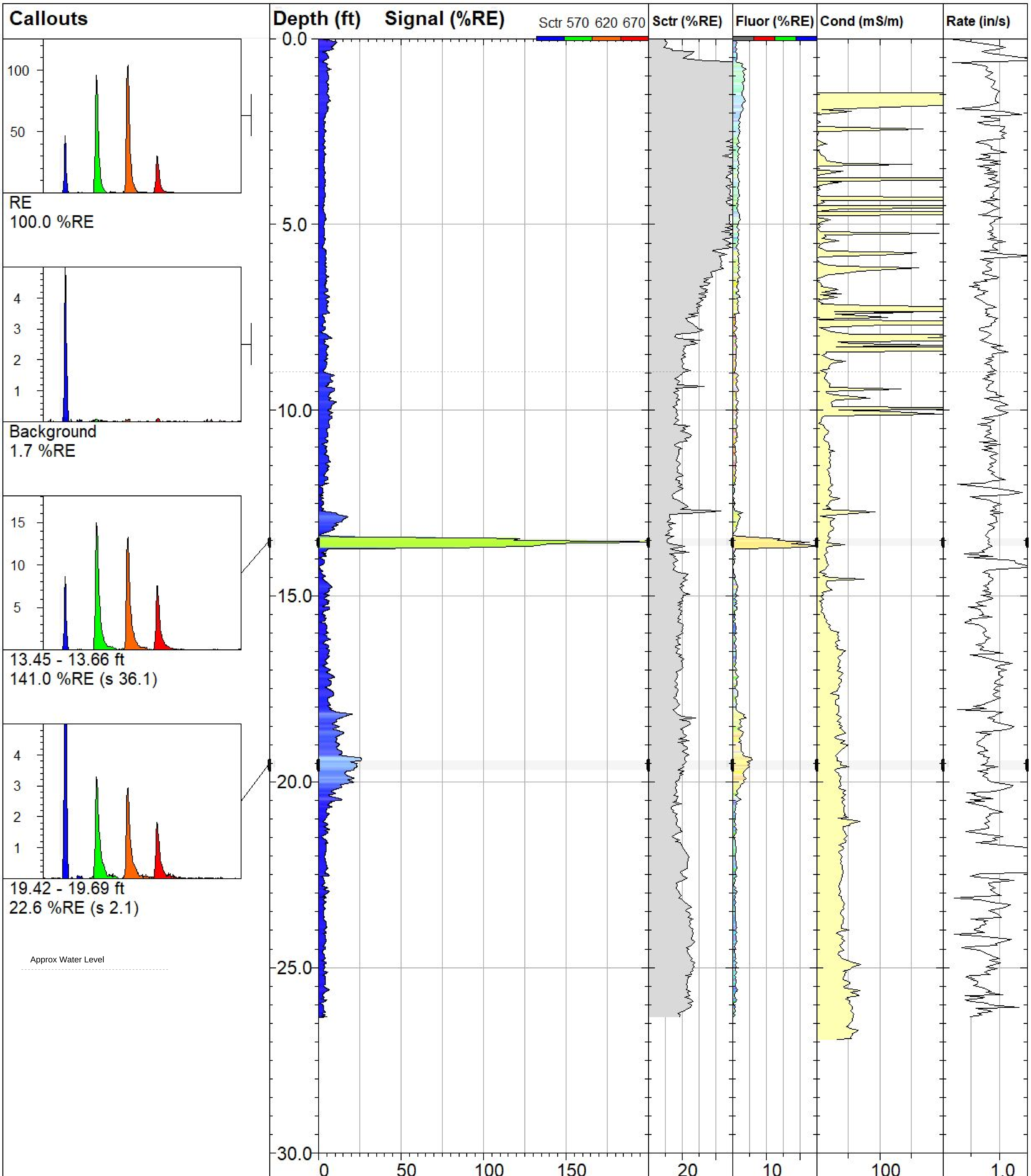
TG-20

TarGOST® By Dakota
www.DakotaTechnologies.com

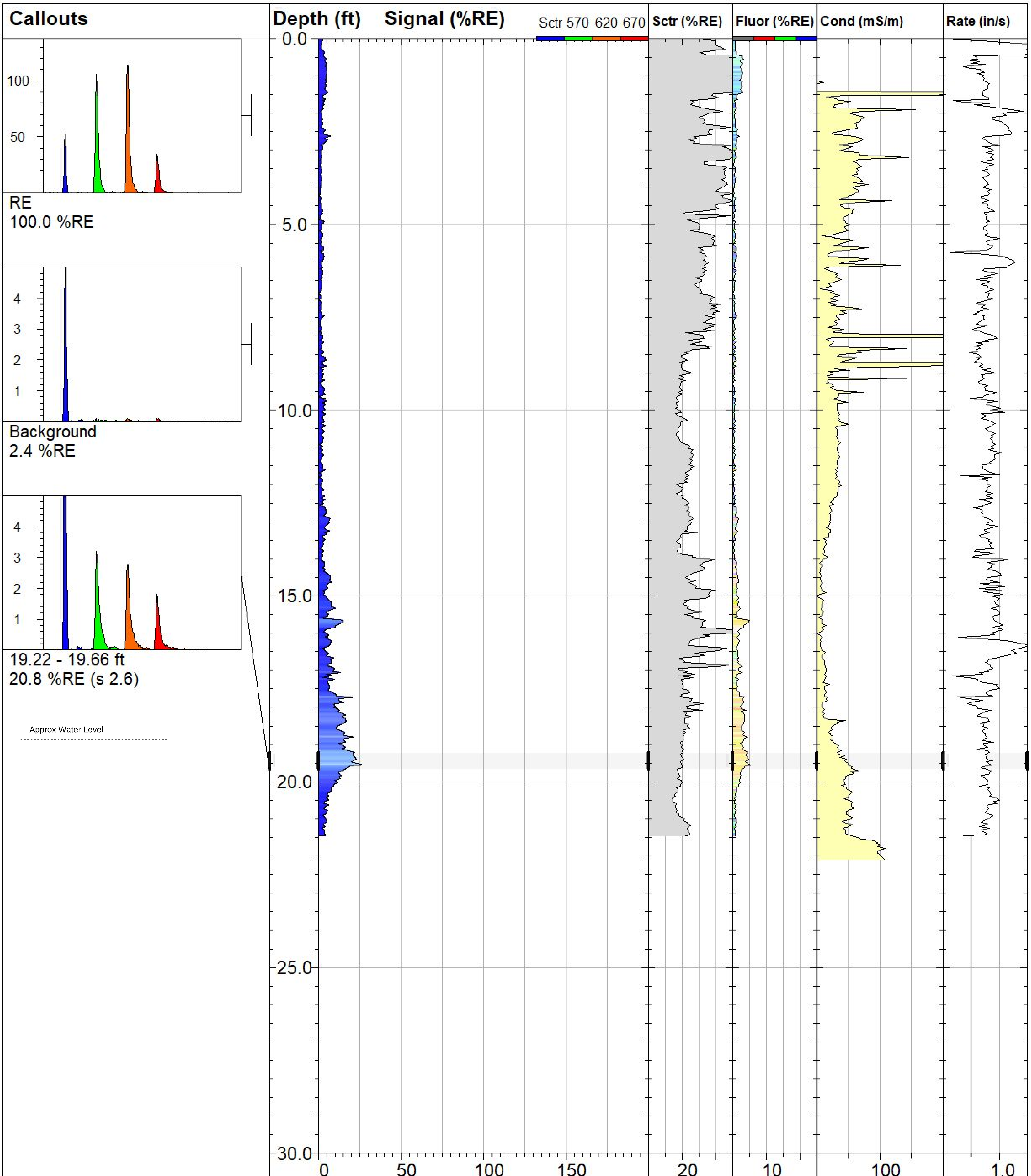
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.10 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **184.6 %RE @ 20.05 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 11:44 EDT**

