REGIONE PUGLIA
Comune di Serracapriola
Provincia di Foggia

Studio di Ingegneria
Ing. Nicola Roselli - Termoli (CB)
email ing.nicolaroselli@gmail.com

ATLAS RE
Energy for the Future

PROGETTO DEFINITIVO

PROGETTO PER LA COSTRUZIONE ED ESERCIZIO DI UN IMPIANTO AGRIVOLTAICO NECESSARIO ALLA PRODUZIONE DI ENERGIA ELETTRICA DA FONTE FOTOVOLTAICA CON ASSOCIATO IMPIANTO APIARIO E DELLE RELATIVE OPERE ED INFRASTRUTTURE CONNESSE DELLA POTENZA NOMINALE MASSIMA DI 46632 KW E POTENZA IN A.C. DI 40000 KW, SITO NEL COMUNE DI SERRACAPRIOLA (FG)

TITOLO TAVOLA

RELAZIONE GEOLOGICA

PROGETTAZIONE

PROGETTISTI
Ing. Nicola ROSELLI

Ing. Rocco SALOME

PROGETTISTI PARTI ELETTRICHE
Per.Ind. Alessandro CORTI

CONSULENZE E COLLABORAZIONI
Arch. Gianluca DI DONATO
Dott. Massimo MACCHIAROLA
Ing. Elvio MURETTA
Archeol. Gerardo FRATIANNI
Geol. Vito PLESCIA

PROPONENTE

LIMES 7 S.R.L
SEDE LEGALE
Milano, cap 20121
via Manzoni n.41
P.IVA 10307690965

Dott. VITO FRANCESCO PLESCIA · ORDINE GEOLOGI REGIONE MOLISE · ALBO SEZ. A N. 39 · Geologo Specialista

SPAZIO RISERVATO AGLI ENTI

4.2.2	FILE	CODICE PROGETTO	SCALA
	1YLY2F7_4.2.2_RelazioneGeologica	1YLY2F7	

REVISIONE	DATA	DESCRIZIONE REVISIONE	REDATTO	VERIFICATO	APPROVATO
A	16/01/2023	EMISSIONE	PLESCIA	LIMES7	LIMES7
B					
C					
D					
E					
F					

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   ,'52*(2/2*,$«««««««««««  «««««««««««««««

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&$5$77(5,==$=,21( *(27(&1,&$ 3529( 3(1(7520(75,&+(

5(/$=,21( 68//$ 3(5,&2/26,7$¶ 6,60,&$«««««««  «««««

9$/87$=,21( '(//$ 5,63267$ 6,60,&$ /2&$/(«««««««««

   6,60,&$«««««  «««««««««««««««««««««

   9$/87$=,21( '(//$ 3(5,&2/26,7$¶ 6,60,&$ '(//¶$5(($ $//2 678',2

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3/$1,0(75,$ 6$7(//,7$5(

3/$1,0(75,$ 8%,&$=,21( $5(( $//2 678',2  6FDOD

&$57$ *(2025)2/2*,&$ 6FDOD

&$57$ 3$, '(//$ 3(5,&2/26,7$¶ ,'5$8/,&$  6FDOD

&$57$ 3$, '(/ 5,6&+,2 ,'5$8/,&2  6FDOD

&$57$ 3$, '(//$ )$6&,$ ', 5,$66(772 )/8%,$/(  6FDOD

&$57$ *(2/2*,&$ 6FDOD

&$57$ /,72/2*,&$ 6FDOD
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678',2 ', *(2/2*,$ *(27(&1,&$ ( 6,60,&$
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3/$1,0(75,$ 8%,&$=,21(,1'$*,1, *(2*1267,&+(6FDOD

'2&81(17$=,21( )272*5$),&$

&57 6,60,&$ '(//¶,7$/,$ 3(5 /$ 9$/87$=,21('(//$ 5,63267$ 6,6

$//(*$7,

(1, $*,3 32==2 6$1 1,&$1'52 '8(6HUUDFDSULROD

,635$ 32==, ,'5,&, (675$7,*5$),(

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7$%(//$ &$/&2/2 '(/ 9V (TX

7$92/($//(*$7( )250$72 $

7$9 3/$1,0(75,$ 6$7(//,7$5(,03,$172 $*5,92/7$,&2

7$9 3/$1,0(75,$ 8%,&$=,21($5(($//2 678',2 6FDOD

7$9 &$57$ *(2025)2/2*,&$,03,$172 $*5,92/7$,&2 6FDOD

7$9 &$57$ 3$, '(//$ 3(5,&2/26,7$¶ ,'5$8/,&$,03,$172 $*5,92/
6FDOD

7$9 &$57$ 3$, '(/ 5,6&+,2 ,'5$8/,&2 ,03,$172 $*5,92/7$,&2 6F

7$9 &$57$ 3$,)$6&,$ '(/5,$66(772)/89,$/(,03,$172 $*5,92/7
6FDOD

7$9 &$57$ *(2/2*,&$,03,$172 $*5,92/7$,&2 6FDOD

7$9 &$57$ /,72/2*,&$,03,$172 $*5,92/7$,&2 6FDOD

678',2 ', *(2/2*,$ *(27(&1,&$ (6,60,&$

35(0(66$

3HU FRQWR GHOOD 6RFLHWj /,0(6 6 5 / FRQ VHGH LQ

*HRORJR 3OHVFLD 9LWR)UDQFHVFR LVFULWWR DOO¶$OE

5HJLRQH 0ROLVH DO Qƒ VH] $ ³*HRORJL 6SHFLDOLVWL´

D FRUUHGR GHO SURJHWWR GHILQLWLYR DXWRUL]]D]LRQH

HVHUFL]LR GL XQ LPSLDQWR DJULYROWDLFR QHFHVVDULR

IRWRYROWDLFD FRQ DVVRFLDWR LPSLDQWR DSLDULR H GH

SRWHQ]D QRPLQDOH PDVVLPD GL .: H SRWHQ]D LQ D F

GL 6HUUDFDSULROD)* LQ ORFDOLWj 6SDQGLWXUR 1HO

VRSUDOOXRJR SHU FRQVWDWDUH OR VWDWR GHL OXRJKL

VXOO DUHH LQWHUHVVDWH GDOO¶LQWHUYHQWR FKH LQ TX

WHUULWRULR LQ FXL VLSWURFRQRVFH Wj)UHRROLR EDQGR OD RR

JHRORJLFR TXHOOR GL ULOHYDUH H VWXGLDUH L WLS

FRQRVFHUH O DVVHWWR JHRVWUXWWXUDOH H VWUDWLJU

PRUIRORJLFKH WHWWRQLFKH HG LGURJHRORJLFKH GHO

JHRPHFFDQLFL GHL PDWHULDOL GD XWLOL]]DUVL LQ IDVH G

IDOGH LGULFKH VXSHUILFLDOL H SURIRQGH GL DFFHUWDU

1HOOH DUHH LQ HVDPH SHU OD ULFRVWUX]LRQH GHO

GXH SURYH SHQHWURPHWULFKH GLQDPLFKH FRQWLQXH '36

ORFDOH DL VHQVL GHO ' 0 H GHOOD &LUFRODUH G

VWDWH HIIHWWXDWH GXH SURYH VLVPLFKH GHO WLSR SDVV

UHGD]LRQH GHOOH FDUWH WHPDWLFKH q VWDWR XWLOL]]D

GHOOD FDUWD JHRORJLFD XIILFLDOH L GDWL FDUWRJUD

GHOO¶DXWRULWj GL EDFLQR 3$, GHO))RUWRUH 'L VHJX

FRQVLGHUD]LRQL HPHUVH GDOOR VWXGLR HIIHWWXDWR

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Futura stazione Terna
- Linea Mt

,148$'5$0(172 7232*5$),&2 (*(2025)2/2*,&2 '(//($5((2**(77
'(// ,17(59(172

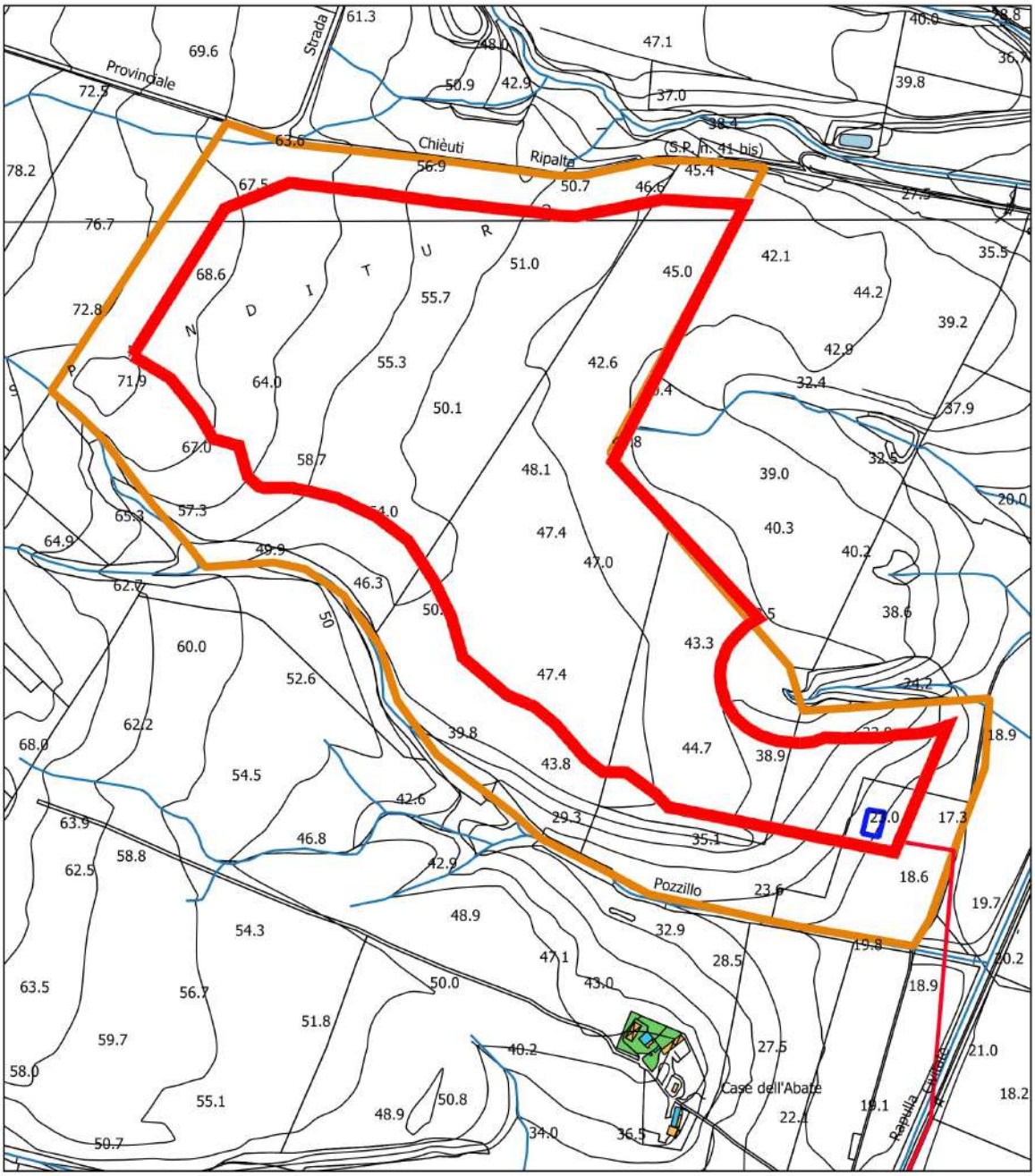
,O WHUULWRULR LQWHUHVVDWR GDO SUHVHQWH VWX

Qƒ 6DQ 6HYHUR H QHOOH &DUWH 7HFQLFKH 5HJL

DOOD VFDOD

LQWHUHVVDWD GDL SDQQHOOL IRWRYROWDLFL ULHQWUD Q
D QRUG GDOOD 0DVVHULD &KLDQWLQHOOH DG HVW GDOOD
VXG GDOOH &DVH GHOO¶$EDWH HG LQILQH DG RYHVW GDO
DSSDUWHQJRQR DO EDFLQR LGURJUDILFR GHO))RUWRUH
YHUVR (VW HG DOWLPHWULFDPHQWH q SRVWD D TXRWH PL
SHQGHQ]D PDVVLPD GHO TXDVL SLDQHJJLDQWH (VVD q
R PHQR HVWHVH FKH ORFDOPHQWH IDQQR VSDUWLDFTXH
HQWUDPEL WULEXWDUH GHO))RUWRUH ,Q WDOL DUHH
QDWXUDOPHQWH FRQGL]LRQDWD GDOOD QDWXUD GHO VXE
GHOOH FDUWH 3$, GDOOD OHWWXUD GHOOH FDUWH JHRP
ULVXOWDQR LQWHUHVVDWH GD SHULFRORVLWj H ULVFKL
LGURJHRORJLFR LQ TXDQWR O¶DUHH SUHVHQWDQR XQD ED
IHQRPHQL IUDQRVL 3HUWDQWR QHOOH DUHH DOOR VWXGL
IUDQRVL LQ DWWR R SRWHQ]LDOL IHQRPHQL TXLHVFHQWL
UXVFHOODPHQWR DFFHOHUDWR

,O WHUULWRULR LQWHUHVVDWR GDOO¶LPSLDQWR DJU
SUHVHQWD VWDELOH H SULYR GL IHQRPHQRORJLH HYHUVLY
QHOOH FDUWH GHO ULVFKLR H SHULFRORVLWj LGUDXOLFD
$VVHWWR ,GURJHRORJLFR 9HG 7DYROH

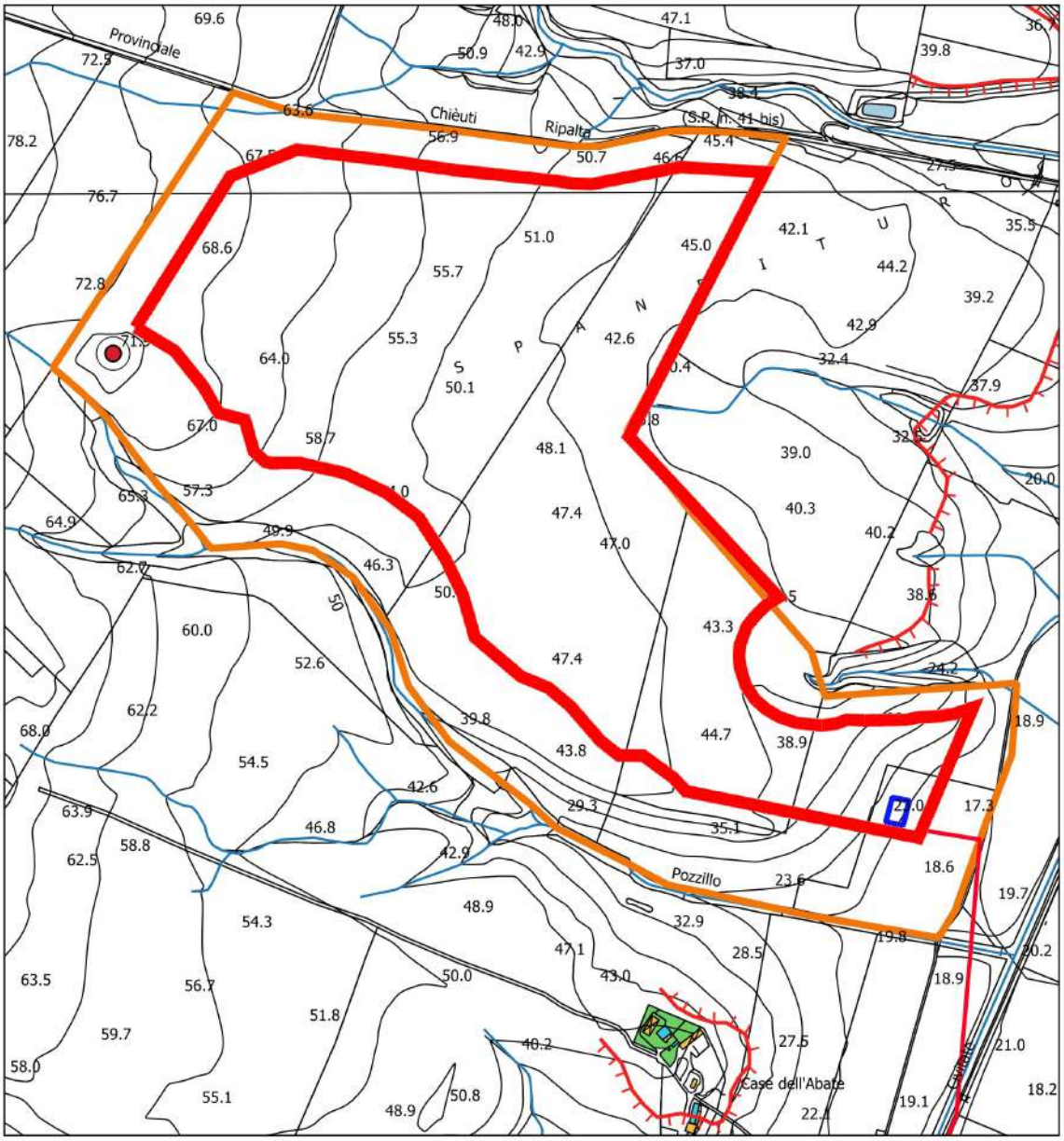


PLANIMETRIA UBICAZIONE IMPIANTO AGRIVOLTAICO

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Sottostazione Terna
- Linea Mt

Scala 1 : 8.000



CARTA GEOMORFOLOGICA IMPIANTO AGRIVOLTAUCO

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Futura stazione Terna
- Linea Mt

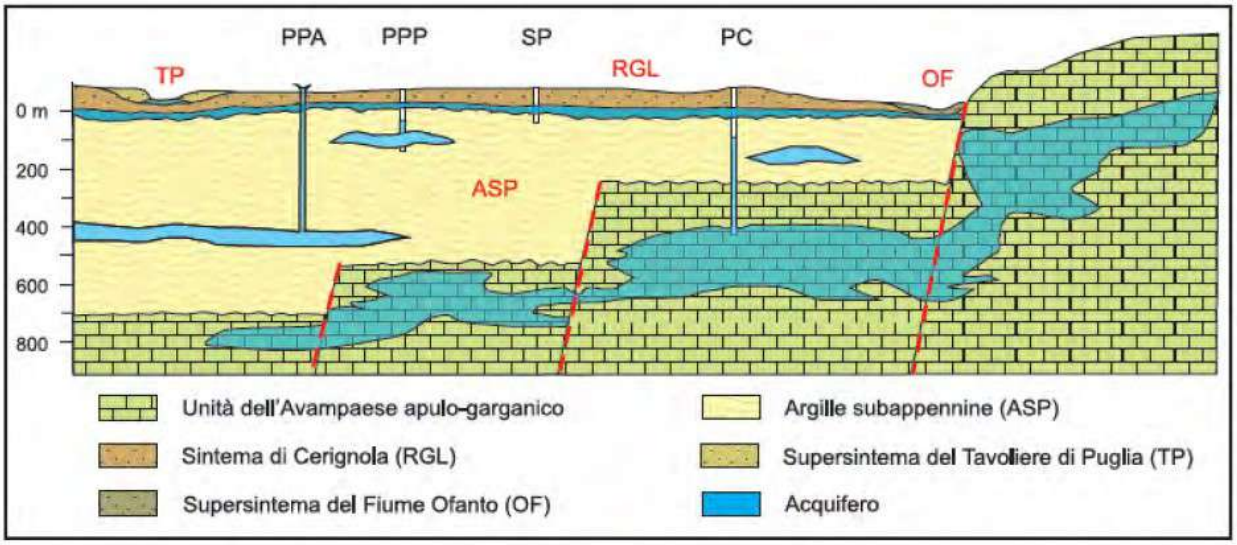
geomorfologia

- 382_reticolo
- 382_orli_terrazzo_morfologico
- 382_nicchie
- 382_vette
- 382_punti_sommitali
- 382_corpi_frana
- 382_creste
- 382_cave