ATTACHMENT C



TG-05		TarGOST® By Dakota www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **26.34 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **206.2 %RE @ 13.54 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 11:05 EDT**

DAKOTA TECHNOLOGIES
www.DakotaTechnologies.com

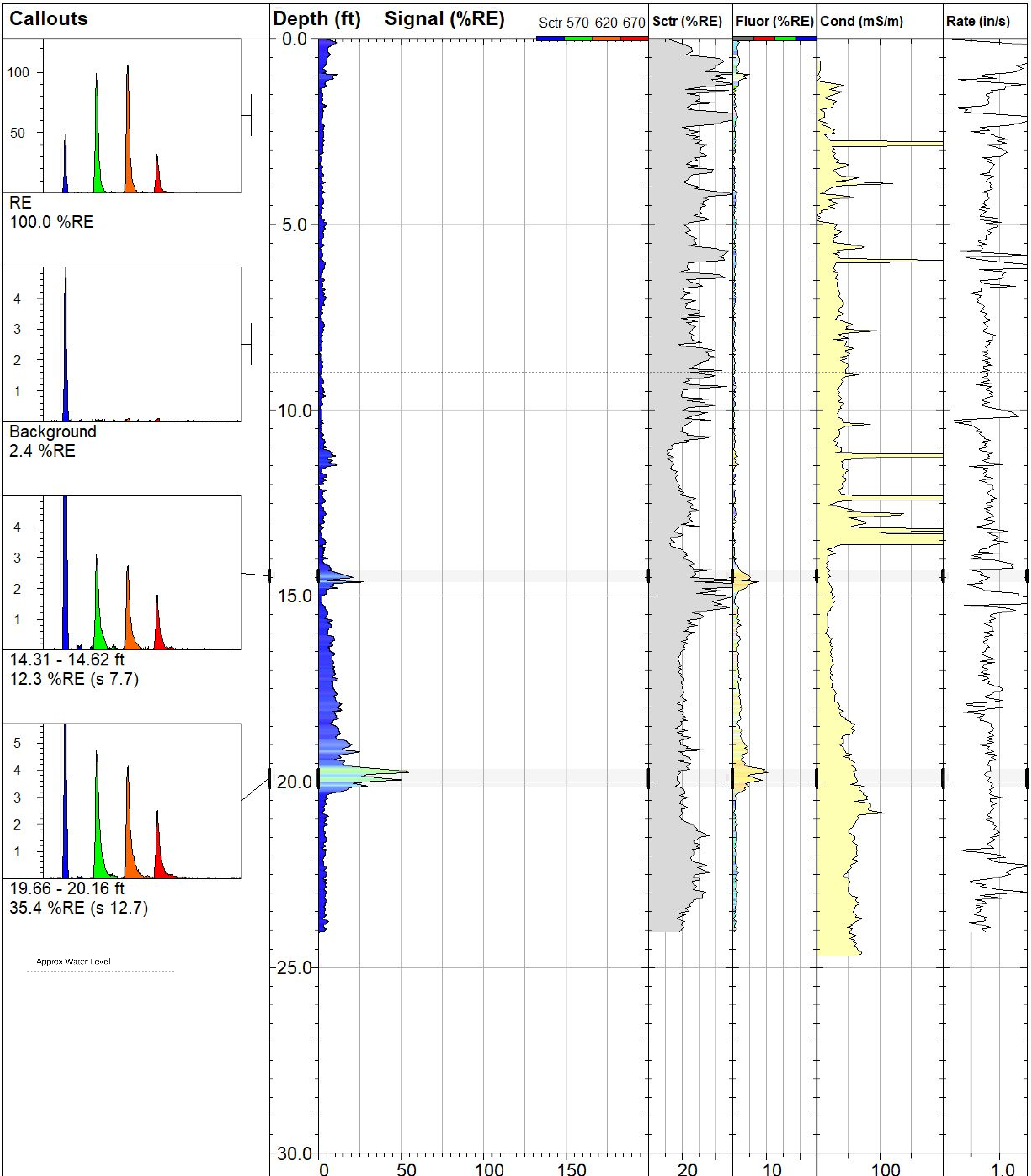


DAKOTA TECHNOLOGIES
www.DakotaTechnologies.com

TG-06

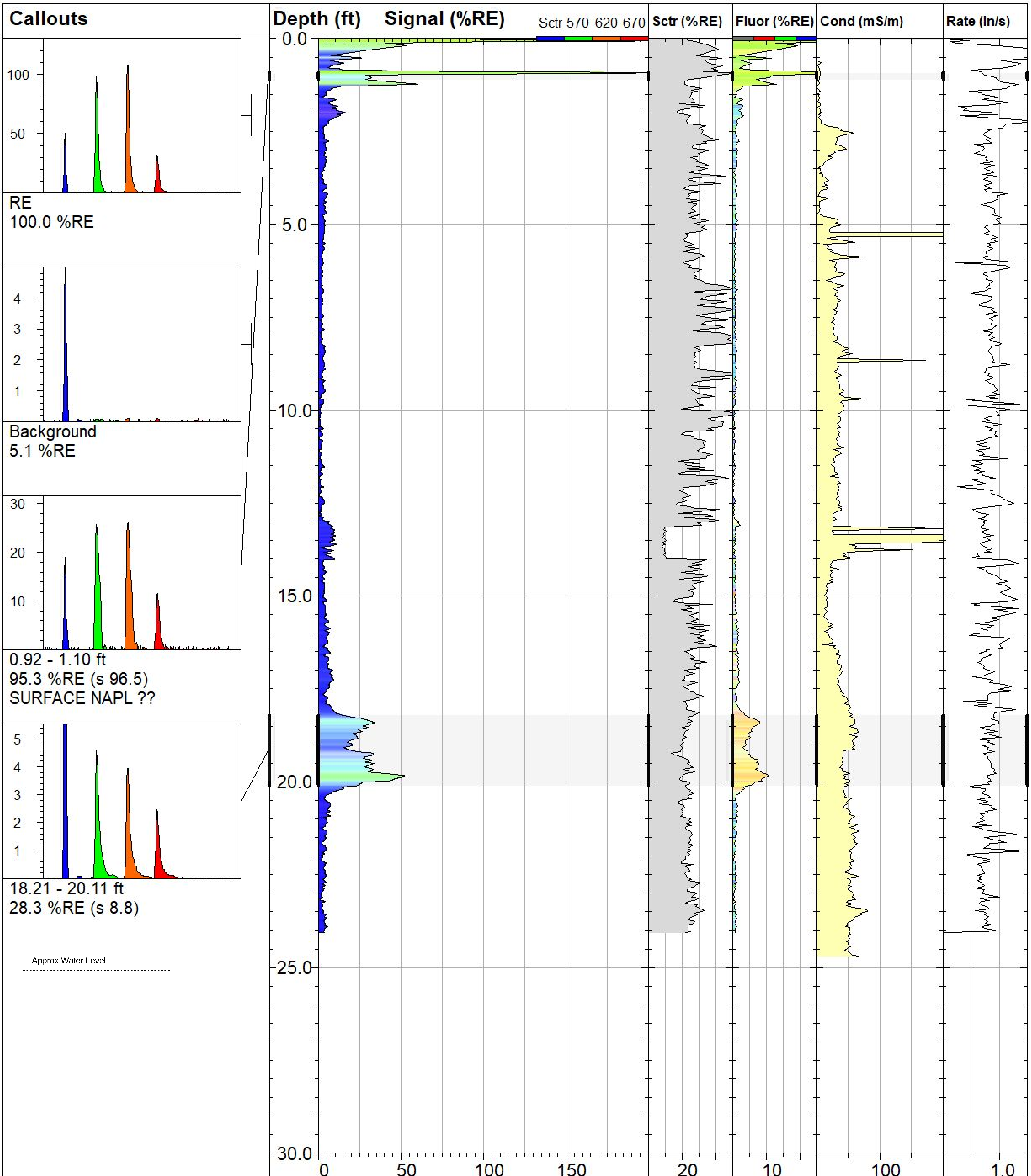
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **21.46 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **25.9 %RE @ 19.54 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 11:52 EDT**



www.DakotaTechnologies.com

TG-07		TarGOST® By Dakota www.DakotaTechnologies.com
Site:	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.05 ft**
Client / Job: /	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **54.7 %RE @ 19.75 ft**
Operator / Unit: **/ TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 13:07 EDT**



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TG-08

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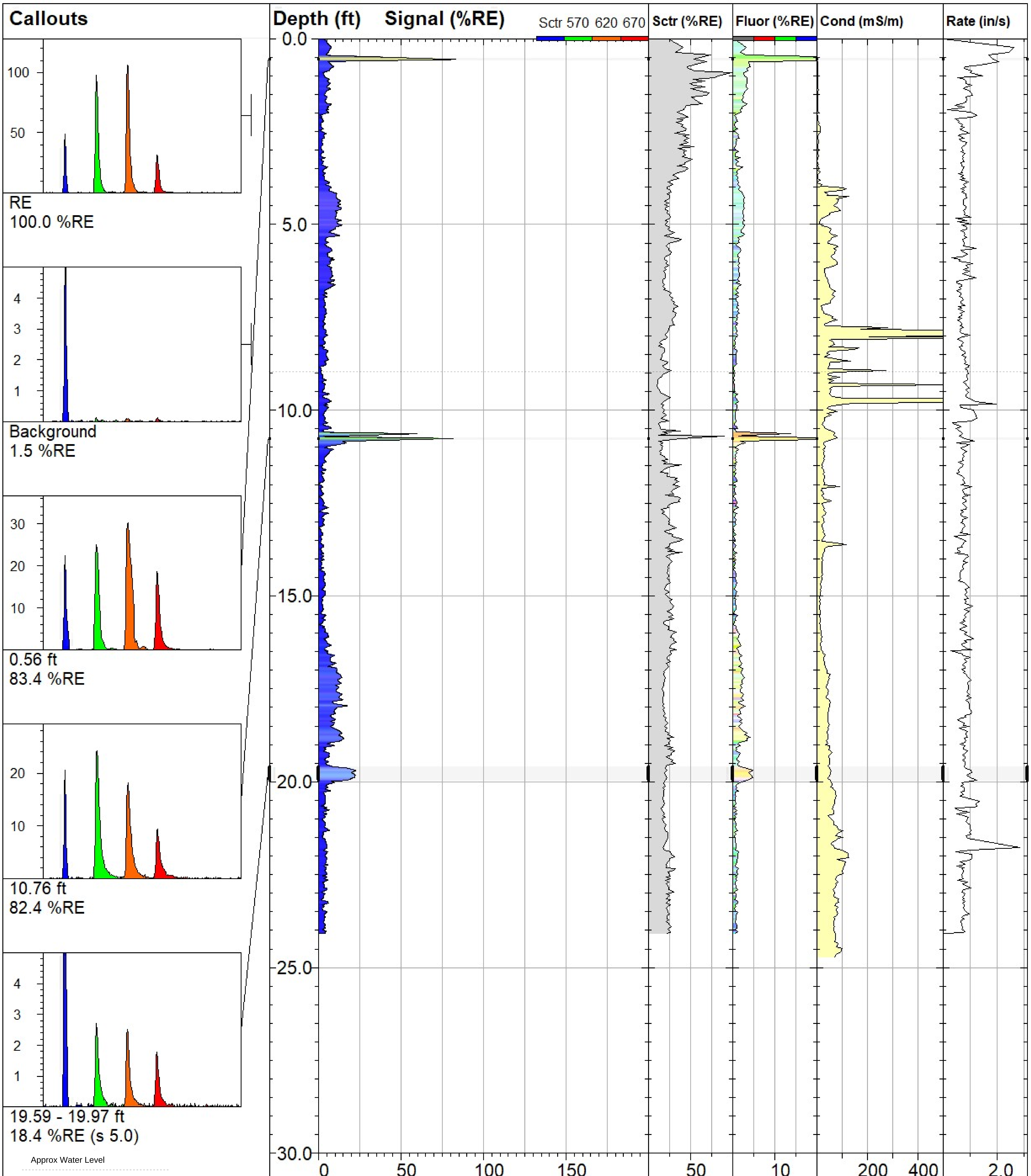
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.06 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **419.0 %RE @ 0.05 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 13:36 EDT**