Scala 1 : 8.000

,'52*(2/2*,$

/¶DFTXD GHOOH SUHFLSLWD]LRQL DWPRVIHULFKH LQ SD
LQ SDUWH VFRUUH VX GL HVVR HURGHQGROR H VFDYDQGR
GLVHJQR FKH ULVXOWD GD TXHVWD D]LRQH SDWWHUQ GL
ROWUH FKH GDOOD ORUR GLVSRVL]LRQH 1HO WHUULWRUL
FRQYHUJHQWH ULFRQGXFLELOH D IRUPD]LRQL SOLRFHQLFK



6FKHPD LGURORJLFR GHO 7DYROLHUH GL 3XJOLD
/HJHQGD

3& $FTXLIHUR IHVVXUDWR FDUVLFR SURIRQGR 333
33$ DFTXLIHUR SRURVR SURIRQGR DUWHVLDQR 63

$&48,)(52)(6685$72 &$56,&2 352)21'2

/¶XQLWj SL• SURIRQGD WURYD VHGH QHOOH URFFH FDO
DSSHQQLQLFD HG q LQ FRQWLQXLWj QHO VHWWRUH VXG R
GL DFTXLIHUR OD FLUFRODZLRQH LGULFD VRWWHUUDQHD
QXPHURVH IDJOLH FKH GLVORFDQR OH XQLWj VHSROWH
IUDWWXUD]LRQH H FDUVLILFD]LRQH GHOOD URFFLD FDOFDU

$&48,)(52 325262 352)21'2

6L ULQYLHQH QHL OLYHOOL VDEELRVR OLPRVL H LQ PL
QHOOD VXFFHVVLRQH DUJLOORVD SOLRSOHLVWRFHQLFD $
VSD]LDOH H OD JHRPHWULD GL TXHVWL FRUSL LGULFL QR

, OLYHOOL DFTXLIHUL VRQR FRVWLWXLWL GD FRUSL GLVFR
YDULDELOL WUD L P H L P GDO SLDQR FDPSDJQD $S
PW HG LO ORUR VSHVVRUH QRQ VXSHUD OH SRFKH
ULQYHQJRQR DFTXH FRQQDWH DVVRFLDWH D LGURFDUEXU
GHOOD WHPSHUDWXUD *f*& H SHU OD ULFRUUHQWH SU
LQ SUHVVLRQH H SUHVHQWD TXDVL VHPSUH FDUDWWHUL C
HVVHQGR YDULDELOH GD OXRJR D OXRJR ULVXOWD VHPSU
,Q JHQHUH OD SURGXWWLYLWj WHQGH D GLPLQXLUH UDSL
IDFHQGR UHJLVWUDUH LQ DOFXQL FDVL LO FRPSOHWR HV
SRVVRQR FRVWLWXLUH VROWDQWR GHOOH OLPLWDWH IRQ
PROWR OHQWD

$&48,)(52 325262 683(5),&,$/(

/¶DFTXLIHUR SRURVR VXSHUILFLDOH VL ULQYLHQH QHL
FRQWLQXLWj ODWHUDOH OH IRUPD]LRQL DUJLOORVH SOHL
DFTXD HYLGHQ]LDQR O¶HVLVWHQ]D GL XQD VXFFHVVLRQH
HG DFTXLIHUL LQWHUFDODWL GD OLYHOOL OLPR DUJLOORV
, GLYHUVL OLYHOOL LQ FXL O¶DFTXD IOXLVFH FRVWLWXLV
OXRJR DG XQ XQLFR VLVWHPD DFTXLIHUR ,Q OLQHD JHQH
SUHYDOJRQR QHOOH DUHH SL• LQWHUQH VYROJRQR LO UXI
VL IDQQR SL• IUHTXHQWL HG DXPHQWDQR GL VSHVVRUH OH
FKH VYROJRQR LO UXROR GL DFTXLWDUGR 1H ULVXOWD
QHOOH DUHH SL• LQWHUQH HG LQ SUHVVLRQH PDQ PDQR
SRWHQ]LDOLWj UHDOH GHOOD IDOGD HVVHQGR VWUHWW
VWUDWLJUDILFR YDULD VHQVLELOPHQWH GD]RQD D]RQ
SUHIHUHQ]LDOPHQWH GRYH LO WHWWR GHOOH DUJLOOH IR
GHL WHUUHQL SHUPHDELOL q PDJJLRUH H GRYH OD ORUR
PRGDOLWj GL DOLPHQWD]LRQH GHOOD IDOGD VXSHUILFL
SUHFLSLWD]LRQL 2OWUH FKH GDOOH DFTXH GL LQILOWUD
GHOOD IDOGD VXSHUILFLDOH FRQWULEXLVFDQR DQFKH L F

SHUPHDELOH 3HU OH FRQVLGHUD]LRQL VX PHQ]LRQDWH H
QHOOH DUHH RJJHWWR GL VWXGLR TXHVWL XOWLPL ULHQ
YLVWD LGURJHRORJLFR OD SUHVHQ]D GL WHUUHQL VDEE
SRURVLWj SRJJLDQWL VXOOH DUJLOOH JULJLR D]]XUUH
SHUPHDELOL SHUPHWWH O¶LQVWDXUD]LRQH GL XQD IDOGD
FRQWDWWR WUD L GXH OLWRWLSL ,GURJUDILFDPHQWH C
)RUWRUH $ FRQIHUPD GL WXWWR FLz VRQR VWDWL YLVLR
ULFHUFKH LGURFDUEXUL WUH SR]]L SHU ULFHUFKH GL DFTX
WHUUHQL DOOR VWXGLR QHL YDUL WLSL GL WHUUHQL D

D 3R]]R (1, GHQRPLQDWR 6DQ 1LFDQGUR QHO WHUULW
VDODWD ULQYHQXWD D PW

E 3R]]R QHO WHUULWRULR SRVWR D QRUG GL 6HUUDFDSU
D PW

F 3R]]R QHO WHUULWRULR SRVWR D QRUG GL 6HUUDFDSU
D PW

G 3R]]R QHO WHUULWRULR SRVWR D QRUG GL 6HUUDFDSU
D PW H D

'DOOD OHWWXUD VWUDWLJUDILFD GHL SR]]L FHQVLWL L F
HVVHQ]LDOPHQWH VFLROWL R GHEROPHQWH FHPHQWDWL
ULWHQHUVL PROWR SHUPHDELOL SHU SRURVLWj

352*(772 3$,)25725(

,O 3URJHWWR 3$, q ILQDOL]]DWR DO PLJOLRUDPHQWR VWDELOLWj JHRPRUIRORJLFD LQGLYLGXD H QRUPD SHU O' ULVFKLR LGUDXOLFR H OH DUHH D SHULFRORVLWj H ULVFKL /H DUHH D SHULFRORVLWj LGUDXOLFD LQGLYLGXDWH GDO GL ULVFKLR LQ

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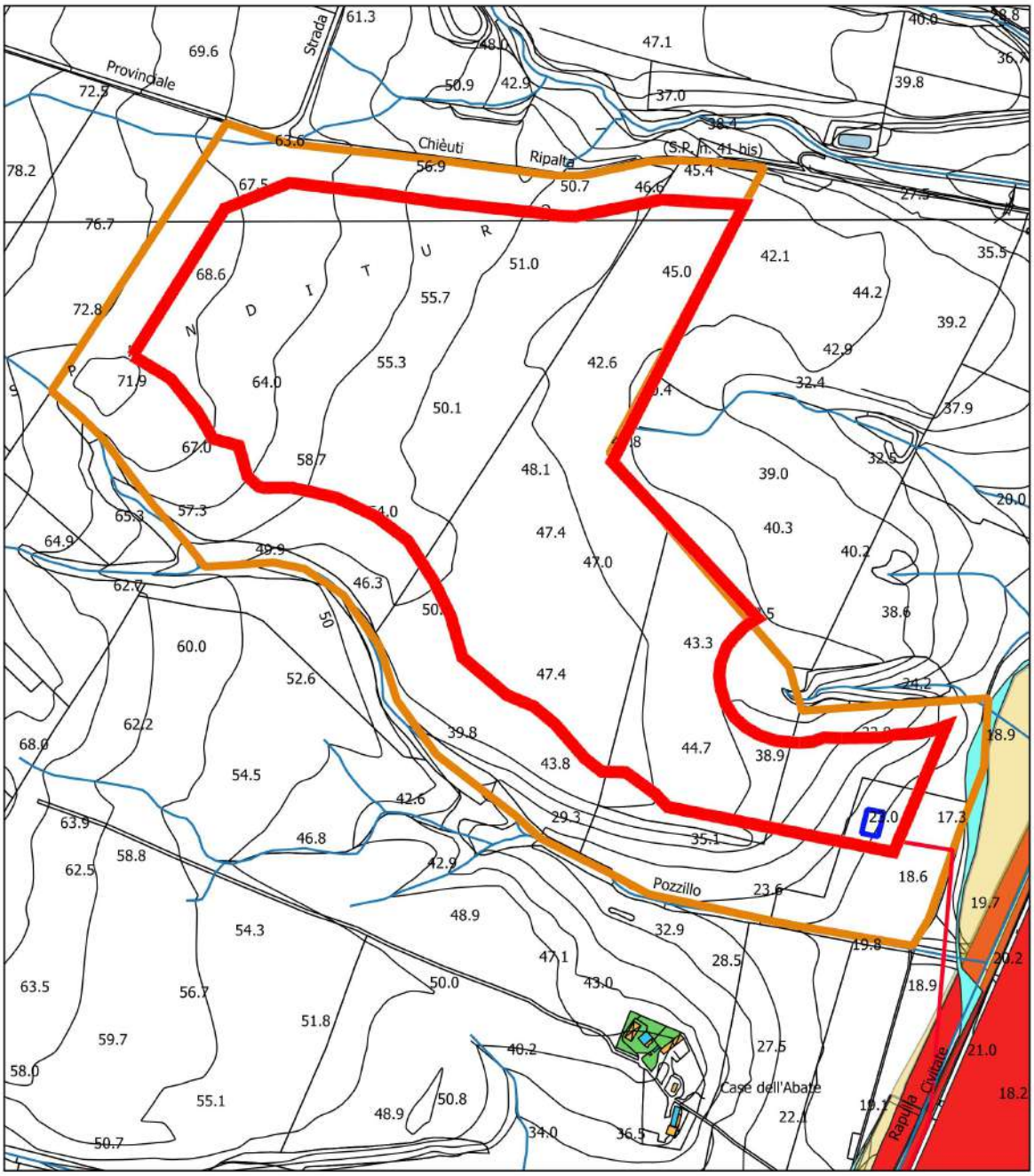
$5(( $ 3(5,&2/26,7$¶ ,'5$8/,&$
    $UHH D SHULFRORVLWj LGUDXOLFD DOWD ± 3,
    $UHH D SHULFRORVLWj LGUDXOLFD PRGHUDWD ± 3,
    $UHH D SHULFRORVLWj LGUDXOLFD EDVVD ± 3,
$5(( $ 3(5,&2/26,7$¶ *(2025)2/2*,&$
    $UHH D SHULFRORVLWj GD IUDQD HVWUHPDPHQWH HOHY
    $UHH D SHULFRORVLWj GD IUDQD HOHYDWD ± 3)
    $UHH D SHULFRORVLWj GD IUDQD PRGHUDWD ± 3)
$5(( $ 5,6&+,2 ,'5$8/,&2
    $UHH D ULVFKLR LGUDXOLFR PROWR HOHYDWR ± 5,
    $UHH D ULVFKLR LGUDXOLFR HOHYDWR ± 5,
    $UHH D ULVFKLR LGUDXOLFR PHGLR ± 5,
    $UHH D ULVFKLR LGUDXOLFR PRGHUDWR ± 5,
$5(( $ 5,6&+,2 )5$1$
    $UHH D ULVFKLR IUDQD PROWR HOHYDWR ± 5
    $UHH D ULVFKLR IUDQD HOHYDWR ± 5
    $UHH D ULVFKLR IUDQD PHGLR ± 5
    $UHH D ULVFKLR IUDQD PRGHUDWR ± 5
```

1HOOH DUHH DOOR VWXGLR 9HG 7DY GDOOH YHUL LGUDXOLFD H SHULFRORVLWj GD IUDQD HG q DVVHQWH LO ULVSHWWDWD OD GLVWDQ]D SUHYLVWD QHOOH QRUPH 3$,)



CARTA PAI DELLA PERICOLOSITA' IDRAULICA IMPIANTO AGRIVOLTAICO

Legenda

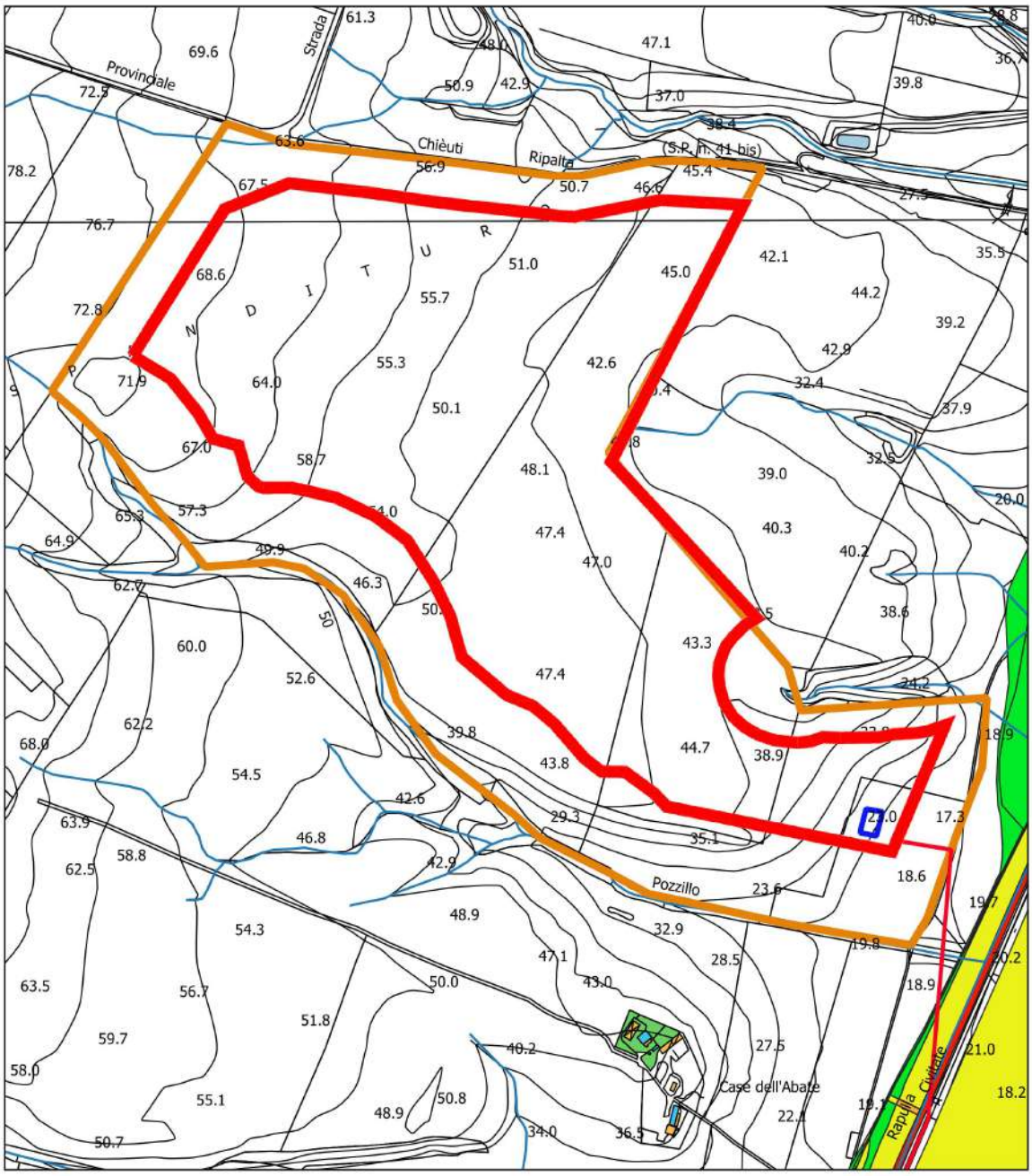
- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Sottostazione Terna
- Linea Mt

PAI Fortore

Pericolosita_idraulica

- PI3
- PI2
- PI1

Scala 1 : 8.000



CARTA PAI DEL RISCHIO IDRAULICO IMPIANTO AGRIVOLTAICO

Legenda

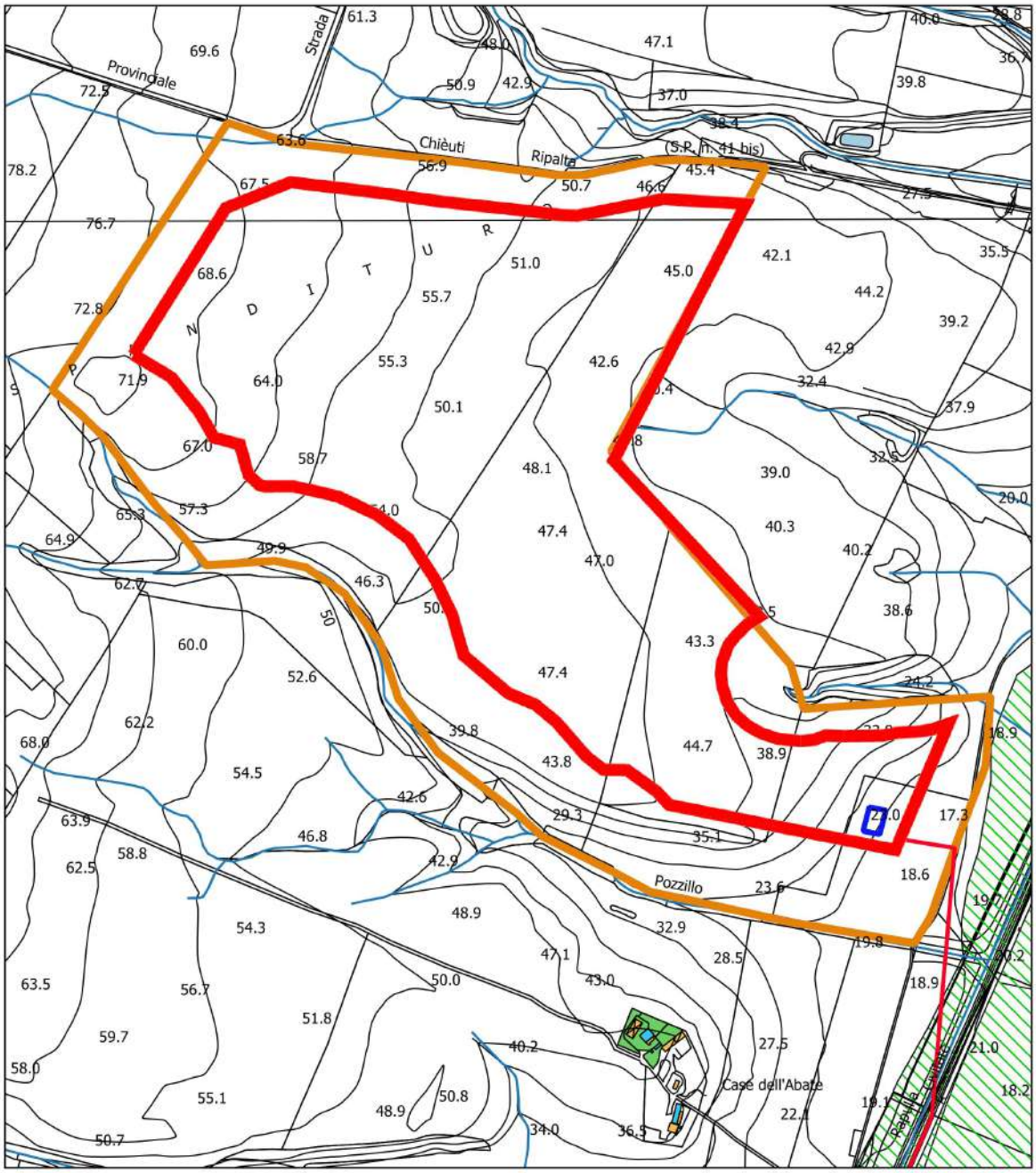
- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Sottostazione Terna
- Linea Mt

PAI Fortore

Rischio_idraulico

- RI4
- RI3
- RI2
- RI1

Scala 1 : 8.000



CARTA PAI FASCIA DI RIASSETTO FLUVIALE IMPIANTO AGRIVOLTAICO

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Sottostazione Terna
- Linea Mt

PAI Fortore

- Fascia di riassetto fluviale

Scala 1 : 8.000

/D JHROORJLD GHO WHUULWRULR LQWHUHVVDWR GDOO'
WHUUHQL GL RULJLQH PDULQD OD FXL HWj q FRPSUHVD V
7DY 'DO EDVVR YHUVR O¶DOWR VL VXVVHJXRQR
)250$=,21, ', *(1(6, 0$5,1$

$UJLOOH GL6LOPRQWDWWHFGRL DUJLOOH PDUQRVH VLOWRV
VXSHUILFLH SHU DOWHUD]LRQH FRQ YHOL GL VL W H UDUH
IUHTXHQWL DOOD VRPPLWj GHOOD IRUPD]LRQH FKH SDVVD
6HUUDFDSULROD %DQFKL GL VDEELD SRWHQWL TXDOFKH G
PHGLD GHOOD IRUPD]LRQH /R VSHVVRUH q GL GLIILFLOH Y
'DL GDWL GL SHUIRUD]LRQH VL GHVXPH FKH VLD PROWR QR
GHOO¶RUGLQH GHL PHWUL QHOOD]RQD IUD 6HUUDF
VSRQGH GHO))RUWRUH DG RYHVW GHOO¶DUHH DOOR V
0HGLR

6DEELH GL 6/HUU6DEELH GL6HUUDFDSULROD VRQR FRVW
JLDOOADVWUH TXDU]RVH LQ JURVVL EDQFKL D OXRJKL VRQ
FHPHQWDWH DUJLOOH ELDQFDVWUH R YHUGH FKLDUR 1R
HOHPHQWL SUHYDOHQWHPHQWH DUHQDFHL H FDOFDUHR P
0RQWHVHFFR DOOH TXDOL SDVVDQR JUDGXDOPHQWH SHU
OLPLWH IUD OH GXH IRUPD]LRQL q VWDWR SRVWR FRQYH
SRWHQWL FDUDWWHUL]]DWL GDOOD SUHVHQ]D GL LQWHUF
SL• JURVVRODQD 2YH LO SDVVDJJLR q SL• QHWWR OH 6
PRUIRORJLFD VXOOH WHQHUH DUJLOOH VRWWRVWDQWL /
FLUFD P GLYHQWD TXL SL• FRQVLGHUHYROH $IILRUD VX
VWXGLR /¶HWj q DVFULYLELOH DO &DODEULDQR 3OLRFHQH

&RQJORPHUDWL GL &RQ&DODFFDUHQLWL GD OHQWL H OHWW
WDOYROWD FRQ OLYHOOL GL FRQJORPHUDWL FRPSDWWL
LQFURFLDWD HG LQWHUFDOD]LRQL GL DUJLOOH YHUGDVW
WUDWWDQGRVL GL PDWHULDOH SURYHQLHQWH GDOOH IRU

PDUQRVL GL DUHQDULH H ORFDOPHQWH GL FULVWDOOLQ
DEEDVWDQ]D SURQXQFLDWR q LO JUDGR GL DSSLDWWLPH
SDVVDJJLR DOOH VRWWRVWDQWL 6DEELH GL 6HUUDFDSU
GLVFRUGDQ]D DQJRODUH QHOOH]RQH SL• LQWHUQH /R V
SURVVLPD DOOD FRVWD TXL VL RVVHUYDQR JOL DIILRUD
VFDUSDWD GL DEUDVLRQH PDULQD VSHFLH QHL SUHVVL G
QDWXUD GHO VHGLPHQWR H OD ORFDOH SUHVHQ]D QHL O
IRUPD]LRQH UDSSUHVHQWL OD IDVH ILQDOH GHOOD UHJ
DOOXYLRQDPHQWR , &RQJORPHUDWL Gu &DPSRPDULQR
VXSHUILFLDOH SHU DOWHUD]LRQH 1HO IRJOLR ULOHYDWF
VWXGLR /¶HWj q DVFULYLELOH DO 3RVWFDODEULDQR &DOD
)250$=,21, ', *(1(6, &217,1(17$/(
&RSHUWXUH IOXYLR ODFXVWUL GHL, SGLHDSQRDVOLWWL HVXSHULRU
VRQR FRVWLWXLWL SUHYDOHQWHPHQWH GD JKLDLH VDEE
VXSHUILFLDOH GL WHUUH QHUH 4XHVWL WHUUHQL QRQ
GHSRVL]LRQH OD GLVWULEX]LRQH H OD GLYHUVD DOWH]
LGURJUDILFD FKH OL KD GHWHUPLQDWL QRQ SUHVHQWDVV
IRVVH DQFRUD EHQH LPSRVWDWD 3UREDELOPHQWH VL WU
HURVLRQH FDUDWWHUL]]DWH GDOOD SUHVHQ]D GL GHS
HVVHQ]LDOPHQWH ODFXVWUH VL DOWHUQDYDQR HSLVRGL
VXSHUILFLH HURVD GHOOD VHULH PDULQD 3OLRFHQLFR &
&RQJORPHUDWL GL &DPSRPDULQR 1HOO¶DUHD GHOOH RR
QHOOD]RQD D 6 GL 8XUL H VXSHUDQR L P GL TXRWD
JLDOOODVWUH FRQ FLRWWRODPH GL PHGLD GLPHQVLRQH
SXOYHUXOHQWR GD TXHVWD]RQD HVVL GHJUDGDQR UDS
6DFFLRQH H GHO))RUWRUH DVVXPHQGR XQ FDUDWWHU
DQGDPHQWR ORQJLWXGLQDOH VSHFLH OXQJR LO YHUVD
FKLDUDPHQWH GHOLPLWDELOL GDJOL DIILRUDPHQWL GHL &

q SUHVHQWH QHOOD¶DUHD VHPLFHQWUDOH GHO WHUULWRU

GHO FDPSR DJULYROWDLFR /¶HWj q DVFULYLELOH DO 3OHL

&RSHUWXUH IOXYLDOL GHO JKLDLDLR SLÙ FH WHUUHQR

VDEELRVH VSHVVR ULFRSHUWH GD WHUUH QHUH DG DO

DOOXYLRQDOL LQWHUPHGL KDQQR XQD QDWXUD OLWRORJL

WHUUD]]L DQDORJD q LQIDWWL OD SURYHQLHQ]D GHL FO

PRUIRORJLFD FDUDWWHUL]]DWD GD XQ PDUFDWR IHQRPH

SUHYDOHQWHPHQWH IOXYLDOH SHU TXHVWL GHSRVLWL ,O

HVWHVR OXQJR LO))RUWRUH RYH GD XQD TXRWD GL F

SURJUHVVLYDPHQWH ILQR D IRQGHUVL FRQ L WHUUD]]L SL

GHSRVLWL DOOXYLRQDOL LQGLFDWL FRPH q PROWR SL• PD

FKH LO FRUVR GHJOL DOYHL DWWLYL VL VLD VSRVWDWR JU

'HWWD IRUPD]LRQH DIILRUD QHOOD SDUWH FHQWUDOH GH

FDPSR DJULYROWDLFR /¶HWj q DVFULYLELOH DO 3OHLVWRF

$OOXYLRQL SUHYDOHQWHPHQWH OLPRVR DUJLOORVH GHO

VDEELH SURYHQLHQWL HVVHQ]LDOPHQWH GDOO¶HURVLRQH

))RUWRUH D TXHVWR PDWHULDOH ILQH VL LQWHUFDODQ

DSSHQQLQLFD /R VSHVVRUH VXSHUD L PW VROR UDUD

GHOOD IRUPD]LRQH FRVWLWXLWD GD VDEELH ORFDOPHQW

0RQWHVHFFR 4XHVWH DOOXYLRQL WHUUD]]DWH FRVWLWXL

GH PHWUL ULVSHWWR DOO¶DOYHR DWWXDOH $IILRUD QHO

DVFULYLELOH DO 3OHLVWRFHQH VXSHULRUH 2ORFHQH

$OOXYLRQL VFLROWH DWWXDOL FRVWLWXLWH GD GHSRVLWL FRQ HOHPHQ

VDEELH H DUJLOOH FRQ SUHYDOHQ]D GL GHWULWL ILQL 2

OXQJR LO))RUWRUH /¶HWj q DVFULYLELOH DOO¶2ORFHQH

RVSLWD WHUUHQL DSSDUWHQHQWL DOOH &RSHUWXUH IOXY

GHOOH &RSHUWXUH IOXYLR ODFXVWUL GHL SLDQDOWL H GH

,QROWUH q GD PHWWHUH LQ HYLGHQ]D FRPH OD GLYHUVD

WHUULWRULR VL ULIOHWWH VSHVVR VXOOH IRUPH PRUIRO

YHUVDQWL 4XLQGL D IRUPH PRUIRORJLFKH GROFL FRPH
DFFOLYL VL SRVVRQR DVVRFLDUH WHUUHQL WHQHUL PI
IRUPD]LRQL FRQJORPHUDWLFKH FHPHQWDWH H IRUPD]LRQL
VSRUJHQ]H H SHQGLL SLXWWRVWR ULSLGL 4XHVWH FRQ
JHQHUDOH HVWHVD LQ WXWWR LO WHUULWRULR SRVWR
HVWHQGHUH OD YLVLRQH JHRORJLFD FRPH GHVFULWWR L
FRPSOHWD H JOREDOH GHOOD PRUIRORJLD GHOO¶LGURJHR
DG LQWHUYHQLUH

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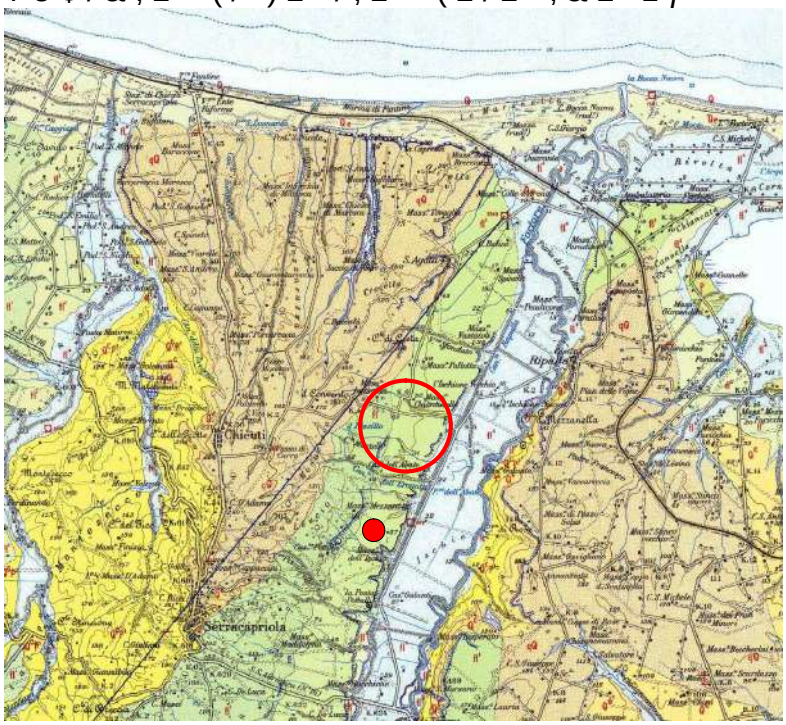


&DPSR DJULYROWDLFR

6WD]LRQH 7HUQD

*KLDLH VDEELH H DUJLOOH GL IRQGRYDOOH DWWXDOL 2O

$OOXYLRQL SUHYDOHQWHPHQWH OLPRVR DUJLOORVH GHO ,

&RSHUWXUH)OXYLR ODFXVWUL GHO ,,ƒ 2UGLQH GHL 7HUUD]

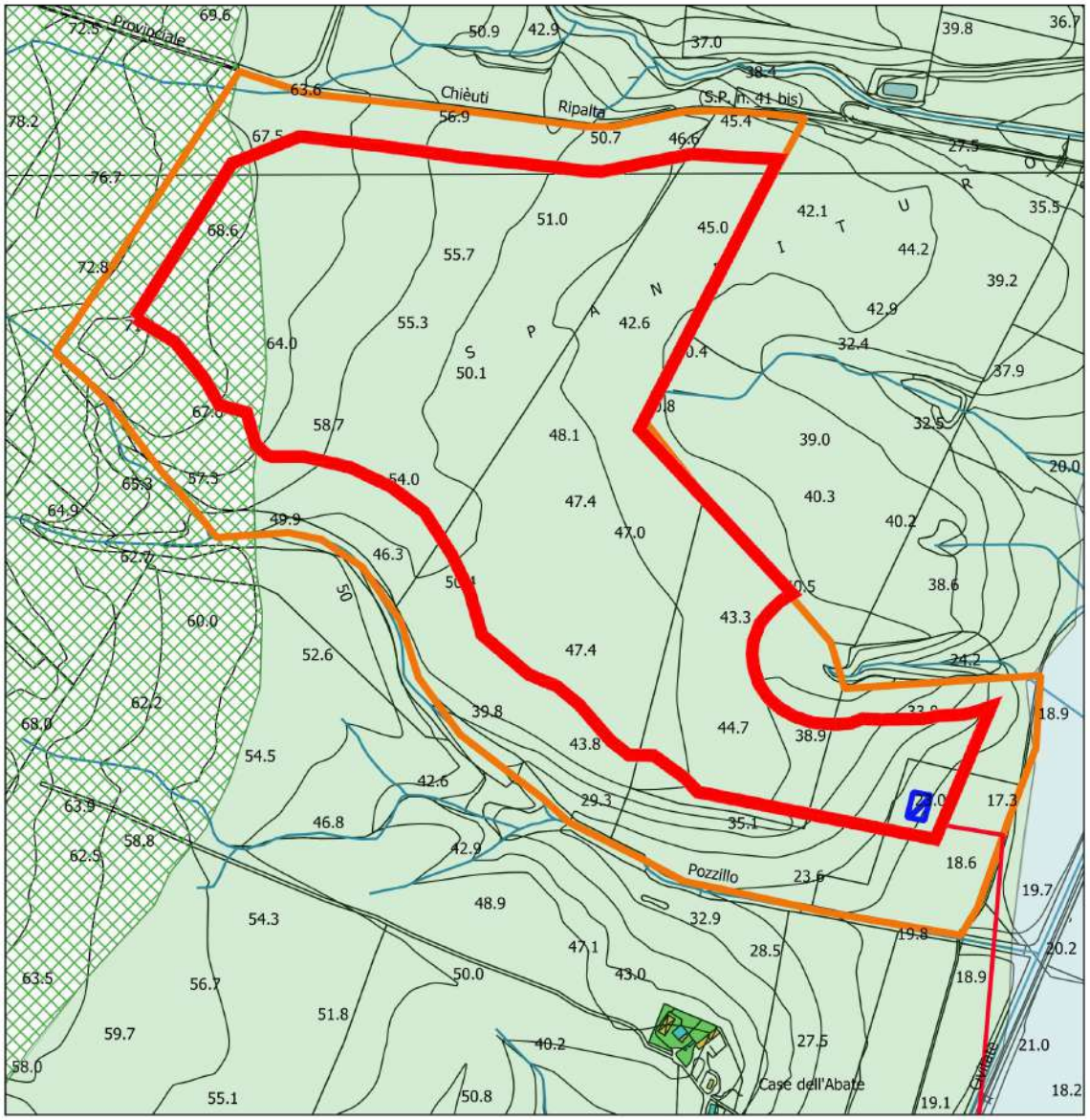
&RSHUWXUH)OXYLR ODFXVWUL GHO ,ƒ 2UGLQH GHL 7HUUD]]L 3O

&RQJORPHUDWL GL &DPSRPDULQR &DODEULDQR 7HUPLQDOH

6DEELH GL 6HUUDFDSULROD 3OLRFHQH 6XSHULRUH &DODEULDQR

$UJLOOH GL 0RQWHVHFFR 3OLRFHQH 0HGLR

6FDOD



CARTA GEOLOGICA IMPIANTO AGRIVOLTAICO

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Futura stazione Terna
- Linea Mt

geologia

- Ghiaie, sabbie e argille dei fondovalle attuali (a)
- Alluvioni prevalentemente limoso-argillose del IV Ordine dei Terrazzi
- Coperture Fluviali del II° Ordine dei terrazzi
- Coperture fluviale I° Ordine, ghiaie e sabbie,limi e argille. (Pleistocene).
- Conglomerati di Campomarino. (Calabriano Terminale).