TG-09

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Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.08 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **83.4 %RE @ 0.56 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 14:03 EDT**

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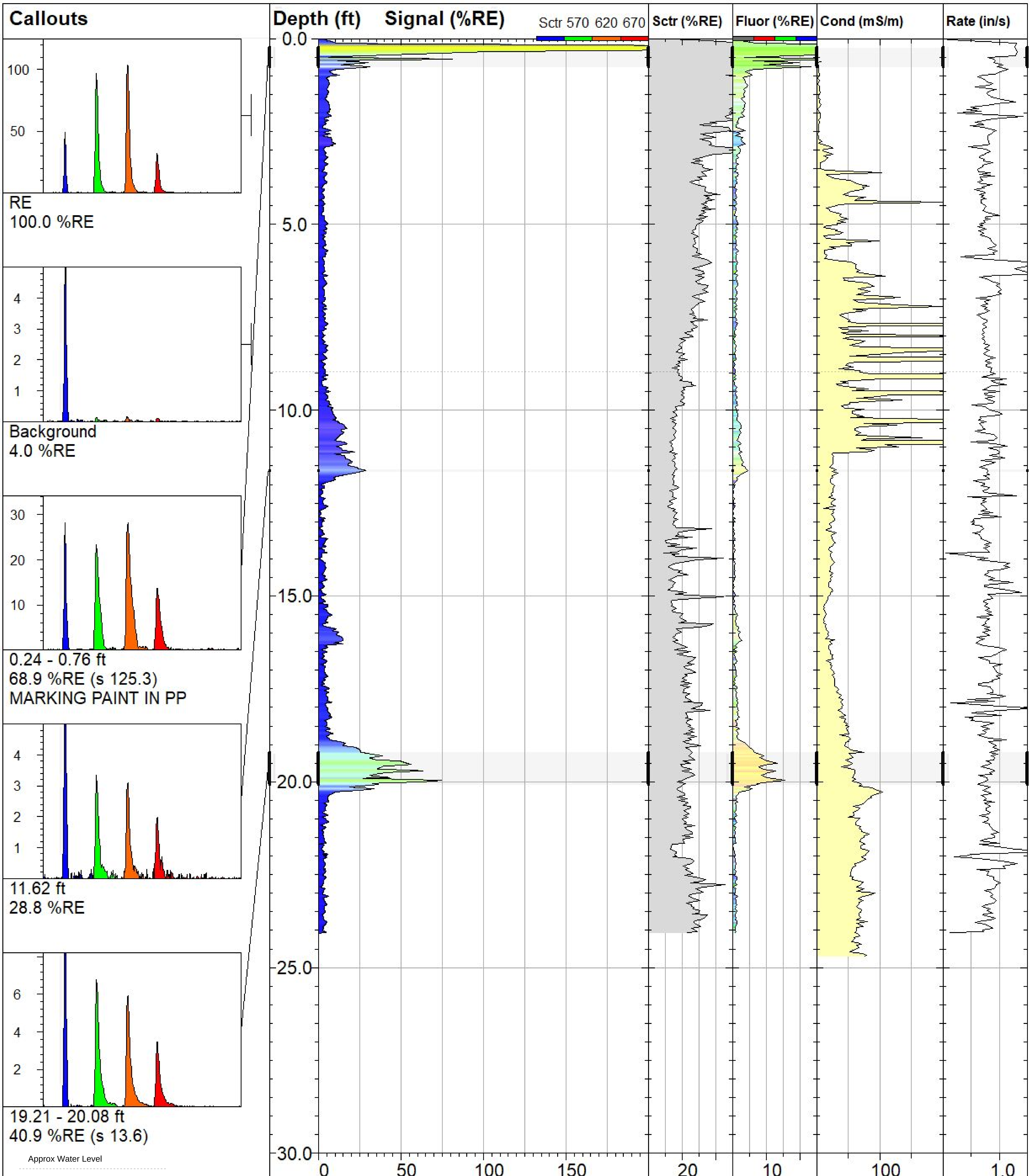

TG-10		TarGOST® By Dakota www.DakotaTechnologies.com
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.07 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **401.1 %RE @ 0.24 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 14:33 EDT**