- Sabbie di Serracapriola. (Calabriano-Pliocene Superiore).
- Argille di Montesecco, argilla scistosa, argilla marnosa. (Pliocene)).

Scala 1 : 8.000

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/LWRORJLD GHO VXEVWUDWR

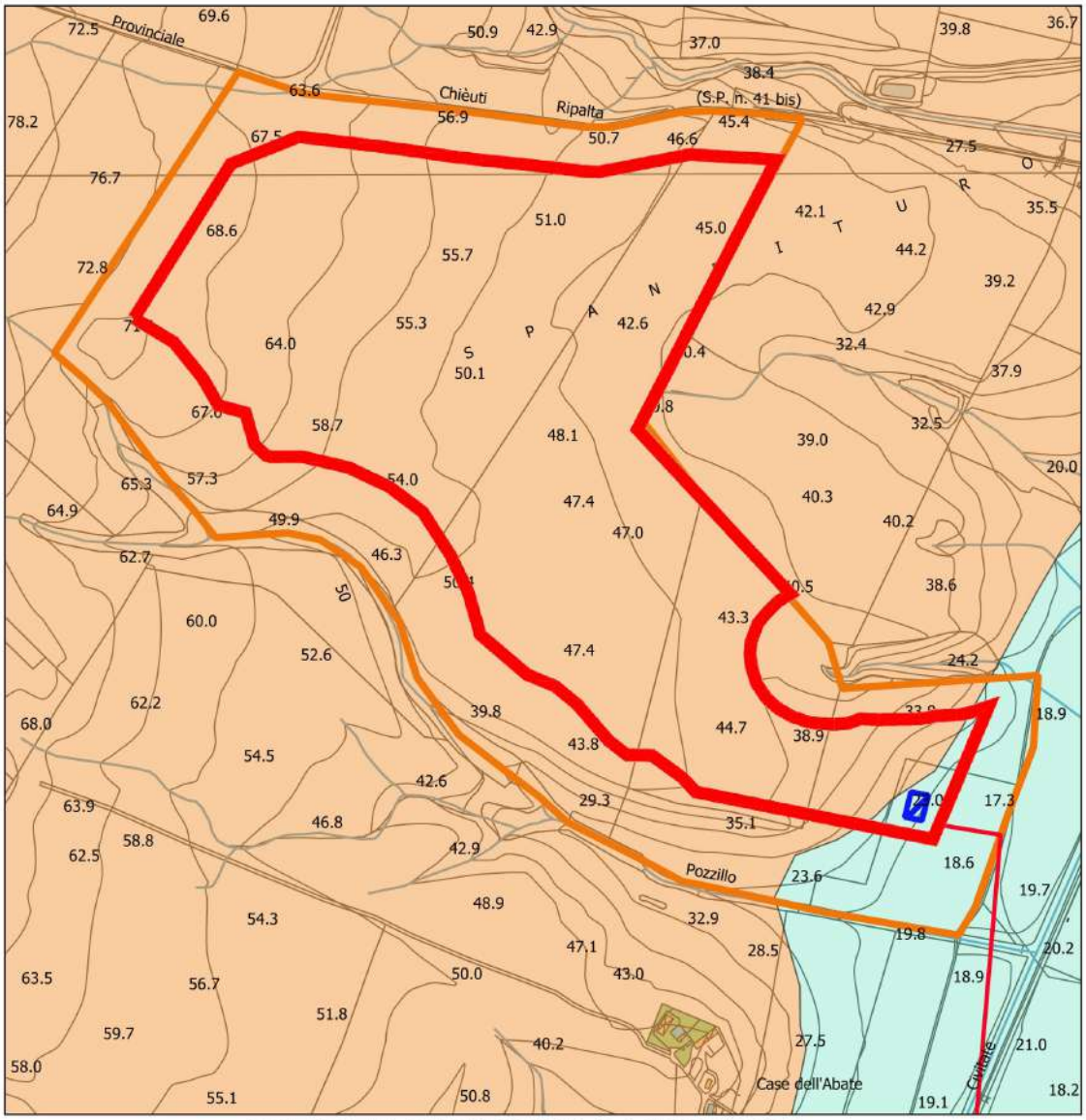
3HU TXDQWR ULJXDUGD O¶DVVHWWR OLWRWHFQLFR OR WHUPLQL ULFRQRVFLXWL LQ DIILRUDPHQWR GD SHFXOLDU 7DY 'L VHJXLWR VRQR GHVFULWWH OH XQLWj OLWRWHFQ SL• R PHQR RPRJHQHR

8QLWj OLWRWHFQLFD FRVWLWXLWD GD GHSRVLWL VFL DUJLOORVL H VDEELRVL ULJXDUGD OD IRUPD]LRQH GHO ,9 VDEELH H DUJLOOH GHL IRQGRYDOOH DWWXDOL 'HWWD XQ JUDQXODUH HG XQD ULVRVWD PHFFDQLFD GHO WLSR QRQ PHGLR

8QLWj OLWRWHFQLFD FRVWLWXLWD GD GHSRVLWL VF ULJXDUGD OD IRUPD]LRQH GHOOH FRSHUWXUH IOXYLDOL OLWRWHFQLFD SUHVHQWD XQ FRPSRUWDPHQWR GHO WLSR HODVWLFR ,O JUDGR GL SHUPHDELOLWj ULVXOWD LQ JHQH

8QLWj OLWRWHFQLFD D SUHYDOHQWH FRPSRQHQWH VL GHOOH 6DEELH GL 6HUUDFDSULROD H OD IRUPD]LRQH GH OLWRWHFQLFD SUHVHQWD XQ FRPSRUWDPHQWR GHO WLSR HODVWLFR ,O JUDGR GL SHUPHDELOLWj ULVXOWD LQ JHQH

8QLWj OLWRWHFQLFD D SUHYDOHQWH FRPSRQHQWH D 0RQWHVHFFR 'HWWD XQLWj OLWRWHFQLFD SUHVHQWD PHFFDQLFD GHO WLSR QRQ HODVWLFR ,O JUDGR GL SHUP



CARTA LITOLOGICA IMPIANTO AGRIVOLTAICO

Legenda

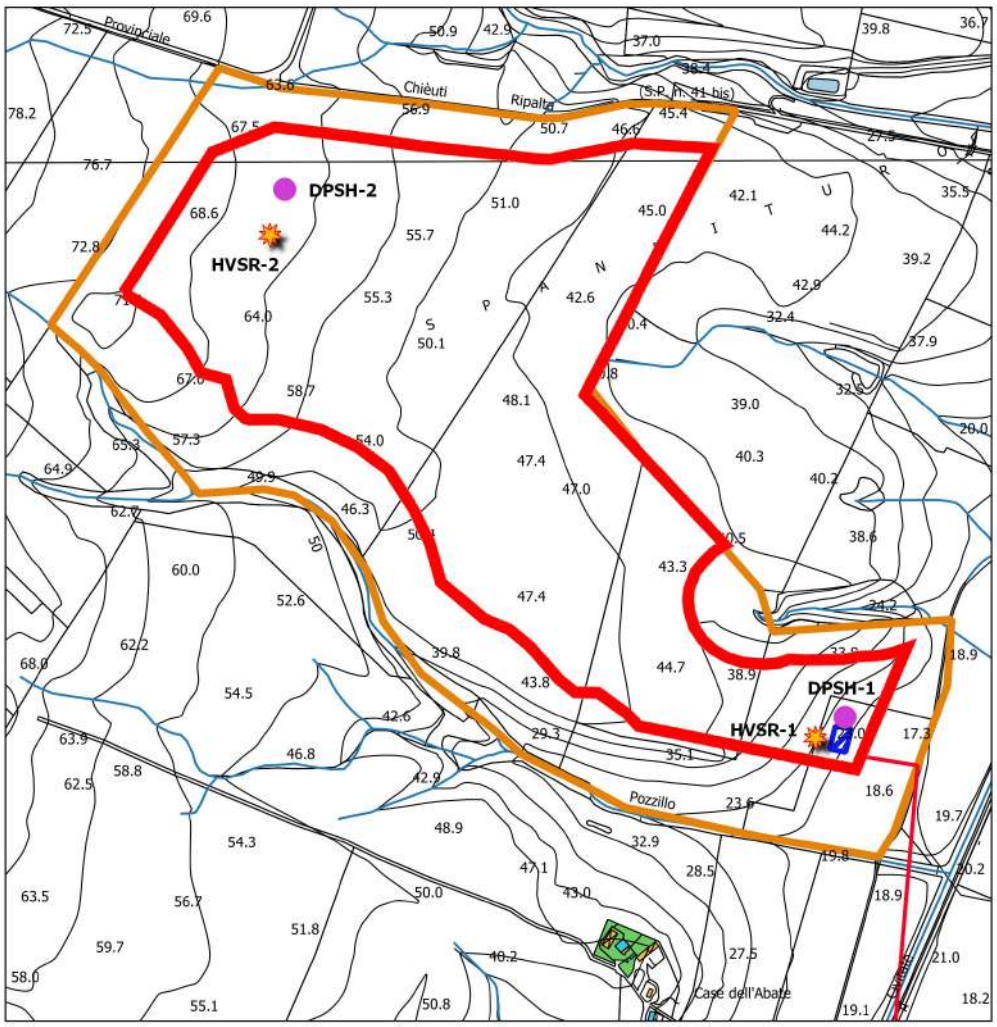
- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Futura stazione Terna
- Linea Mt

Litologia

- Depositi sciolti a prevalente componente pelitica
- Depositi sciolti a prevalente componente sabbioso-ghiaiosa
- Unit a prevalente componente argillosa
- Unit a prevalente componente ruditica
- Unit a prevalente componente siltoso-sabbiosa e/o arenitica

Scala 1 : 8.000

1HOOH DUHH LQ HVDPH FRPH JLj GHVFULWWR q VWDW
FRVWLWXLWD GD GXH SURYH SHQHWURPHWULFKH GHO WLS
VLJQLILFDWLYD ULILXWR H GXH SURYH GL VLVPLFD SDVV
ORFDOH DL VHQVL GHO ' 0 H GHOOD &LUFRODUH G
VWDWH HIIHWWXDWH GXH SURYH VLVPLFKH GHO WLSR SDVV



PLANIMETRIA UBICAZIONE INDAGINI GEOGNOSTICHE IMPIANTO AGRIVOLTAICO

Legenda

- Area a disposizione per campo agrivoltaico
- Campo agrivoltaico
- Cabina MT campo agrivoltaico
- Sottostazione Terna
- DPSH
- Prova sismica HVSR

Scala 1 : 8.000

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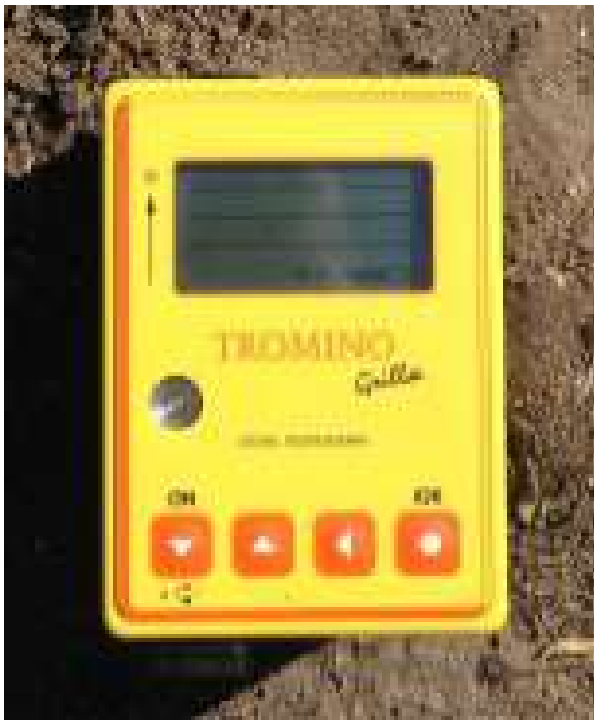
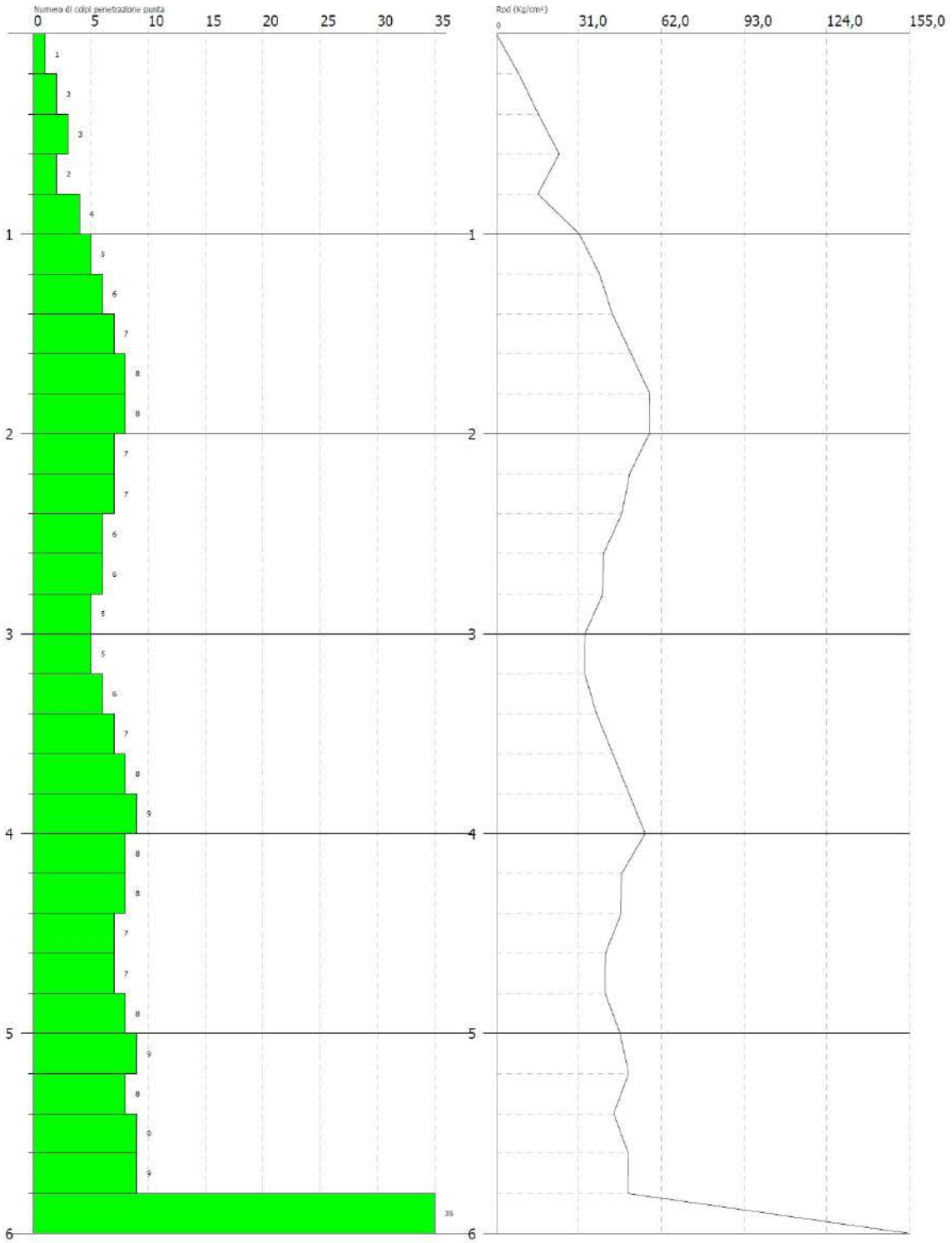


PROVA PENETROMETRICA DINAMICA N°.1
Strumento utilizzato... DPSH (Dinamic Probing Super Heavy)

Committente: Ing. Roselli Nicola
Cantiere: Impianto agrovoltaico
Località: Serracapriola

Data:

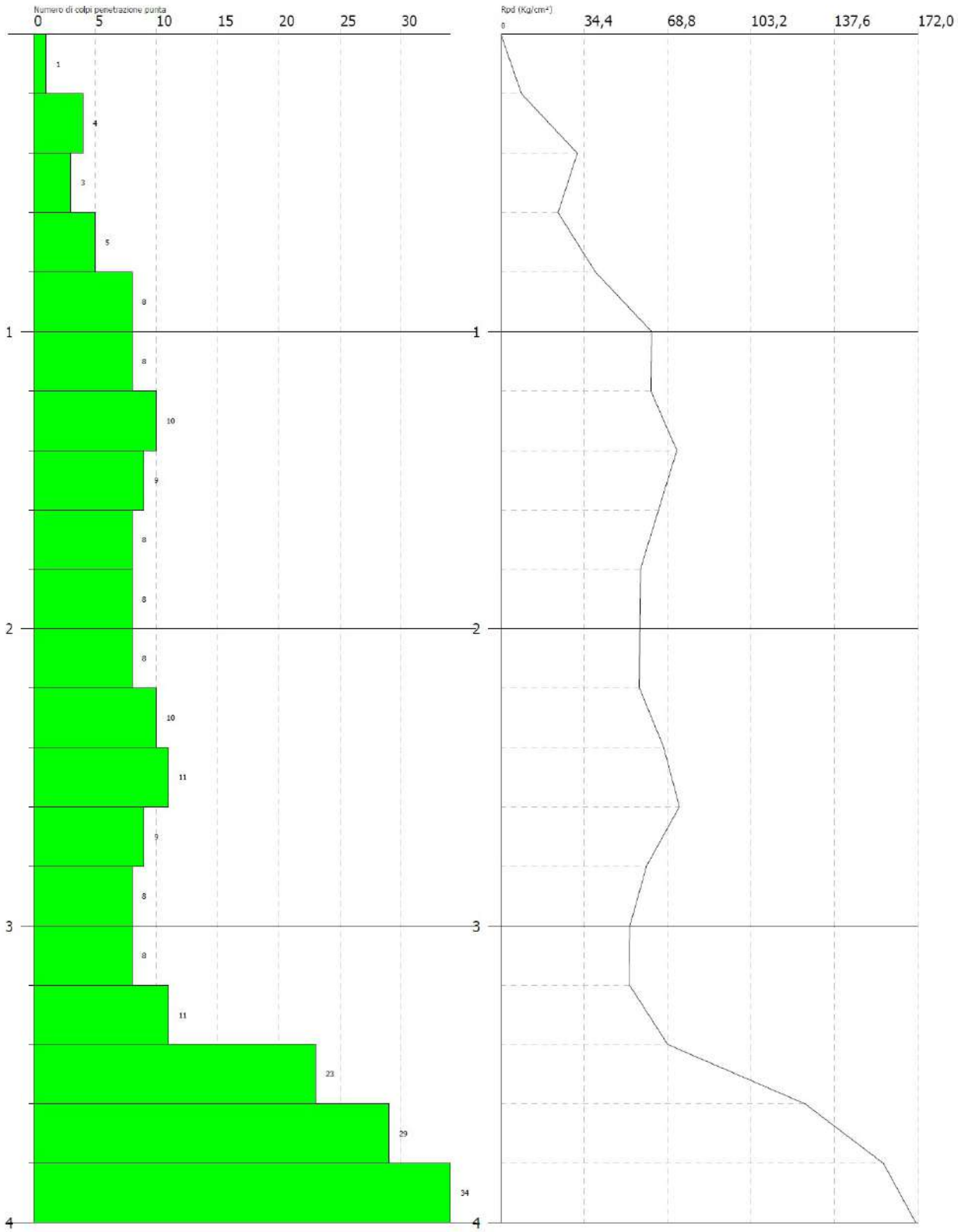
Scala 1:25



PROVA PENETROMETRICA DINAMICA Nr.2
Strumento utilizzato... DPSH (Dinamic Probing Super Heavy)

Committente: Ing. Roselli Nicola
Cantiere: Impianto agrovoltaico
Località: Serracapriola
Data:

Scala 1:17



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PW 7HUUHQR YHJHWDOH OLPRVR VDEELRVR FRQ

PW 6DEELH OLPRVH FRQ UDUH LQFOXVLRQL JK

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GL +] LQ PRGR GD DYHUH LQIRUPD]LRQL VX IUHTXHQ]H
GL 1\TXLVW VHFRQGR LO TXDOH OD PDVVLPD
IUHTXHQ]D GL FDPSLRQDPHQWR GHO VHJQDOH VWHVVR
,O ULVXOWDWR ILQDOH FRQVLVWH QHOOD JUDILFL]]D]LRQ
QHOO LQWHUSUHWD]LRQH VHFRQGR OD WHFQLFD GL 1DNDI
WHUUHQR GL IRQGD]LRQH ,QROWUH O¶HODERUD]LRQH GH
SHUPHVVR OD FODVVLILFD]LRQH GHO WLSR GL WHUUHQR
&LUFRODUH GHO & 6 // 33 Q GHO JHQQDLR 'DL ULV
HYLQFH FKH LO FDPSR DJULYROWDLFR SUHVHQWD XQD YH
9VBHTX GL P VHF FKH LQGLFD
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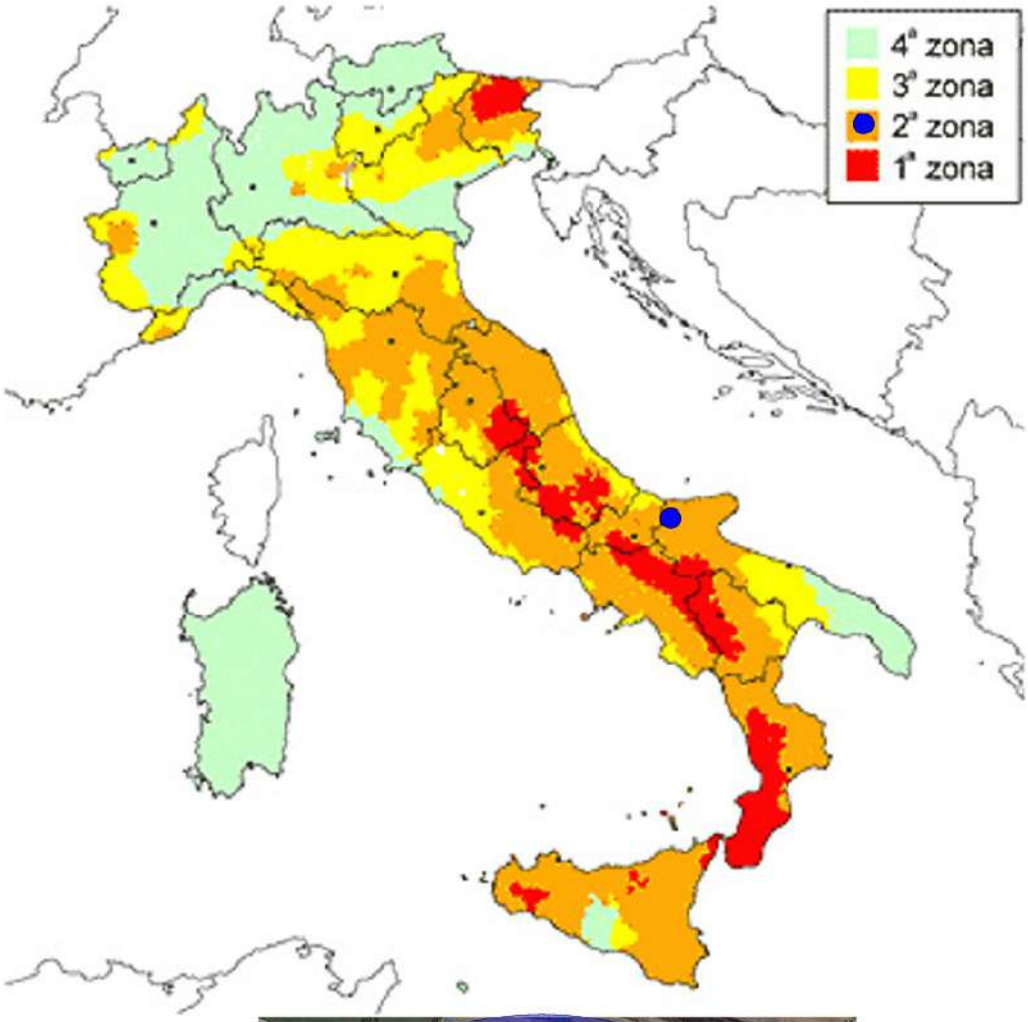

3UHPHVVR FKH SHU SHULFRORVLWj VLVPLFD GL XQ¶DU WHPSR SXz YHULILFDUVL XQ WHUUHPRWR GL XQD FHUWD JHRORJLD GHO VLWR PRUIRORJLD VXSHUILFLDOH PRUIRO SURIRQGLWj GHOOD IDOGD IUHDWLFD FRVWLWX]LRQH H SU GLSHQGH GDOOH SDUWLFRODUL FRQGL]LRQL ORFDOL FLRq GHSRVLWL GL WHUUHQR GHJOL DPPDVVL URFFLRVL H GDO OR FRVWLWXLVFRQR

&Lz SUHPHVVR LO WHUULWRUL FRPXQDOH GL 6HU ' 0 / 2UGLQDQ]D 3 & 0 Q GHO ULFODVV H LQ WDOH TXDGUR LO WHUULWRULR GL 6HUUDFDSULROD 6L ULSRUWD OD WDEHOOD RYH FLDVFXQD]RQD q LQGLYL RUL]]RQWDOH GHO VXROR DJ FRQ SUREDELOLWj GL VXSHU

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=RQH 6LVPLFKH	&ODVVH 6	&RHIILFLHQWH 6LVPLFR &	$PSOLILFD]LRQH VLVPLFD 6	$PSOLILFD]LRQH VLVPL D J
	(OHYDWD 6LVPLFLWj			
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	%DVVD 6LVPLFLWj			

&RQ O HQWUDWD LQ YLJRUH GHO ' 0 JHQQDLR GHILQLWD PHGLDQWH XQ DSSURFFLR ³VLWR GLSHQGHQWH´ /¶D]LRQH VLVPLFD GL SURJHWWR LQ EDVH DOOD TXDOH YD VL GHILQLVFRQR D SDUWLUH GDOOD ³SHULFRORVLWj VLVPL GHOOH FDUDWWHULVWLFKH PRUIRORJLFKH H VWUDWLJUDIL DOOD VFDOD GHOOD VLQJROD RSHUD R GHO VLQJROR VLVW FRPH ULVSRVWD VLVPLFD ORFDOH /D VWHVVD FRQVHQWH VXELVFH D FDXVD GHL IDWWRUL DQ]L GHWWL ULSHWWR

FRQ VXSHUILFLH WRSRJUDILFD RUL]]RQWDOH FDWHJRULD

,Q GHILQLWLYD OD ULVSRVWD VLVPLFD ORFDOH q O¶D]LR

GHOOH PRGLILFKH LQ DPSLH]]D GXUDWD FRQWHQXWR LQ

ULJL/GORFODVVLILFD]LRQH GHO VRWWRVXROR VL HIIHWWXD L

GHOOD YHORFLWj HTXLYDOHQWH GL SURSDJD]LRQH GHOOH

$$V_{S,eq} = \frac{H}{\sum_{i=1}^{N} \frac{h_i}{V_{S,i}}}$$

FRQ

KL VSHVVRUH GHOOR VWDWR L VHVLPR

9V L YHORFLWj GHOOH RQGH GL WDJOLR QHOO¶L HVLPR V

1 QXPHUR GL VWUDWL

+ SURIRQGLWj GHO VXEVWUDWR GHILQLWR FRPH TXHOOD

ULJLGR FDUDWWHUL]]DWD GD 9V QRQ LQIHULRUH D P V

'DL ULVXOWDWL GHOOH YHORFLWj GHOOH RQGH GL WDJOL

YHORFLWj PLQLPD 9VBHTX GL P VHF PDVVLPD 9VBHTX G

WL%R

3HU OH IRQGD]LRQL VXSHUILFLDOL OD SURIRQGLWj GHO

VWHVVH PHQWUH SHU OH IRQGD]LRQL VX SDOL DOOD WHVV

1HO FDVR GL RSHUH GL VRVWHJQR GL WHUUHQL QDWXU

PXUL GL VRVWHJQR GL WHUUDSLHQL OD SURIRQGLWj YLH

3HU GHSRVLWL FRQ SURIRQGLWj + GHO VXEVWUDWR VXSHU

WDJOLR 96 HT q GHILQLWD GDO SDUDPHWUR 96 RWW

HVSUHVVLRQH H FRQVLGHUDQGR OH SURSULHWj GHJOL VWU

9HQJRQR LGHQWLILFDWH FODVVL $ % & ' H (DG
ULVSRVWD HODVWLFR /R VFKHPD LQGLFDWLYR GL ULIHULP
VHJXHQWH

&OD	'HVFUL]LRQH
$	$PPDVVL URFFLRVL DIILRUDQWL R WHUUHQL PR YDORUL GL YHORFLWj GHOOH RQGH GL WDJO HYHQWXDOPHQWH FRPSUHQGHQWL LQ VXSHUILF PHFFDQLFKH SL• VFDGHQWL FRQ VSHVVRUH PDV
%	5RFFH WHQHUH H GHSRVLWL GL WHUUHQL D JU WHUUHQL D JUDQD ILQH PROWR FRQVLVWHQ PLJOLRUDPHQWR GHOOH SURSULHWj PHFFDQLFH YDORUL GL YHORFLWj HTXLYDOHQWH FRPSUHVL
&	'HSRVLWL GL WHUUHQL D JUDQD JURVVD PHGLD JUDQD ILQH PHGLDPHQWH FRQVLVWHQWL FRQ VXSHULRUL D P FDUDWWHUL]]DWL GD XQ PLJ PHFFDQLFKH FRQ OD SURIRQGLWj H GD YDORUL FRPSUHVL WUD P V H P V
'	'HSRVLWL GL WHUUHQL D JUDQD JURVVD VFDU WHUUHQL D JUDQD ILQH VFDUVDPHQWH FRQVL VXEVWUDWR VXSHULRUL D P FDUDWWHUL]]DW SURSULHWj PHFFDQLFKH FRQ OD SURIRQGLWj HTXLYDOHQWH FRPSUHVL WUD H P V
(	7HUUHQL FRQ FDUDWWHULVWLFKH H YDORUL ULFRQGXFLELOL D TXHOOH GHILQLWH SHU OH SURIRQGLWj GHO VXEVWUDWR QRQ VXSHULRUH

3HU TXDOVLDVL FRQGL]LRQH GL VRWWRVXROR QRQ FODVV
SUHGLVSRUUH VSHFLILFKH DQDOLVL GL ULVSRVWD ORFDOH
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&DWHJRULD %RWWRVXROR

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,Q VHGH SUHOLPLQDUH q VWDWR GDWR XQ TXDGUR WI
ULFDGRQR L VLWL LQ HVDPH (VWDWD SRL DQDOL]]DWD C
VWUHWWR GHO WHUULWRULR FLUFRVWDQWH H GHOO¶DUH
JHRORJLFKH VHGLPHQWDULH OD FXL HWj q FRPSUHVD WU
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$UJLOOH GL6LOWRQWDWWHFRL DUJLOOH PDUQRVH VLOWRV
VXSHUILFLH SHU DOWHUD]LRQH FRQ YHOL GL VL W H UDUH
IUHTXHQWL DOOD VRPPLWj GHOOD IRUPD]LRQH FKH SDVVD
6HUUDFDSULOD /¶HWj q DVFULYLELOH DO &DODFULDQR 3C

6DEELH GL 6/HU6DEESHLRO6HUUDFDSULOD VRQR FRVW
JLDOODVWUH TXDU]RVH LQ JURVVL EDQFKL D OXRJKL VRQ
FHPHQWDWH DUJLOOH ELDQFDVWUH R YHUGH FKLDUR 1R
HOHPHQWL SUHYDOHQWHPHQWH DUHQDFHL H FDOFDUHR P
VXSHULRUH

&RQJORPHUDWL 6RQ&DOFDUHQLWL GD OHQWL H OHWW
WDOYROWD FRQ OLYHOOL GL FRQJORPHUDWL FRPSDWWL
LQFURFLDWD HG LQWHUFDOD]LRQL GL DUJLOOH YHUGDVW
WUDWWDQGRVL GL PDWHULDOH SURYHQLHQWH GDOOH IRU
PDUQRVL GL DUHQDULH H ORFDOPHQWH GL FULVWDOOL
7HUPLQDOH

)250$=,21, ', *(1(6, &$17,1(17$/(

&RSHUWXUH IOXYLR ODFXVWUL GHL,SGLDSRVLWL HVSHULRU
VRQR FRVWLWXLWL SUHYDOHQWHPHQWH GD JKLDLH VDEE
VXSHUILFLDOH GL WHUUH QHUH 4XHVWL WHUUHQL QRQ
GHSRVL]LRQH OD GLVWULEX]LRQH H OD GLYHUVD DOWH]
LGURJUDILFD FKH OL KD GHWHUPLQDWL QRQ SUHVHQWDVV

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

IRVVH DQFRUD EHQH LPSRVWDWD 4XHVWD IRUPD]LRQH LQ
DJULYROWDLFR /¶HWj q DVFULYLELOH DO 3OHLVWRFHQH P
&RSHUWXUH IOXYLDOL GHOJK,ƑLRUSL•R PLHORHUHDH]QWD
VDEELRVH VSHVVR ULFRSHUWH GD WHUUH QHUH DG DO
DOOXYLRQDOL LQWHUPHGL KDQQR XQD QDWXUD OLWRORJL
WHUUD]]L DQDORJD q LQIDWWL OD SURYHQLHQ]D G
'HWWD IRUPD]LRQH LQWHUHVVD JUDQ SDUWH GHO FDPSR
PHGLR 6XSHULRUH

$OOXYLRQL SUHYDOHQWHPHQWH OLPRV6L DUJLOORVL GL GHO
VDEELH SURYHQLHQWL HVVHQ]LDOPHQWH GDOO¶HURVLRQH
))RUWRUH D TXHVWR PDWHULDOH ILQH VL LQWHUFDOD
DSSHQQLQLFD /¶HWj q DVFULYLELOH DO 3OHLVWRFHQH VX

$OOXYLRQVROR WWRVWLWXLWH GD GHSRVLWL FRQ HOHPHQ
VDEELH H DUJLOOH FRQ SUHYDOHQ]D GL GHWULWL ILQL 2
OXQJR LO))RUWRUH /¶HWj q DVFULYLELOH DOO¶2ORFHQH
RVSLWD WHUUHQL DSSDUWHQHQWL DOOH &RSHUWXUH IOXY
GHOOH &RSHUWXUH IOXYLR ODFXVWUL GHL SLDQDOWL H GH

3HU TXDQWR ULJXDUGD O¶DVVHWWR OLWRWHFQLFR OR
WHUPLQL ULFRQRVFLXWL LQ DIILRUDPHQWR GD SHFXOLDU
$OO 'L VHJXLWR VRQR GHVFULWWH OH XQLWj OLWRWHF
SL• R PHQR RPRJHQHR

8QLWj OLWRWHFQLFD FRVWLWXLWD GD GHSRVLWL VFL
DUJLOORVL H VDEELRVL ULJXDUGD OD IRUPD]LRQH GHO ,9
VDEELH H DUJLOOH GHL IRQGRYDOOH DWWXDOL 'HWWD XQ
JUDQXODUH HG XQD ULVSRVWD PHFFDQLFD GHO WLSR QRQ
PHGLR

8QLWj OLWRWHFQLFD FRVWLWXLWD GD GHSRVLWL VF
ULJXDUGD OD IRUPD]LRQH GHOOH FRSHUWXUH IOXYLDOL

OLWRWHFQLFD SUHVHQWD XQ FRPSRUWDPHQWR GHO WLSR
HODVWLFR ,O JUDGR GL SHUPHDELOLWj ULVXOWD LQ JHQH

8QLWj OLWRWHFQLFD D SUHYDOHQWH FRPSRQHQWH VL
GHOOH 6DEELH GL 6HUUDFDSULROD H OD IRUPD]LRQH GH
OLWRWHFQLFD SUHVHQWD XQ FRPSRUWDPHQWR GHO WLSR
HODVWLFR ,O JUDGR GL SHUPHDELOLWj ULVXOWD LQ JHQH

8QLWj OLWRWHFQLFD D SUHYDOHQWH FRPSRQHQWH D
0RQWHVHFFR 'HWWD XQLWj OLWRWHFQLFD SUHVHQWD
PHFFDQLFD GHO WLSR QRQ HODVWLFR ,O JUDGR GL SHUPI

'DO SXQWR GL YLVWD JHRPRUIRORJLFR HG LGURJHRORJ
SUHVHQWD SRFR DFFOLYH DOWLPHWULFDPHQWH q SRVWD
V O P FRQ SHQGHQ]D PDVVLPD GHO TXDVL SLDQHJJLD
3$, GDOOD OHWWXUD GHOOH FDUWH JHRPRUIRORJLFKH H
LQWHUHVVDWH GD SHULFRORVLWj H ULVFKLR JHRPRUIROR
TXDQWR O¶DUHH SUHVHQWDQR XQD EDVVLVVLPD SHQGHQ
IUDQRVL 3HUWDQWR QHOOH DUHH DOOR VWXGLR HG LQ TX
DWWR R SRWHQ]LDOL IHQRPHQL TXLHVFHQWL IHQRPHQ
UXVFHOODPHQWR DFFHOHUDWR 9HG 7DYROH

$ FRQFOXVLRQH GL TXDQWR VRSUD HVSRVWR H GDOO
LQQDQ]L HIIHWWXDWH VL GHGXFH FKH 3SHUWDQWR LQ SL
LQ TXDQWR

, SHQGLL ULVXOWDQR VWDELOL

1RQ YL VRQR IHQRPHQL IUDQRVL LQ DWWR R SRWHQ]LDOL

1RQ YL VRQR IHQRPHQL HURVLYL

1RQ YL VRQR IHQRPHQL GL UXVFHOODPHQWR

'DOO XOWLPD SURSRVWD GL ULFODVVLILFD]LRQH VLVPLFD
6HUUDFDSULROD q]RQD VLVPLFD GL FODVVH PHGLD VLVP

RSHUH G DUWH q SUHYLVWD O DGR]LRQH H OH UHODWLYH

' 0 JHQQDLR H GHOOD &LUFRODUH GHO & 6 // 33 Q

7DQWR 'RYHYDVL ,/ *(2/2*2

'RWW 9LWR) 3/(

%LEOLRJUDILD

5(*,21(38*/,$ &DUWD 7HFQLFD 5HJLRQDOH & 7 5 HOHPHQW
DOOD VFDOD

5HJRODPHQWR 5HJLRQDOH 0DU]R Q H GDOOD / 5 GH
OHWW E H $UW FRPPD ELV

0LQLVWHUR GHOO¶,QGXVWULD GHO &RPPHUFLR H GHOO¶$U
6HUYL]LR *HRORJLFR G¶,WDOLD ± 1RWH LOOXVWUDWLYH GH
6DQ 6HYHUR

1RWH LOOXVWUDWLYH GHOOD FDUWD JHRORJLFD DOOD VFD

$XWRULWj GL %DFLQR))RUWRUH

,O 'LSDUWLPHQWR 6HUYL]LR *HRORJLFR G¶,WDOLD LQ ,635$
3URJHWWR ,)), ,QYHQWDULR GHL)HQRPHQL)UDQRVL LQ ,W

(1, $FTXH GROFL VRWWHUUDQHH ³,QYHQWDULR GHL GDWL
LQ ,WDOLD´

' 0 H GHOOD &LUFRODUH GHO & // 33 Q GHO

& &HVWHOOL *XLGL *HRWHFQLFD H WHFQLFD GHOOH IRQGD

$UDL + H 7RNLP DWDVXH .9HORFLW\ 3URILOLQJ E\ ,QYHUVLRQ
RI 0LFURWUHPRU%X9 6SHFWUXP 6RF $P

'HJDGR - /RSH] &DVDGR & *LQHU - (VWHYH] $ &XHQF
0LFURWUHPRUV DV D JHRSK\VLFDO H[SORUDWLRQ WRRO DS
3XUH $SSO *HRSK\V

1DNDPXUD < $ PHWKRG IRU G\QDPLF FKDUDFWHULVWL
PLFURWUHPRU RQ 4V5KRIU5RXQG VXUIDFH

%DUG 3 < 0LFURWUHPRU PHDVXUHPHQWV D WRRO IR
HVWLPDWLRQ" 6HFRQG ,QWHUQDWLRQDO 6\PSRVLXP RQ WK
RI WKH 6XUIDFH *HRORJ\ RQ 6HLVPLF 0RWLRQ (6* -DSDQ

%RUFKHUGW 5 ' 6LPSOLILHG VLWH FODVVHV DQG HPS
IDFWRUV IRU VLWH GHSHQGHQW FRGH SURYLVLRQV LQ
1&((5 6($2& %66& :RUNVKRS RQ 6LWH 5HVSRQVH GXULQJ
(DUWKTXDNHV DQG 6HLVPLF 1RLVH &RPPLWWHH 3URYLVLRQV
8QLYHUVLW\ RI 6RXWKHUQ &DOLIRUQLD /RV $QJHOHV &DO

%RUFKHUGW 5 ' (VWLPDWHV RI VLWH GHSHQGHQW UH
VSHFWUD IRU GHVLJQ PHWKRGRORJLHV 6DQ)UDQFLVFR 8QLW

%XGQ\ 0 6HLVPLVFKH %HVWLPPXQJ GHU ERGHQG\QDPLVFKH
REHUIOlFKHQQDKHQ 6FKLFKWHQ LQ (UGEHEHQJHELHWHQ GH
VHLVPRORJLVFKH 3K'Q 7KHVLV\VXEPLVVLRQ 1R *HRORJLV
8QLYHUVLWlW
]X .|OQ SS LQ *HUPDQ

&DVWHOODUR 6 0XODUJLD) H %LDQFRQL / 6WUDWL
DFFXUDWD UDSLGR H JHRWHFQLFD HO $PELHQWDOH

0XODUJLD) H &DVWHOODUR 6 E 6LQJOH VWDWLRQ SD
WR DOPRVW NP GHSWK 5RPD *1*76

%HQ 0HQDKHP $ H 6LQJK 6 - 6HLVPLF ZDYHV DQG VRX
SS

0XFFLDUHOOL 0 H *DOOLSROL 0 5 &RPSDULVRQ EHWZ
DPSOLILFDWLRQ LQ ,WDO\ &RQI (DUWKT (QJ DQG 6HLVPR

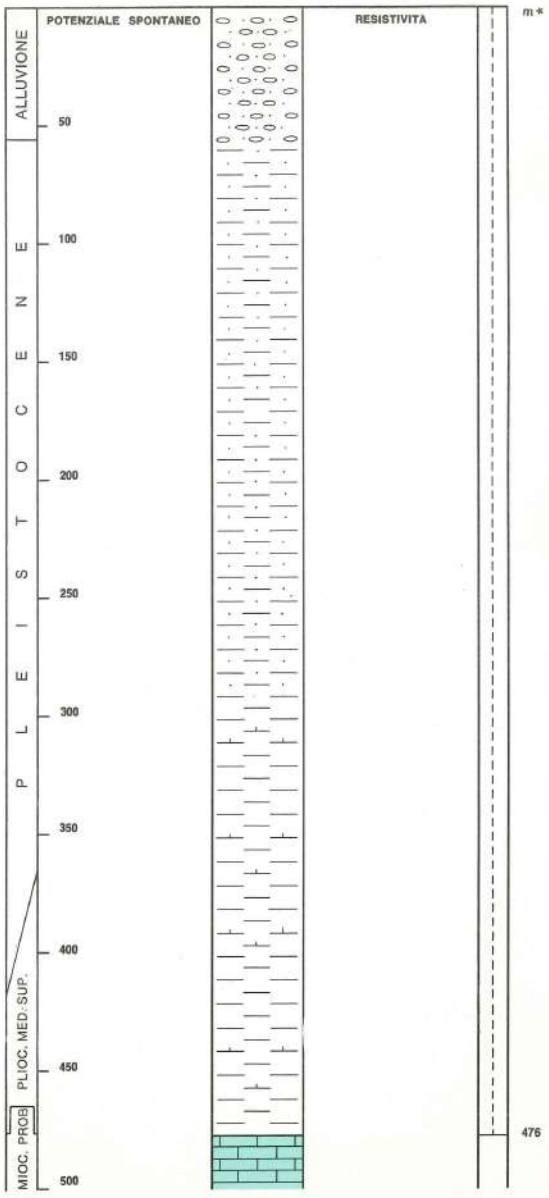
5HJLRQH $EUX]]R GLSDUWLPHQWR GHOOD SURWH]LRQH FLY
SHU OD ULFRVWUX]LRQH GHOO¶DUHD DTXLODQD

$//(*$7,

Pozzo: SANNICANDRO 2 (1963)

Comune: SERRACAPRIOLA (FOGGIA)
I.G.M. F° 155 I S.O.
Lat. 41° 53' 31"
Long. 2° 47' 49" Est da Monte Mario

Quota del piano campagna: + m 12



ELEMENTI DI VALUTAZIONE
- Mancanti
- Insufficienti
- Incerti

LITOLOGIA
- Ciottoli e ghiaia
- Sabbia
- Argilla
- Argilla sabbiosa
- Marna
- Calcare

FLUIDI IN STRATO
- Acqua dolce
- Acqua salmastra
- Acqua salata

PERMEABILITÀ
- Buona
- Discreta
- Nulla

* Le profondità sono riferite al piano campagna

ISPRA

Sistema Nazionale per la Protezione dell'Ambiente

Istituto Superiore per la Protezione e la Ricerca Ambientale

Archivio nazionale delle indagini nel sottosuolo (Legge 464/1984)

Dati generali

Codice: 206398
Regione: PUGLIA
Provincia: FOGGIA
Comune: SERRACAPRIOLA
Tipologia: PERFORAZIONE
Opera: SONDAGGIO GEOGNOSTICO
Profondità (m): 60.00
Quota pc slm (m): 116.00
Anno realizzazione: 1999
Numero diametri: 1
Presenza acqua: SI
Portata massima (l/s): ND
Portata esercizio (l/s): ND
Numero falde: 1
Numero filtri: 0
Numero piezometrie: 0
Stratigrafia: SI
Certificazione(*): NO
Numero strati: 17
Longitudine WGS84 (dd): 15.214719
Latitudine WGS84 (dd): 41.876231
Longitudine WGS84 (dms): 15° 12' 52.100" E
Latitudine WGS84 (dms): 41° 52' 34.44" N

(*)Indica la presenza di un professionista nella compilazione della stratigrafia

Ubicazione indicativa dell'area d'indagine

DIAMETRI PERFORAZIONE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)	Diametro (mm)
1	0.00	60.00	60.00	101

FALDE ACQUIFERE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)
1	35.00	45.00	10.00

STRATIGRAFIA

Progr	Da profondità (m)	A profondità (m)	Spessore (m)	Età geologica	Descrizione litologica
1	0.00	0.60	0.60		MATERIALE DI RIPORTO
2	0.60	1.50	0.90		TERRENO VEGETALE BRUNASTRO CON ELEMENTI LAPIDEI