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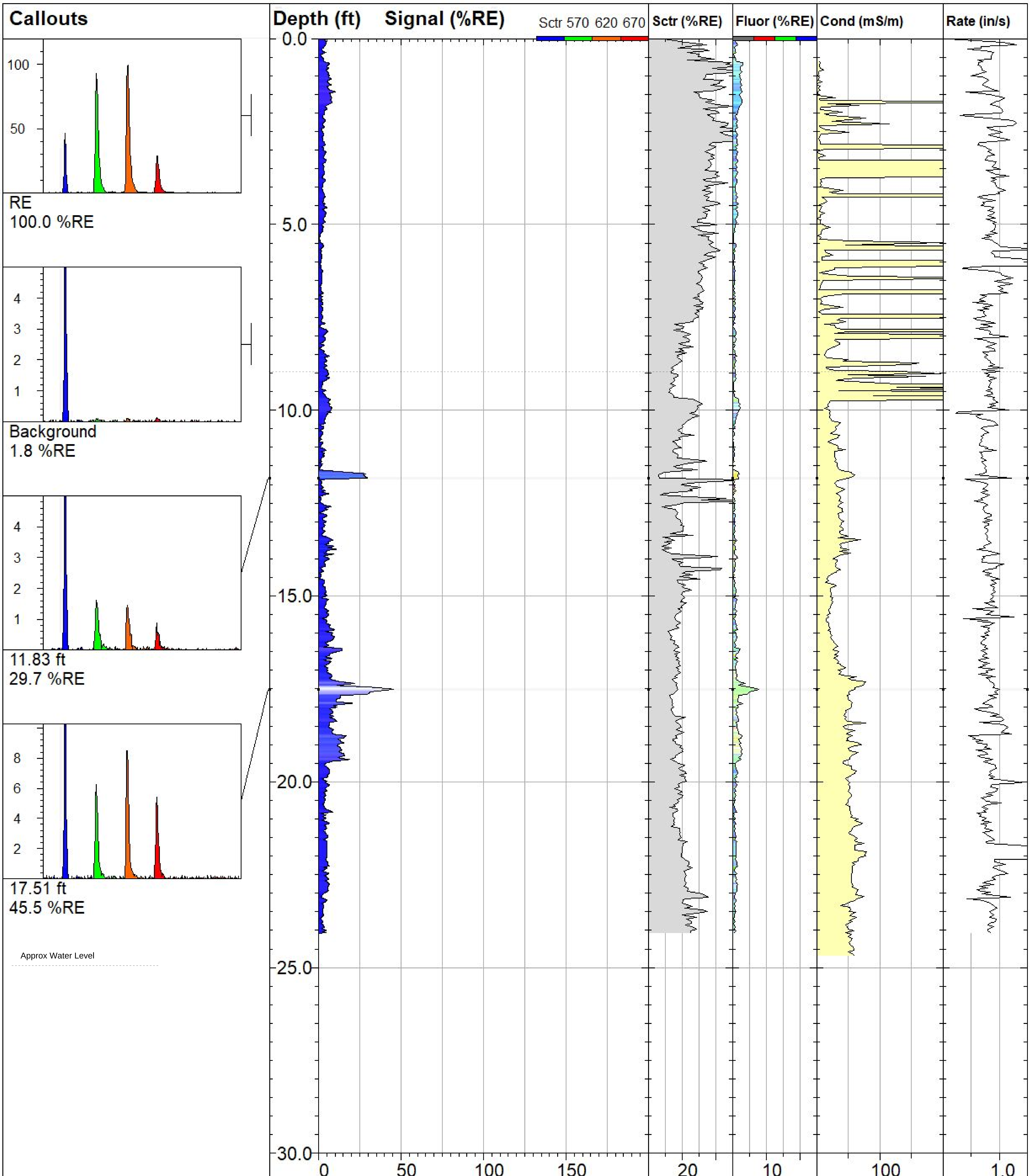

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TG-11

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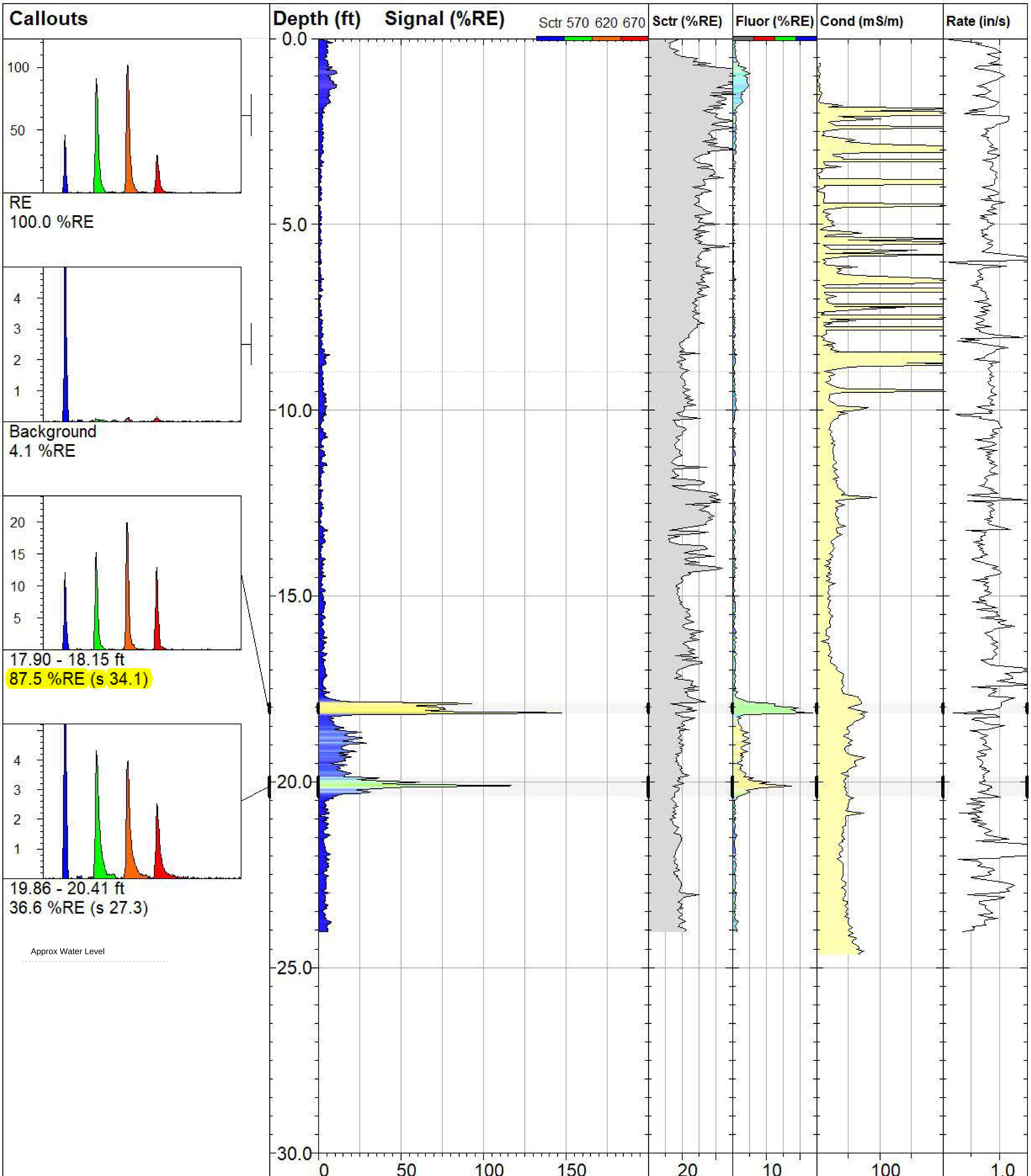
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.07 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **45.5 %RE @ 17.51 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 15:15 EDT**



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TG-12

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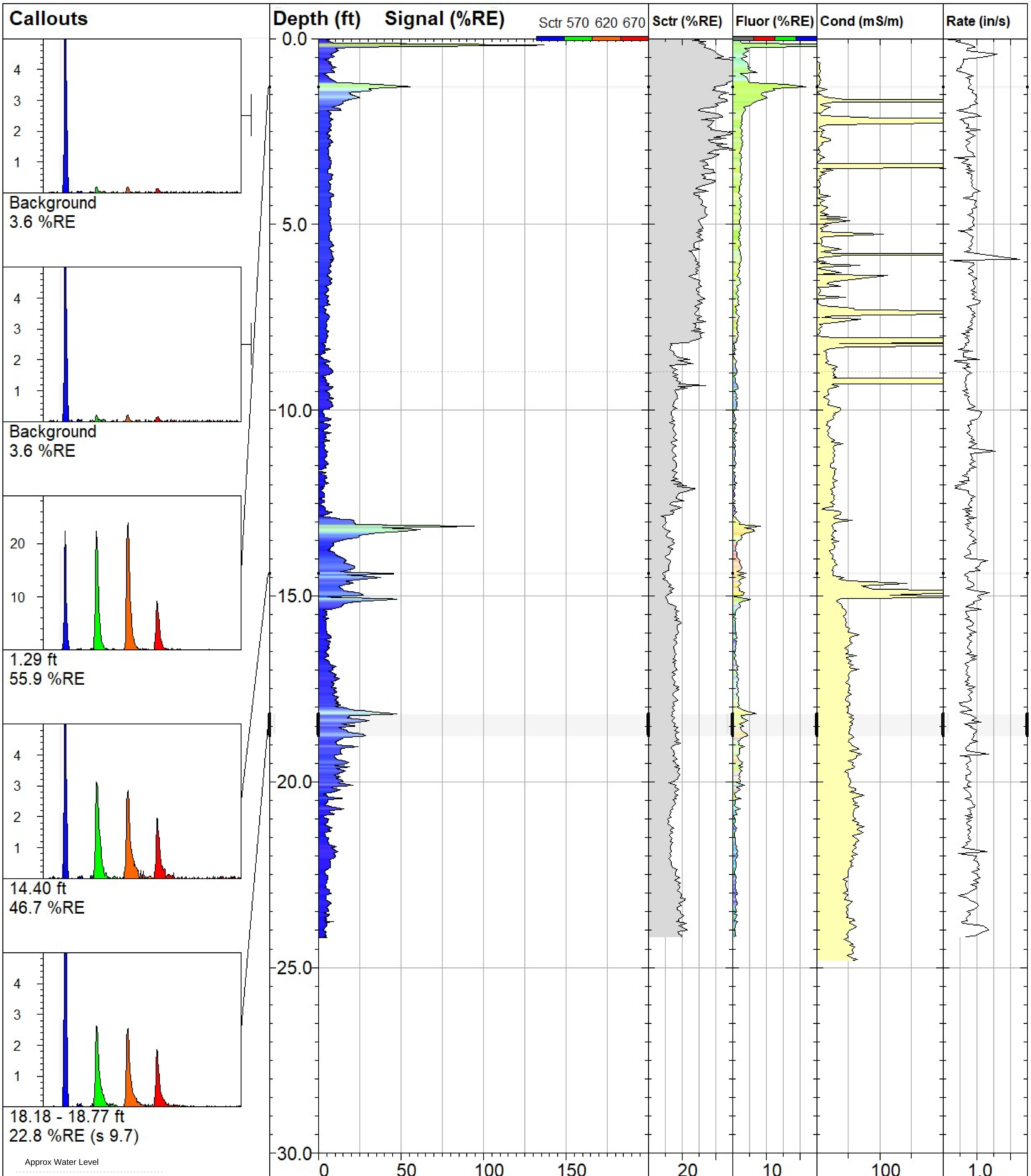
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.04 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **148.4 %RE @ 18.15 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-15 15:41 EDT**



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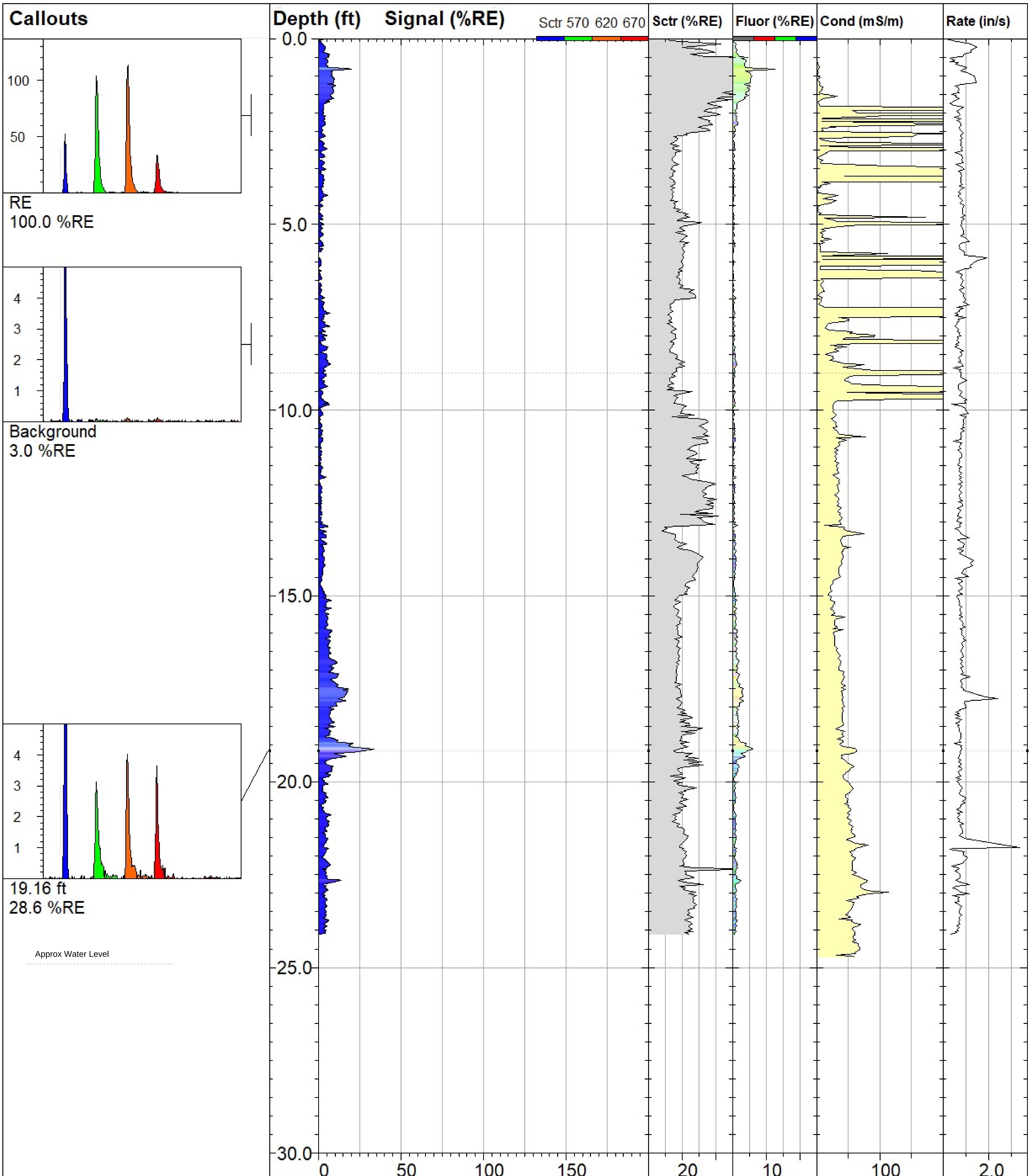
	Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.19 ft**
	Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **138.8 %RE @ 0.18 ft**
	Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 07:47 EDT**