3	1.50	5.00	3.50		GHIAIE E CIOTTOLI POLIGENICI SUBARROTONDATI E, TALORA, BLOCCHI CON SABBIE DEBOLMENTE LIMOSE; A LUOGHI INCLUSIONI CARBONATICHE BIANCASTRE FARINOSE DI ORIGINE EVAPORITICA
4	5.00	22.00	17.00		GHIAIE E CIOTTOLI ETEROMETRICI SUBARROTONDATI, TALORA CEMENTATI, CON SABBIE A GRANULOMETRIA DA MEDIO-GROSSOLANA A MEDIO-FINE
5	22.00	24.50	2.50		GHIAIE E CIOTTOLI POLIGENICI DA SUBARROTONDATI A SUBANGOLOSI CON SCARSA MATRICE SABBIOSA, TALORA CEMENTATI
6	24.50	27.00	2.50		SABBIE LIMOSO-ARGILLOSE GIALLASTRE, A LUOGHI CON GHIAIA, SEGNATAMENTE AL TETTO
7	27.00	28.00	1.00		LIMI ARGILLOSI CON SABBIA GRIGIO-GIALLASTRI PIUTTOSTO COMPATTI
8	28.00	29.50	1.50		SABBIE LIMOSO-ARGILLOSE GIALLASTRE, TALORA CON ORIZZONTI DEBOLMENTE GHIAIOSI
9	29.50	31.00	1.50		SABBIE LIMOSE PER LO PIU' DEBOLMENTE ARGILLOSE

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

10	31,00	36,00	5,00		GHIAIE E CIOTTOLI ETEROMETRICI POLIGENICI IN MATRICE SABBIOSO-LIMOSA, A LUOGHI DEBOLMENTE CEMENTATI
11	36,00	40,00	4,00		SABBIE CON GHIAIA E SUBORDINATI CIOTTOLI, AL LETTO LIMOSE
12	40,00	41,00	1,00		SABBIE LIMOSE GIALLASTRE, TALORA CON GHIAIA
13	41,00	44,40	3,40		SABBIE LIMOSE GIALLASTRE PASSANTI TALORA A SABBIE SCIOLTE, OCCASIONALMENTE CON GHIAIA
14	44,40	45,00	0,60		SABBIE LIMOSE DEBOLMENTE ARGILLOSE
15	45,00	47,00	2,00		LIMI ARGILLOSI CON SABBIA DI COLORE GRIGIASTRO PIUTTOSTO COMPATTI
16	47,00	50,20	3,20		LIMI SABBIOSO-ARGILLOSI GRIGIASTRI BEN ADDENSATI
17	50,20	60,00	9,80		LIMI ARGILLOSI CON SABBIA GRIGIASTRI, TALORA CON INTERCALAZIONI DECIMETRICHE DI LIMI SABBIOSO-ARGILLOSI E, FINANCHE, SABBIE LIMOSO-ARGILLOSE

ISPRA

Istituto Superiore per la Protezione e la Ricerca Ambientale

Archivio nazionale delle indagini nel sottosuolo (Legge 464/1984)

Dati generali

Codice: 206400
Regione: PUGLIA
Provincia: FOGGIA
Comune: SERRACAPRIOLA
Tipologia: PERFORAZIONE
Opera: SONDAGGIO GEOGNOSTICO
Profondità (m): 42.00
Quota pc slm (m): 80.00
Anno realizzazione: 1999
Numero diametri: 1
Presenza acqua: SI
Portata massima (l/s): ND
Portata esercizio (l/s): ND
Numero falde: 1
Numero filtri: 0
Numero piezometrie: 0
Stratigrafia: SI
Certificazione(*): NO
Numero strati: 11
Longitudine WGS84 (dd): 15.229161
Latitudine WGS84 (dd): 41.880669
Longitudine WGS84 (dms): 15° 13' 44.98" E
Latitudine WGS84 (dms): 41° 52' 50.41" N

(*)Indica la presenza di un professionista nella compilazione della stratigrafia

Ubicazione indicativa dell'area d'indagine

DIAMETRI PERFORAZIONE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)	Diametro (mm)
1	0.00	42.00	42.00	101

FALDE ACQUIFERE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)
1	11.00	32.00	21.00

STRATIGRAFIA

Progr	Da profondità (m)	A profondità (m)	Spessore (m)	Età geologica	Descrizione litologica
1	0.00	0.30	0.30		MATERIALE DI RIPORTO
2	0.30	1.60	1.30		TERRENO VEGETALE BRUNASTRO CON GHIAIA E CIOTTOLI
3	1.60	3.20	1.60		GHIAIE E CIOTTOLI POLIGENICI SUBARROTONDATI CON SABBIE
4	3.20	4.00	0.80		GHIAIE E CIOTTOLI CON SABBIE PIU' O MENO LIMOSE
5	4.00	8.50	4.50		GHIAIE E CIOTTOLI POLIGENICI SUBARROTONDATI IN MATRICE SABBIOSA PER LO PIU' ABBONDANTE
6	8.50	9.40	0.90		SABBIE GIALLASTRE TALORA CEMENTATE CON GHIAIE E RARI CIOTTOLI
7	9.40	15.00	5.60		SABBIE GIALLASTRE PER LO PIU' SCIOLTE, A LUOGHI DEBOLMENTE LIMOSE O AL CONTRARIO GHIAIOSE, TALORA CON SOTTILI ORIZZONTI CEMENTATI
8	15.00	17.50	2.50		SABBIE GIALLASTRE DEBOLMENTE LIMOSE, TALORA CON SOTTILI ORIZZONTI CEMENTATI. N.B. IL CAMPIONATORE RAYMOND DURANTE L'ESECUZIONE DELLA PROVA S.P.T. HA PROBABILMENTE INTERCETTATO UN ELEMENTO LAPIDEO
9	17.50	21.50	4.00		SABBIE LIMOSE GIALLASTRE PIUTTOSTO COMPATTE, OCCASIONALMENTE CON LIVELLI CM DA SCARSAMENTE A BEN CEMENTATI

678',2 ', *(2/2*,$ *(27(&1,&$$ 6,60,&$$

10	21,50	32,00	10,50		SABBIE FINI CON LIMO DI COLORE GRIGIASTRO BEN ADDENSATE, TALORA CON INTERCALAZIONI DECIMETRICHE DI SABBIE LIMOSO-ARGILLOSE
11	32,00	42,00	10,00		LIMI ARGILLOSI CON SABBIA GRIGIASTRI, NELLE ASSISE SUPERIORI CON OCCASIONALI INTERCALAZIONI DECIMETRICHE DI SABBIE LIMOSO-ARGILLOSE; AL LETTO, A PROFONDITA' MAGGIORI DI M 41.40 E' STATA RINVENUTA UNA

ISPRA

Sistema Nazionale per la Protezione dell'Ambiente

Istituto Superiore per la Protezione e la Ricerca Ambientale

Archivio nazionale delle indagini nel sottosuolo (Legge 464/1984)

Dati generali

Codice: 206399
Regione: PUGLIA
Provincia: FOGGIA
Comune: SERRACAPRIOLA
Tipologia: PERFORAZIONE
Opera: SONDAGGIO GEOGNOSTICO
Profondità (m): 50,00
Quota pc slm (m): 38,00
Anno realizzazione: 1999
Numero diametri: 1
Presenza acqua: SI
Portata massima (l/s): ND
Portata esercizio (l/s): ND
Numero falde: 2
Numero filtri: 0
Numero piezometrie: 0
Stratigrafia: SI
Certificazione(*): NO
Numero strati: 12
Longitudine WGS84 (dd): 15,231939
Latitudine WGS84 (dd): 41,886789
Longitudine WGS84 (dms): 15° 13' 54.99" E
Latitudine WGS84 (dms): 41° 53' 12.44" N

(*)Indica la presenza di un professionista nella compilazione della stratigrafia

Ubicazione indicativa dell'area d'indagine

DIAMETRI PERFORAZIONE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)	Diametro (mm)
1	0,00	50,00	50,00	101

FALDE ACQUIFERE

Progr	Da profondità (m)	A profondità (m)	Lunghezza (m)
1	4,00	10,00	6,00
2	40,00	50,00	10,00

STRATIGRAFIA

Progr	Da	A	Spessore	Età	Descrizione litologica

	profondità (m)	profondità (m)	(m)	geologica	
1	0,00	1,60	1,60		TERRENO VEGETALE BRUNASTRO, TALORA CON CIOTTOLI, SEGNATAMENTE ALLA SOMMITA'
2	1,60	5,10	3,50		SABBIE LIMOSE BRUNASTRE PASSANTI AL ROSSASTRO CON GHIAIE POLIGENICHE PER LO PIU' FINI, COMPATTE, AL TETTO ALTERATE, A LUOGHI DEBOLMENTE CEMENTATE
3	5,10	8,00	2,90		SABBIE GIALLASTRE DEBOLMENTE LIMOSE, TALORA CON GHIAIA, OCCASIONALMENTE CEMENTATE
4	8,00	10,00	2,00		SABBIE LIMOSE GIALLASTRE, TALORA DEBOLMENTE ARGILLOSE
5	10,00	15,00	5,00		LIMI SABBIOSO-ARGILLOSI GRIGIASTRI
6	15,00	18,00	3,00		LIMI ARGILLOSI CON SABBIA GRIGIASTRI, TALORA CON FRUSTOLI CARBONIOSI
7	18,00	26,40	8,40		LIMI SABBIOSO-ARGILLOSI COMPATTI
8	26,40	28,10	1,70		LIMI SABBIOSO-ARGILLOSI, A LUOGHI CON INTERCALAZIONI CENTIMETRICHE SABBIOSO-LIMOSE
9	28,10	31,00	2,90		LIMI SABBIOSO-ARGILLOSI GRIGIASTRI COMPATTI
10	31,00	35,00	4,00		LIMI ARGILLOSI CON SABBIA GRIGIASTRI BEN ADDENSATI, AL LETTO SI OSSERVA UN INCREMENTO DELLA FRAZIONE FINE
11	35,00	45,00	10,00		LIMI ARGILLOSI CON SABBIA, TALORA CON PASSAGGI DM PIU' O MENO GRADUALI A LIMI SABBIOSO-ARGILLOSI, PIU' FREQUENTI NELLE ASSISE INFERIORI
12	45,00	50,00	5,00		LIMI ARGILLOSI CON SABBIA

3529$ 3(1(7520(75,&$ ',1$0,&$

&RPPLWWHQWH ,QJ 5RVHOOL 1LFROD
&DQWLHUH ,PSLDQWR DJULYROWDLFR
/RFDOLWj 6HUUDFDSULROD)*

&DUDWWHULVWLFKH 7HFQLFKH 6WUXPHQWDOL 6RQGD '36+ 'LQDPLF 3URELQJ

5LI 1RUPH ',1
3HVR 0DVVD EDWWHQWH .J
$OWH]]D GL FDGXWD OLEHUD P
3HVR VLVWHPD GL EDWWXWD .J
'LDPHWUR SXQWD FRQLFD PP
$UHD GL EDVH SXQWD FPð
/XQJKH]]D GHOOH DVWH P
3HVR DVWH D PHWUR .J P
3URIRQGLWj JLXQ]LRQH SULPD DVWD P
$YDQ]DPHQWR SXQWD P
1XPHUR FROSL SHU SXQWD 1
&RHII &RUUHOD]LRQH
5LYHVWLPHQWR IDQJKL 1R
$QJROR GL DSHUWXUD SXQWD *f

3529(3(1(7520(75,&+(',1$0,&+(&217,18(

'<1$0,& 352%,1*

'36+

1RWH LOOXVWUDWLYH 'LYHUVH WLSRORJLH GL SHQHWURP
/D SURYD SHQHWURPHWULFD GLQDPLFD FRQVLVWH QHOO¶