TG-14

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Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.10 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **33.8 %RE @ 19.13 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 08:18 EDT**

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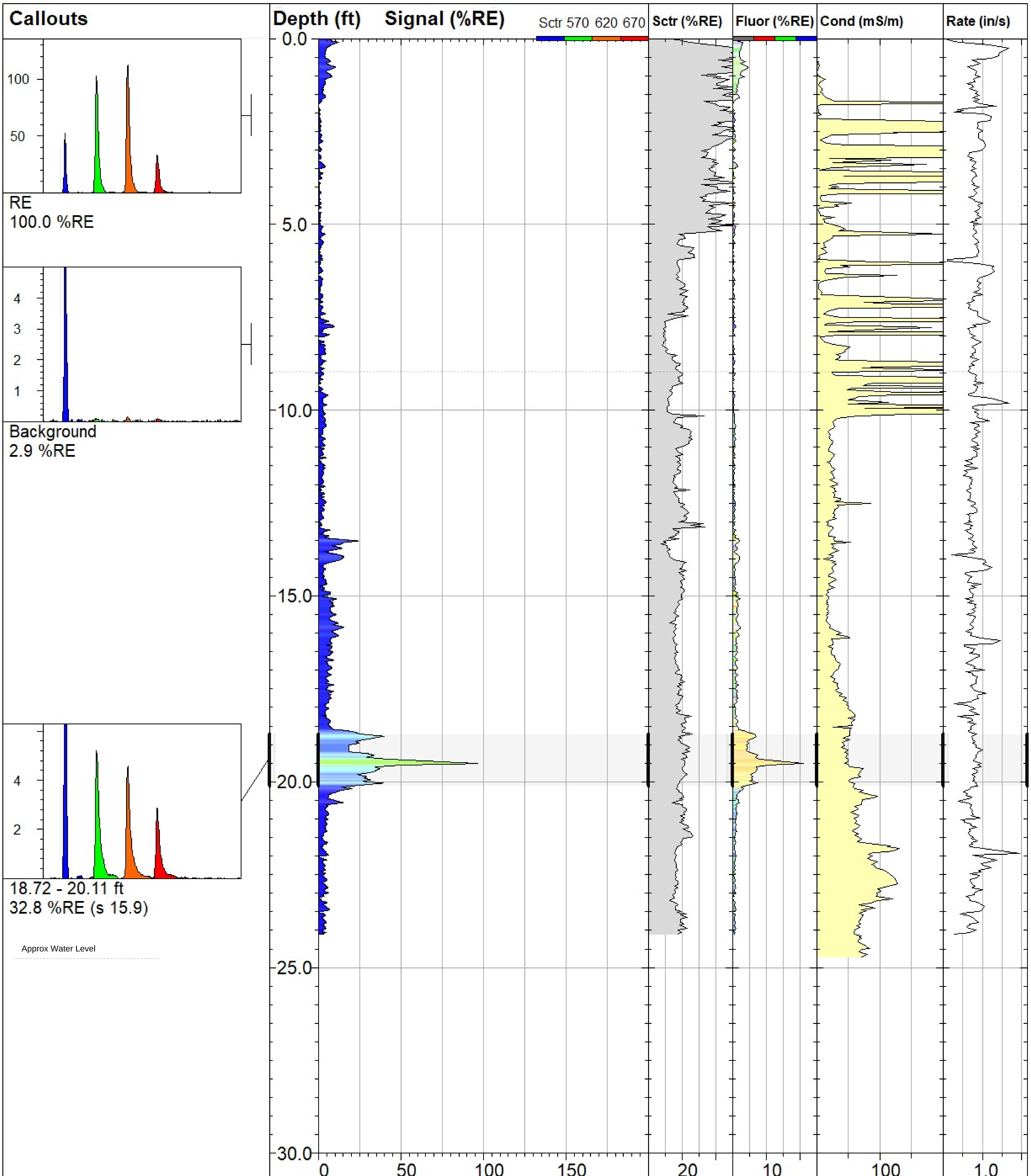

TG-15

Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.10 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **97.4 %RE @ 19.51 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 08:50 EDT**

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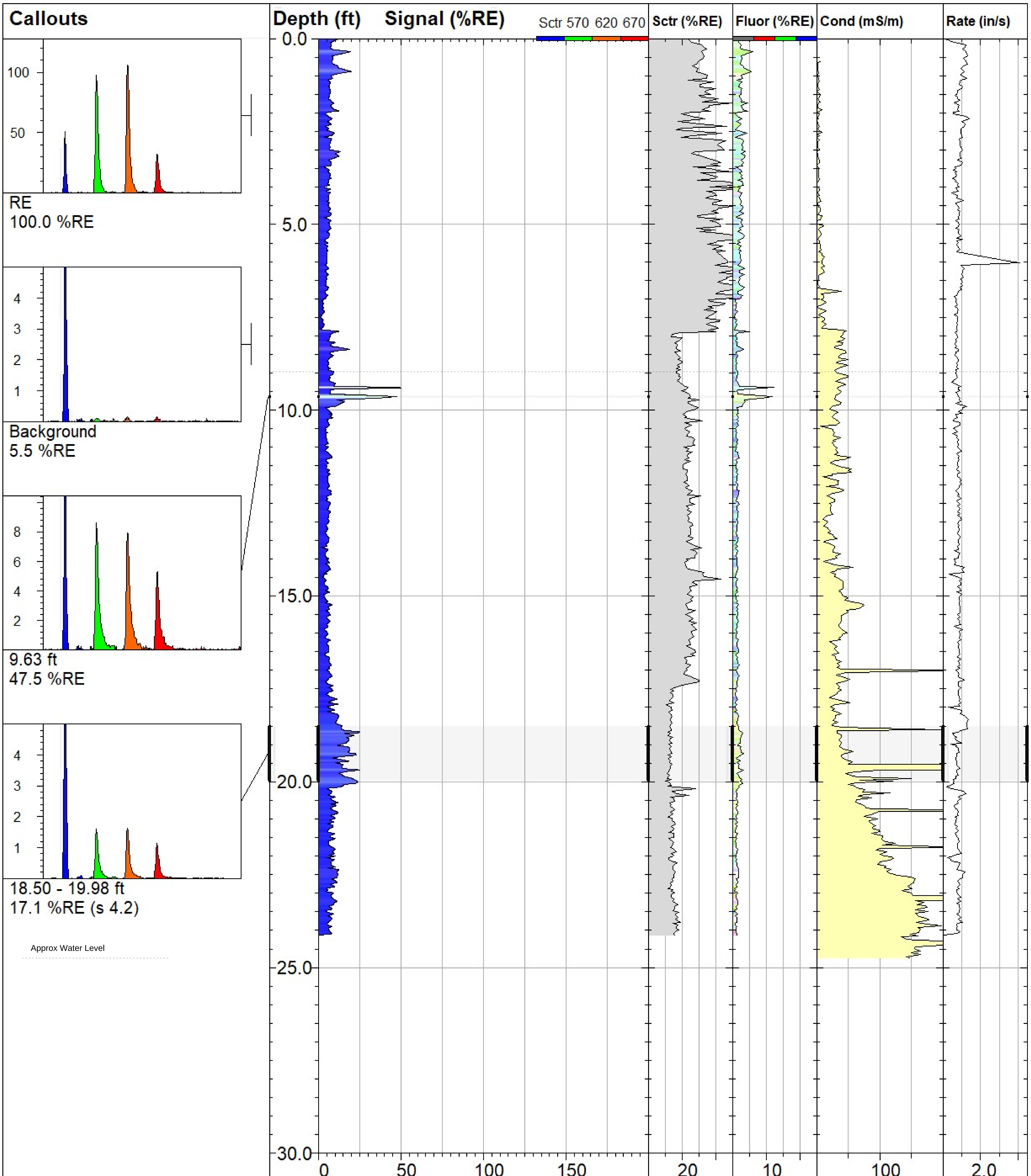

TG-16

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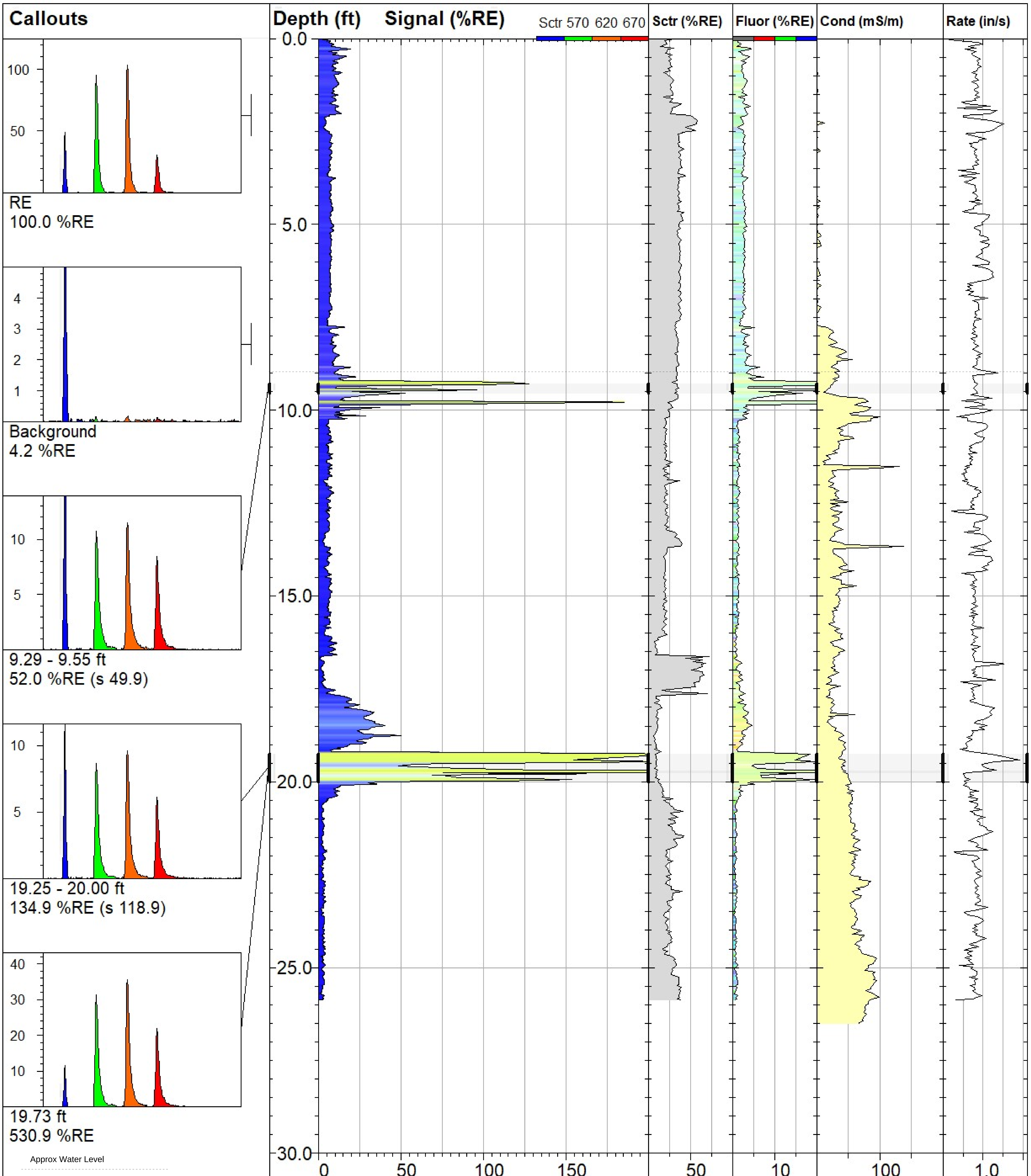
Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.12 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **51.7 %RE @ 9.39 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 09:41 EDT**



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TG-21

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Site: **KROG**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.88 ft**
Client / Job: **WOOD /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **530.9 %RE @ 19.73 ft**
Operator / Unit: **SWM / TG1806**	*Elevation:* **Unavailable**	*Date & Time:* **2019-05-16 12:55 EDT**