FRQVHFXWLYR LQDQGR LO QXPHUR GL FROSL 1 QHFHVVDUL
/H 3URYH 3HQHWURPHWULFKH 'LQDPLFKH VRQR PROWR GL
JHRWHFQLFL GDWD OD ORUR VHPSOLFLWj HVHFXWLYD HFF

/D ORUR HODERUD]LRQH LQWHUSUHWD]LRQH H YLVXDO
SDUDPHWUL]]DUH´ LO VXROR DWWUDYHUVDWR FRQ XQ¶LPP
UDIIURQWR VXOOH FRQVLVWHQ]H GHL YDUL OLYHOOL DW
JHRJQRVWLFL SHU OD FDUDWWHUL]]D]LRQH VWUDWLJUDIL
ULFRQRVFHUH DEEDVWDQ]D SUHFLVDPHQWH OR VSHVVRUH
H VXSHUILFL GL URWWXUD VXL SHQGLL H OD FRQVLVWHQ]D

/¶XWLOL]]R GHL GDWL ULFDYDWL GD FRUUHOD]LRQL LQGL
FRPXQTXH HVVHUH WUDWWDWR FRQ OH RSSRUWXQH FDXW
DFTXLVLWH LQ]RQD

(OHPHQWL FDUDWWHULVWLFL GHO SHQHWURPHWUR GLQDPL

SHVR PDVVD EDWWHQWH 0

DOWH]]D OLEHUD FDGXWD +

SXQWD FRQLFD GLDPHWUR EDVH FRQR ' DUHD EDVH

DYDQ]DPHQWR GSHQHWUD]LRQH

SUHVHQ]D R PHQR GHO ULYHVWLPHQWR HVWHUQR IDQ

&RQ ULIHULPHQWR DOOD FODVVLILFD]LRQH ,660)(GHL

WDEHOOD VRWWR ULSRUWDWD VL ULOHYD XQD SULPD VXG

PDVVD EDWWHQWH

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WLSR 683(53(6$17('36+

&ODVVLILFD]LRQH ,660)(GHL SHQHWURPHWUL GLQDPLFL

7LSR	6LJOD GL ULIHULPHQWR	0 NJ	[illegible] EDWWHQWH P
/HJJHUR	'3/ /LJKW	0 d	
0HGLR	'30 0HGLXP		0
3HVDQWH	'3+ +HDY\	0	
6XSHU SHVDQWH +HDY\	'36+ 6XSHU	0t	

SHQHWURPHWUL LQ XVR LQ ,WDOLD

,Q ,WDOLD ULVXOWDQR DWWXDOPHQWH LQ XVR L VHJXHQWL [illegible]

,660)(

',1$0,&2 683(53(6$17(7LSR (0,/,$

0DVVD EDWWHQWH 0 NJ DOWH]]D FDGXWD [illegible] SXQWD FRQLFD
FRQLFD ƒ ƒ GLDPHWUR ' PP DUHD EDVH [illegible]
EHQWRQLWLFR WDORUD SUHYLVWR

&RUUHOD]LRQH FRQ 1VSW

3RLFKp OD SURYD SHQHWURPHWULFD VWDQGDUG 637 UDS
HFRQRPLFL SHU ULFDYDUH LQIRUPD]LRQL GDO VRWWRVXRO
ULJXDUGDQR L YDORUL GHO QXPHUR GL FROSL 1VSW RWWH
QHFHVVLWj GL UDSSRUWDUH LO QXPHUR GL FROSL GL XQD
GD

1VSW E W 1

'RYH

$$E_W \; \frac{4}{4_{637}}$$

LQ FXL 4 q O¶HQHUJLD VSHFLILFD SHU FROSR H 4VSW q TXH
/¶HQHUJLD VSHFLILFD SHU FROSR YLHQH FDOFRODWD FRPH

$$4 \; \frac{0 \; \tilde{} +}{\$ \tilde{} G \tilde{} 0 \quad 0}$$

LQ FXL

0 SHVR PDVVD EDWWHQWH

0¶ SHVR DVWH

+ DOWH]]D GL FDGXWD

$ DUHD EDVH SXQWD FRQLFD

G SDVVR GL DYDQ]DPHQWR

9DOXWD]LRQH UHVLVWHQ]D GLQDPLFD DOOD SXQWD 5SG

)RUPXOD 2ODQGHVL

$$5SG \; \frac{0 \; \tilde{} +}{\$ \tilde{} H \tilde{} 0 \quad 3} \; @ \; \frac{0 \; \tilde{} + \tilde{} 1}{\$ \tilde{} G \tilde{} 0 \quad 3} \; @$$

5SG UHVLVWHQ]D GLQDPLFD SXQWD DUHD $
H LQILVVLRQH PHGLD SHU FROSR 1
0 SHVR PDVVD EDWWHQWH DOWH]]D FDGXWD +
3 SHVR WRWDOH DVWH H VLVWHPD EDWWXWD

0HWRGRORJLD GL (ODERUD]LRQH

/H HODERUD]LRQL VRQR VWDWH HIIHWWXDWH PHGLDQWH
3URELQJ *HR6WUX 6RIWZDUH

,O SURJUDPPD FDOFROD LO UDSSRUWR GHOOH HQHUJLH W
WUDPLWH OH HODERUD]LRQL SURSRVWH GD 3DVTXDOLQL
)UDQNRZVN\
3HUPHWWH LQROWUH GL XWLOL]]DUH L GDWL RWWHQXW
HVWUDSRODUH XWLOL LQIRUPD]LRQL JHRWHFQLFKH H JHRO
8QD YDVWD HVSHULHQ]D DFTXLVLWD XQLWDPHQWH DG XQ
VSHVVR GL RWWHQHUH GDWL XWLOL DOOD SURJHWWD]LRQ
WDQWL GDWL ELEOLRJUDILFL VXOOH OLWRORJLH H GL GD
SRFKH SURYH GL ODERUDWRULR HVHJXLWH FRPH UDSSUH
GLVXQLIRUPH H R FRPSOHVVD
,Q SDUWLFRODUH FRQVHQWH GL RWWHQHUH LQIRUPD]LRQL
O¶DQGDPHQWR YHUWLFDOH H RUL]]RQWDOH GHJOL LQ
OD FDUDWWHUL]]D]LRQH OLWRORJLFD GHOOH XQLWj V
L SDUDPHWUL JHRWHFQLFL VXJJHULWL GD YDUL DXWR
GHOOH UHVLVWHQ]D DOOD SXQWD

9DOXWD]LRQL VWDWLVWLFKH H FRUUHOD]LRQL

(ODERUD]LRQH 6WDWLVWLFD
3HUPHWWH O¶HODERUD]LRQH VWDWLVWLFD GHL GDWL QXPH
YDORUL UDSSUHVHQWDWLYL GHOOR VWUDWR FRQVLGHUDW
GHOOR VWUDWR GDWR FRPXQTXH PDJJLRUPHQWH XWLOL]]L

0HGLD
0HGLD DULWPHWLFD GHL YDORUL GHO QXPHUR GL FROS
GRYH Q q LO QXPHUR GL OHWWXUH

3UHVVLRQH DPPLVVLELOH
3UHVVLRQH DPPLVVLELOH VSHFLILFD VXOO¶LQWHUVWUDWR
DVWH R QR FDOFRODWD VHFRQGR OH QRWH HODERUD]LRQ
GL VLFXUH]]D JHQHUDOPHQWH FKH FRUULVSRQGH D
IRQGD]LRQL SDUL D FRQ XQD JHRPHWULD IRQGDOH VWDQ
G PW

&RUUHOD]LRQL JHRWHFQLFKH WHUUHQL LQFRHUHQWL

/LTXHID]LRQH

3HUPHWWH GL FDOFRODUH XWLOL]]DQGR GDWL 1VSW L

SUHYDOHQWHPHQWH VDEELRVL

$WWUDYHUVR OD UHOD]LRQH GL 6+, 0,1*) VL SHUPHWWH DO IDEELOH D WHUUHQL VDE

ULVXOWD SRVVLELOH VROWDQWR VH 1VSW GHOOR VWU

FDOFRODWR FRQ OD HODERUD]LRQH GL 6+, 0,1*

&RUUH]LRQH 1VSW LQ SUHVHQ]D GL IDOGD

1VSW FRUUHWWR î 1VSW

1VSW q LO YDORUH PHGLR QHOOR VWUDWR

/D FRUUH]LRQH YLHQH DSSOLFDWD LQ SUHVHQ]D GL ID

OD FRUUH]LRQH YLHQH HVHJXLWD VH WXWWR OR VW

$QJROR GL $WWULWR

3HFN +DQVRQ 7KRUQEXUQ 0H\HUKRI &RUUHODQLRQ

PW FRUUHOD]LRQH YDOLGD SHU WHUUHQL YDOLGD SHU YLJKLDLH

VWRULFD PROWR XVDWD YDOHYROH SHU SURI PW

IDOGD WHQVLRQL W PT

0H\HUKRI &RUUHOD]LRQL YDOLGH SHU WHUUHQL D

WHUUHQL GL ULSRUWR VFLROWL H FROWXUL GHWULWLFK

6RZHUV $QJROR GL DWWULWR LQ JUDGL YDOLGR SHU

PW VRSUD IDOGD H PW SHU WHUUHQL LQ IDOGD

'H 0HOOR &RUUHOD]LRQH YDOLGD SHU WHUUHQL SUH

PRGLILFD VSHULPHQWDOH GL GDWL FRQ DQJROR GL D

0DOFHY $QJROR GL DWWULWR LQ JUDGL YDOLGR S

! P H SHU YDORUL GL DQJROR GL DWWULWR ƒ

6FKPHUWPDQQ $QJROR GL DWWULWR JUDGL SHU Y

YDORUL VSHVVR WURSSR RWWLPLVWLFL SRLFKp GHVXQ

6KLRL)XNXQL 52$' %5,'*(63(&,),&$7,21 $QJROR GL

SHU VDEELH VDEELH ILQL R OLPRVH H OLPL VLOWRVL

VRSUD IDOGD H ! PW SHU WHUUHQL LQ IDOGD

6KLRL)XNXQL -$3$1(6(1$7,21$/(5$,/:$< $QJROR G

SHU VDEELH PHGLH H JURVVRODQH ILQR D JKLDLRVH

$QJROR GL DWWULWR LQ JUDGL 2ZDVDNL ,ZDVDNL YD
JURVVRODQH FRQ GLDPHWUR PDVVLPDOL SHU SURI ! PW VRSUD
IDOGD V! W PT
0H\HUKRI &RUUHOD]LRQH YDOLGD SHU WHUUHQL
SURIRQGLWj PW H FRQ GL OLPR ! D SURIRQGLW
0LWFKHOO H .DWWL &RUUHOD]LRQH YDOLGD SHU

'HQVLWj UHODWLYD
*LEEV +ROW] FRUUHOD]LRQH YDOLGD SHU TXDOX
YLHQH VRYUDVWLPDWR SHU OLPL
6NHPSWRQ HODERUDWD VXOOD EDVH GL DPSLH
TXDOXQTXH SUHVVLRQH HIILFDFH SHU JKLDLH LO YDOR
VRWWRVWLPDWR
0H\HUKRI
6FKXOW]H 0HQ]HQEDFK JKLDLD H VDEELD GD PHGLD D
YDORUH GL SUHVVLRQH HIILFDFH LQ GHSRVLWL 1& SHU
SHU OLPL VRWWRVWLPDWR

0RGXOR 'L <RXQJ
7HU]DJKL HODERUD]LRQH YDOLGD SHU VDEELD
SUHVVLRQH HIILFDFH
6FKPHUWPDQQ FRUUHOD]LRQH YDOLGD SHU YDUL
6FKXOW]H 0HQ]HQEDFK FRUUHOD]LRQH YDOLGD SHU Y
' $SSROORQLD HG DOWUL FRUUHOD]LRQH YDOLG
%RZOHV FRUUHOD]LRQH YDOLGD SHU VDEELD DUJ
VDEELD PHGLD VDEELD H JKLDLD

0RGXOR (GRPHWULFR
%HJHPDQQ HODERUD]LRQH GHVXQWD GD HVSHULH
OLPR FRQ VDEELD VDEELD H JKLDLD
%XLVPDQQ 6DQJOHUDW FRUUHOD]LRQH YDOLGD SHU V
)DUUHQW YDOLGD SHU VDEELH WDORUD DQFKH SH
VSHULPHQWDOH GL GDWL
0HQ]HQEDFK H 0DOFHY YDOLGD SHU VDEELD ILQH VDE

6WDWR GL FRQVLVWHQ]D

&ODVVLILFD]LRQH $ * ,

3HVR9RGOLXPH *DPPD

0H\HUKRI HG DOWUL YDOLGD SHU VDEELH JKLDLH OLI

3HVR GL YROXPH VDWXUR

%RZOHV 7HU]DJKL 3HFN &RUUHOD]LRQH YD

PDWHULDOH SDUL D PEUHFDSHU SHVR GL YROXPH VHFFR V

D 1VSW

0RGXOR GL SRLVVRQ

x &ODVVLILFD]LRQH $ * ,

3RWHQ]LDOH GL6OLTXHIDDLRQH

6HHG ,GULVV 7DOH FRUUHOD]LRQH q YDOLGD V

VDEELRVL UDSSUHVHQWD OD UDSSUHVHQWD]LRQH VRU

FRQVROLGD]LRQH SHU OD YDOXWD]LRQH GHO SRWHQ]LD

JKLDLRVL DWWUDYHUVR JUDILFL GHJOL DXWRUL

9HORFLWj RQGH GL WDJOLR

7DOH FRUUHOD]LRQH q YDOLGD VRODPHQWH SHU WHUU

0RGXOR GL GHIRUPD]LRQH GL WDJOLR

2KVDNL ,ZDVDNL ± HODERUD]LRQH YDOLGD SHU VDEEL

5REHUWVRQ H &DPSDQHOOD H ,PDL 7RQRXFKL

SHU VDEELH WHQVLRQL OLWRVWDWLFKH FRPSUHVH WUD

0RGXOR GL UHD]LRQH

1DYIDF HODERUD]LRQH YDOLGD SHU VDEELH

5HVLVWHQ]D DOOD SXQWD GHO 3HQHWURPHWUR 6WDWLFR

5REHUWVRQ 4F

&RUUHOD]LRQL JHRWHFQLFKH WHUUHQL FRHVLYL

&RHVLRQH QRQ GUHQDWD

%HQDVVL 9DQQHOOL FRUUHOD]LRQL VFDWXULWH GD
681'$
7HU]DJKL 3HFN FRUUHOD]LRQH YDOLGD SHU D
DUJLOOH OLPRVH VLOWRVH PHGLDPHQWH SODVWLFI
7HU]DJKL 3H&XN PLQ PD[
6DQJOHUDW GD GDWL 3HQHWU 6WDWLFR SHU WHUUHQ
SHU DUJLOOH VHQVLWLYH FRQ VHQVLWLYLWj ! SHU D
EDVVD SODVWLFLWj
6DQJOHUDW SHU DUJLOOH OLPRVH VDEELRVH SRFR F
SHQHWURPHWULFKH FROSL SHU UHVLVWHQ]H SHQH
FRPXQTXH TXHOOD GHOOH DUJLOOH SODVWLFKH GL 6
8 6 ' 0 6 0 8 6 'HVLJQ 0DQXDO 6RLO 0HFKDQLFV &RH
OLPRVH H DUJLOOH GL EDVVD PHGLD HG DOWD SODVWL
6FKPHUWPDQQ &X .J FPT YDORUL PLQLPL YDOLG
1F H 4F 1VSW
6FKPHUWPDQQ &X .J FPT YDORUL PLQLPL YDOLG
)OHWFKHU $UJLOOD GL &KLFDJR &RHVLRQH QR
YDOLGL SHU DUJLOOH D PHGLR EDVVD SODVWLFLWj
+RXVWRQ DUJLOOD GL PHGLD DOWD SODVWLFLWj
6KLRL)XNXQL YDOLGD SHU VXROL SRFR FRHUHQW
%HJHPDQQ
'H %HHU

5HVLVWHQ]D D3HQHWUD]LRQH VWDWLFD SHU WHUUHQL
5REHUWVRQ 4F

0RGXOR (GRPHWULFR &RQILQDWR

6WURXG H %XWOHU SHU OLWRWLSL D PHGLD SOD
PHGLR DOWD SODVWLFLWj GD HVSHULHQ]H VX DUJLOO

6WURXG H %XWOHU SHU OLWRWLSL D PHGLR EDV
DUJLOORVL D PHGLR EDVVD SODVWLFLWj ,3 GD H
9HVLF FRUUHOD]LRQH YDOLGD SHU DUJLOOH PRO
7URILPHQRY 0LWFKHOO H *DUGQHU 0RGXOR &RQ
SHU OLWRWLSL DUJLOORVL H OLPRVL DUJLOORVL UDS
%XLVPDQQ 6DQJOHUDW YDOLGD SHU DUJLOOH FRPSDV
DUJLOOH VDEELRVH 1VSW

0RGXOR 'L (≪RXQJ

6FKXOW]H 0HQ]HQEDFK 0LQ H 0D[FRUUHOD]LRQH
FRQ , 3 !
' $SSROORQLD HG DOWUL FRUUHOD]LRQH YDOLG

6WDWR GL FRQVLVWHQ]D

&ODVVLILFD]LRQH $ * ,

3HVR9RGLXPH *DPPD
0H\HUKRI HG DOWUL YDOLGD SHU DUJLOOH DUJLOOH

3HVR GL YROXPH VDWXUR
&RUUHOD]LRQH %RZOHV 7HU]DJKL 3HFN
SHVR VSHFLILFR GHO PDWHULDOH SDUL D FLUFD *
1VSW D 1VSW

3529$ 1U

6WUXPHQWR XWLOL]]DWR '36+ 'LQDPLF 3URELQJ 6XSHU +HDY\
3URYD HVHJXLWD LQ GDWD
3URIRQGLWj SURYD PW
)DOGD QRQ ULOHYDWD

7LSR HODERUD]LRQH 1U &ROSL 0HGLR

3URIRQG	1U &R	&DOFRO ULGX]L VRQGD	5HV GL ULGRV .J FPð	5HV GL .J FPð	3UHV DPPLVV FRQ ULC +HUPLQ 2ODQG .J FPð	3UHV DPPLVVLELOH +HUPLQLHU 2ODQGHVL .J FPð

67,0$ 3$5$0(75, *(27(&1,&, 3529$ 1U

7(55(1, ,1&2(5(17,
'HQVLWj UHODWLYD

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	'HQVLWj UHODWL
> @ 6WUI				6NHPSWF	
> @ 6WUI				6NHPSWF	
> @ 6WUI				6NHPSWF	
> @ 6WUI				6NHPSWF	

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

$QJROR GL UHVLVWHQ]D DO WDJOLR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	$QJROR G DWWUI f
> @ 6WUI				6KL)RXLN XQL 52$' %5,' 63(&,),&$7	
> @ 6WUI				6KL)RXLN XQL 52$' %5,' 63(&,),&$7	
> @ 6WUI				6KL)RXLN XQL 52$' %5,' 63(&,),&$7	
> @ 6WUI				6KL)RXLN XQL 52$' %5,' 63(&,),&$7	

0RGXOR (GRPHWULFR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	0RGXOR (GRPHWULFR .J FPð
> @ 6WUI				%HJHPDQ *KLDL VDE	
> @ 6WUI				%HJHPDQ *KLDL VDE	
> @ 6WUI				%HJHPDQ *KLDL VDE	
> @ 6WUI				%HJHPDQ *KLDL VDE	

&ODVVLILFD]LRQH $*,

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	&ODVVLILFD]LRQ $*,
> @ 6WUI				&ODVVLI $ * ,	6&,2/72
> @ 6WUI				&ODVVLI $ * ,	32& $''(16$72
> @ 6WUI				&ODVVLI $ * ,	02'(5$7$0(17($''(16$72
> @ 6WUI				&ODVVLI $ * ,	02/72 $''(16$72

3HVR XQLWj GL YROXPH

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	*DPPD W Pñ
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	

3HVR XQLWj GL YROXPH VDWXUR

'HVFUL]LR	1VSW	3URI 6W	1VSW FRU	&RUUHOD	*DPPD 6DWXUR

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

		P	SUHVHQ]I		W Pñ
> @ 6WUI				7HU]D3JH	
> @ 6WUI				7HU]DHH	
> @ 6WUI				7HU]D3JH	
> @ 6WUI				7HU]D3JH	

0RGXOR GL 3RLVVRQ

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	3RLVVRQ
> @ 6WUI				$ *	
> @ 6WUI				$ *	
> @ 6WUI				$ *	
> @ 6WUI				$ *	

0RGXOR GL GHIRUPD]LRQH D WDJOLR GLQDPLFR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	* .J FPð
> @ 6WUI				2KVDNL SXO	
> @ 6WUI				2KVDNL SXO	
> @ 6WUI				2KVDNL SXO	
> @ 6WUI				2KVDNIE I SXO	

3529$ 1U

6WUXPHQWR XWLOL]]DWR '36+ 'LQDPLF 3URELQJ 6XSHU +HDY\
3URYD HVHJXLWD LQ GDWD
3URIRQGLWj SURYD PW
)DOGD QRQ ULOHYDWD

7LSR HODERUD]LRQH 1U &ROSL 0HGLR

3URIRQG	1U &R	&DOFRO ULGX]LR &KL	5HV GL ULGRW .J FPð	5HV GL .J FPð	3UHV DPPLVVL ULGX]L +HUPLQ 2ODQG .J FPð	3UHV DPPLVVLELOH +HUPLQLHU 2ODQGHVL .J FPð

67,0$ 3$5$0(75, *(27(&1,&, 3529$ 1U

7(55(1, ,1&2(5(17,
'HQVLWj UHODWLYD

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	'HQVLWj UHODWL
> @ 6WUI				6NHPSWR	
> @ 6WUI				6NHPSWR	
> @ 6WUI				6NHPSWR	
> @ 6WUI				6NHPSWR	

$QJROR GL UHVLVWHQ]D DO WDJOLR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	$QJROR G DWWUI ƒ
> @ 6WUI				6KLIRXLNXQL 52$' %5,' 63(&,),&$7	
> @ 6WUI				6KLIRXLNXQL 52$' %5,' 63(&,),&$7	
> @ 6WUI				6KLIRXLNXQL 52$' %5,' 63(&,),&$7	

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

> @ 6WUI				6KLIRXLNXQL 52$' %5,' 63(&,),&$7	

0RGXOR (GRPHWULFR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	0RGXOR (GRPHWULFR .J FPð
> @ 6WUI				%XLVPDQ (	W
> @ 6WUI				%XLVPDQ (	W
> @ 6WUI				%XLVPDQ (	W
> @ 6WUI				%XLVPDQ (	W

&ODVVLILFD]LRQH $*,

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	&ODVVLILFD]LRQ $*,
> @ 6WUI				&ODVVLI $ * ,	32&2 $''(16$72
> @ 6WUI				&ODVVLI $ * ,	02'(5$7$0(17($''(16$72
> @ 6WUI				&ODVVLI $ * ,	$''(16$72
> @ 6WUI				&ODVVLI $ * ,	02/72 $''(16$72

3HVR XQLWj GL YROXPH

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	*DPPD W Pñ
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	
> @ 6WUI				0H\HUKRI	

3HVR XQLWj GL YROXPH VDWXUR

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	*DPPD 6DWXUR W Pñ
> @ 6WUI				7HU]D3JH	
> @ 6WUI				7HU]D3JH	
> @ 6WUI				7HU]D3JH	
> @ 6WUI				7HU]D3JH	

0RGXOR GL 3RLVVRQ

'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	3RLVVRQ
> @ 6WUI				$ *	
> @ 6WUI				$ *	
> @ 6WUI				$ *	
> @ 6WUI				$ *	

0RGXOR GL GHIRUPD]LRQH D WDJOLR GLQDPLFR

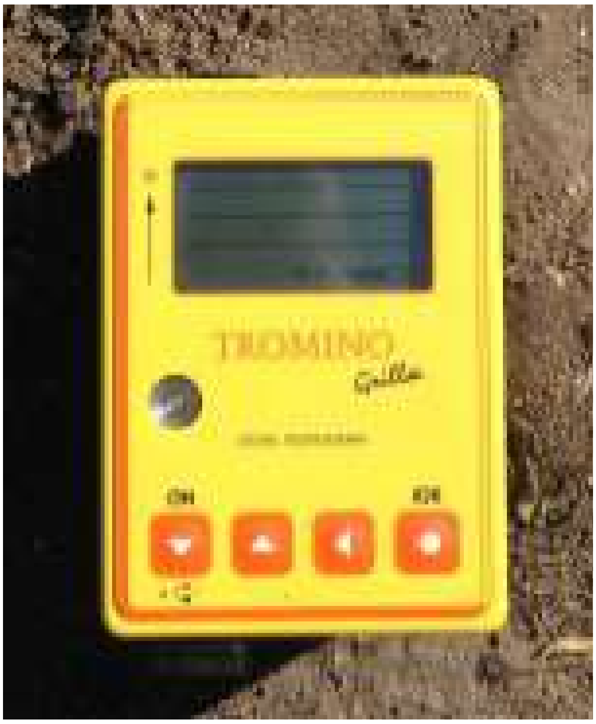
'HVFUL]LR	1VSW	3URI 6W P	1VSW FRU SUHVHQ]I	&RUUHOD	* .J FPð
> @ 6WUI				2KVDNL SXO	

678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

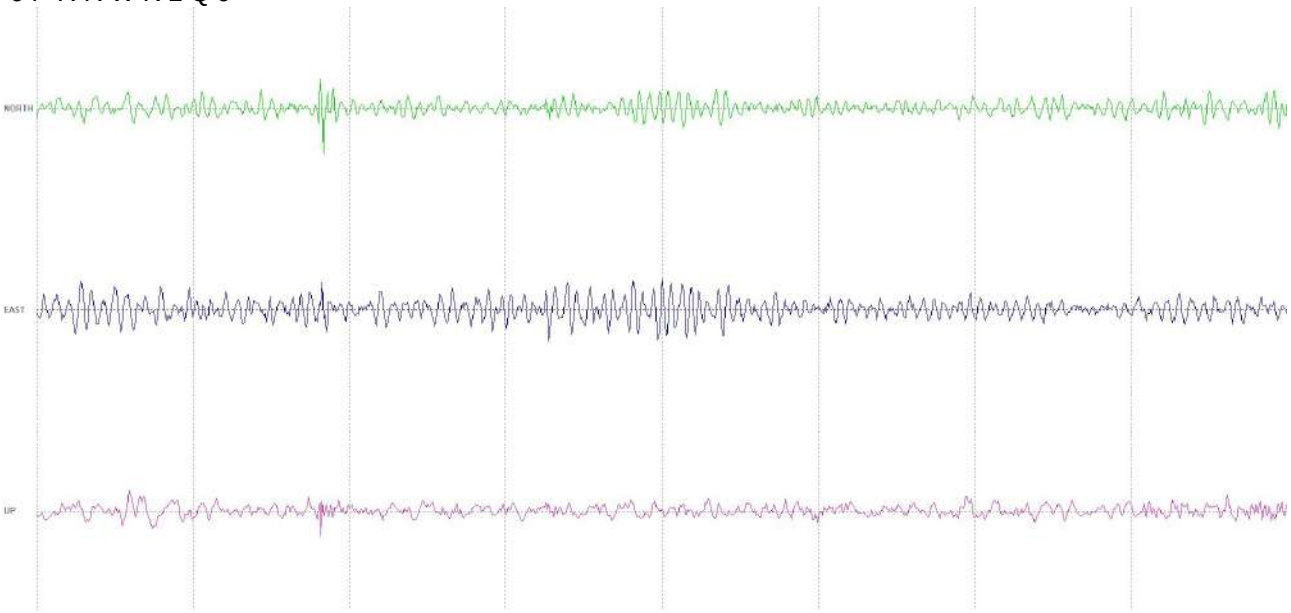
> @ 6WUI				2KVDNL SXC	
> @ 6WUI				2KVDNL SXC	
> @ 6WUI				2KVDNL SXC	

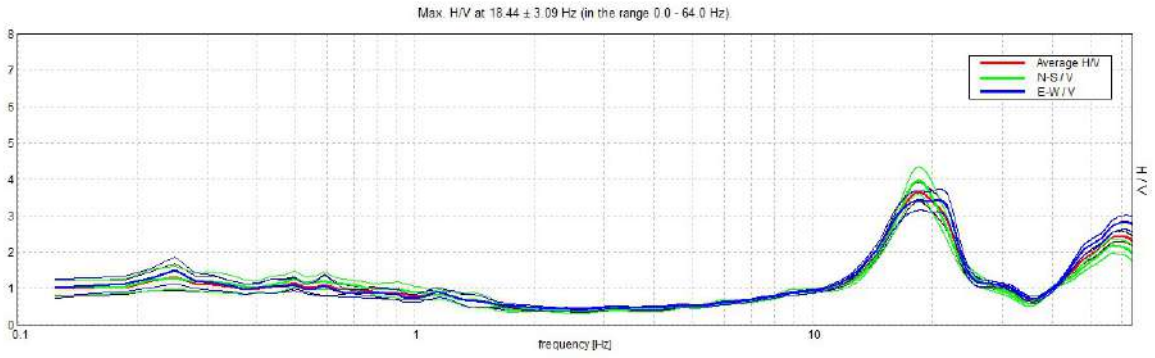
6,60,&$ +965

/H SURYH VLVPLFKH D ULIOHVVLRQH PXOWLSOD GHO WLSR
HIIHWWXDWH SHU PH]]R GL XQ WURPRJUDIR GLJLWDOH
O DFTXLVL]LRQH GHO UXPRUH VL &2/2 5('$ VL VWUXPHQWR
GL SHUVRGRWDWR GL WUH VHQVRUL HOHWWURGLQDPLFL YH
DOLPHQWDWR GD EDWWHULH $$ GD 9 H VHQ]D FDYL HV
D ELW HTXLYDOHQWL VRQR VWDWL DFTXLVLWL DOOH IU
DYHUH LQIRUPD]LRQL VX IUHTXHQ]H PDVVLPH GL +] 6L
TXDOH OD PDVVLPD IUHTXHQ]D UHJLVWUDELOH HG XQ GLVFU
GHO VHJQDOH VWHVVR ,O ULVXOWDWR ILQDOH FRQVLVW
FLDVFXQD ILQHVWUD H QHOO LQWHUSUHWD]LRQH VHFRQ
IRQGDPHQWDOH GL ULVRQDQ]D GHO WHUUHQR GL IRQGD]L
GHL UDSSRUWL VWUDWLJUDILFL KD SHUPHVVR OD FODVVLI
' 0 H GHOOD &LUFRODUH GHO & 6 // 33 Q GHO
+965

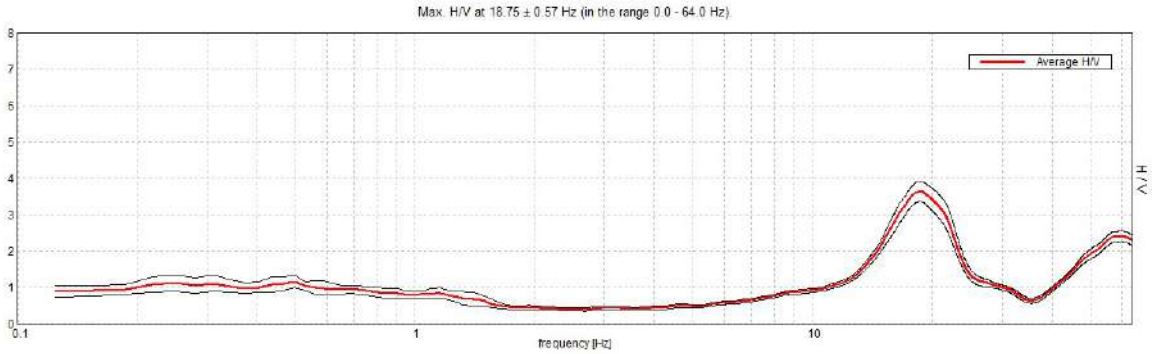


6(55$&$35,2/$)+*965
,QVWUXPHQW 75=
'DWD IRUPDW E\WH
)XOO VFDOH >P9@ Q D
6WDUW UHFRUGLQJ (QG UHFRUGLQJ
&KDQQHO ODEHOV 1257+ 6287+ ($67 :(67 83 '2:1
7UDFH OHQJWK K $QDO\VLV SHUIRUPHG RQ WKH HQWLUH
6DPSOLQJ UDWH +]
:LQGRZ VL]H V
6PRRWKLQJ W\SH 7ULDQJXODU ZLQGRZ
6PRRWKLQJ





+25,=217$/ 72 9(57,&$/ 63(&75$/ 5$7,2



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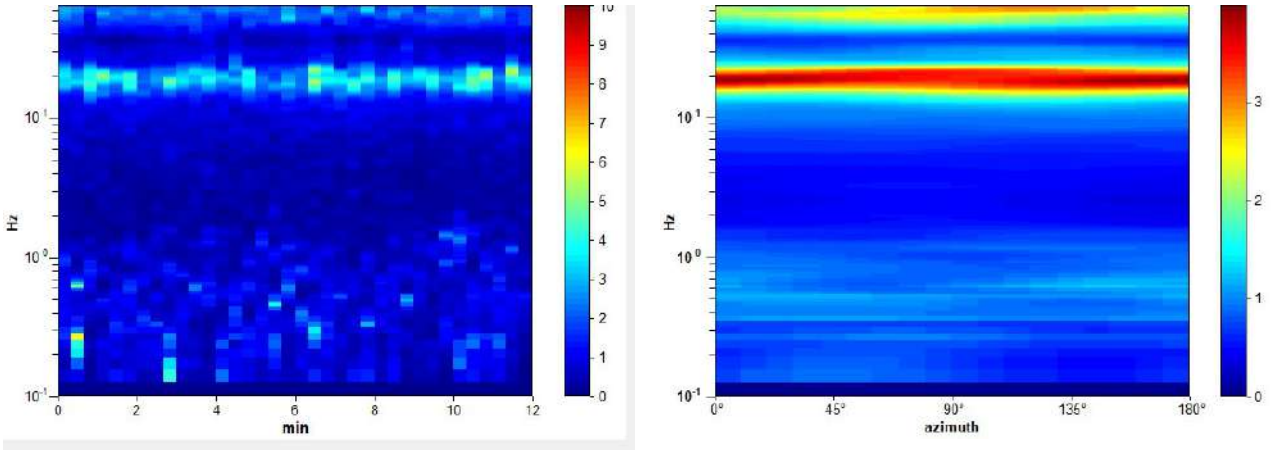

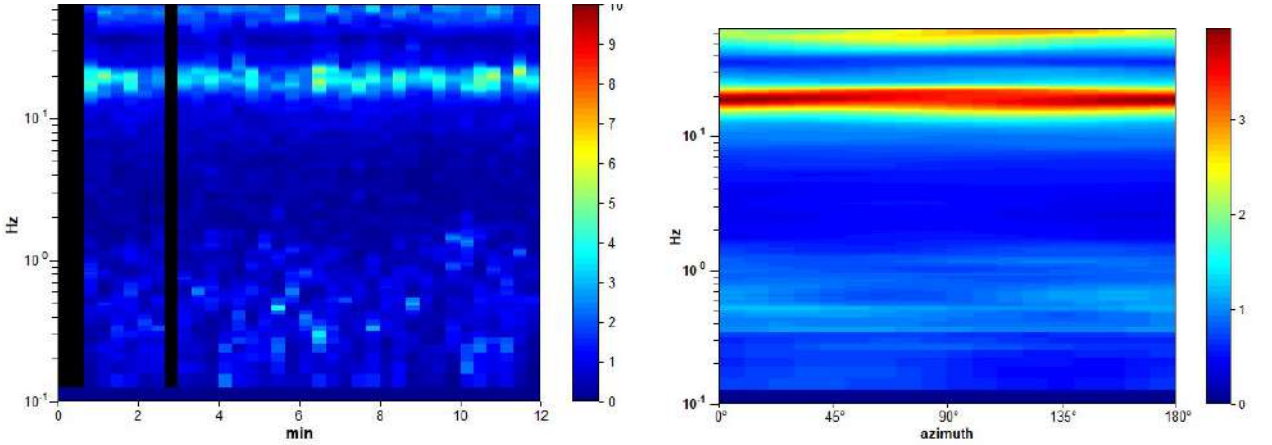

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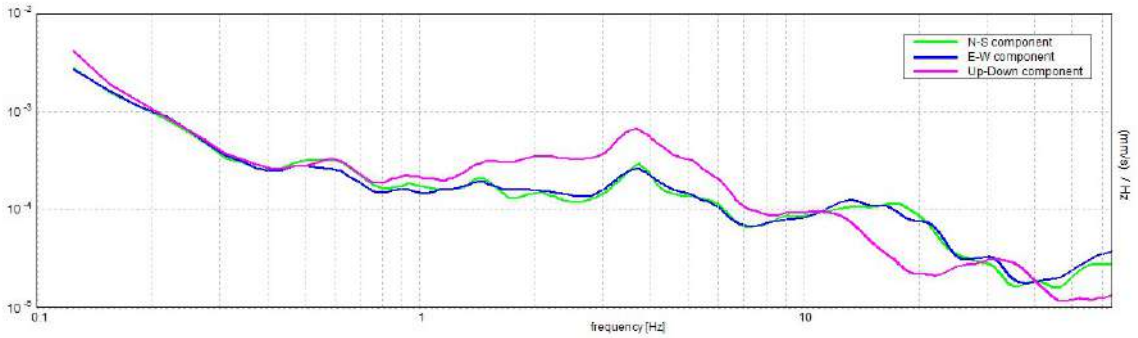
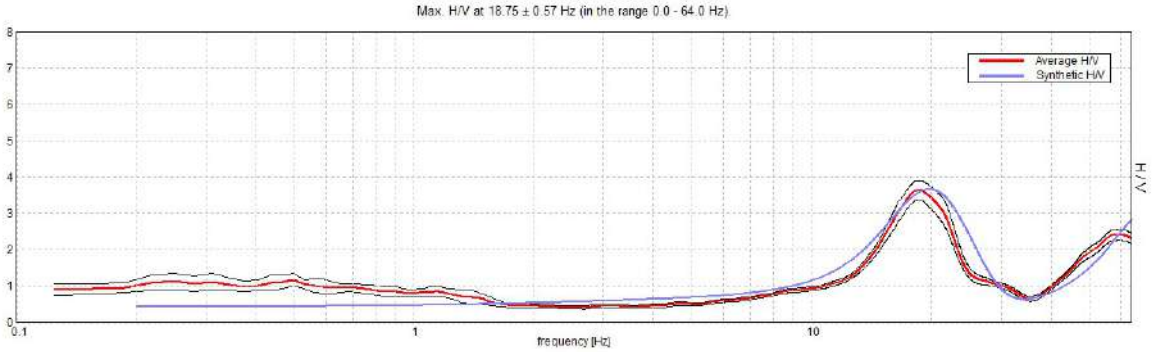


(;3(5,0(17$/ YV 6<17+(7,& + 9



678',2 ', *(2/2*,$ *(27(&1,&$ 6,60,&$

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LQI	LQI	

9VBHT P V

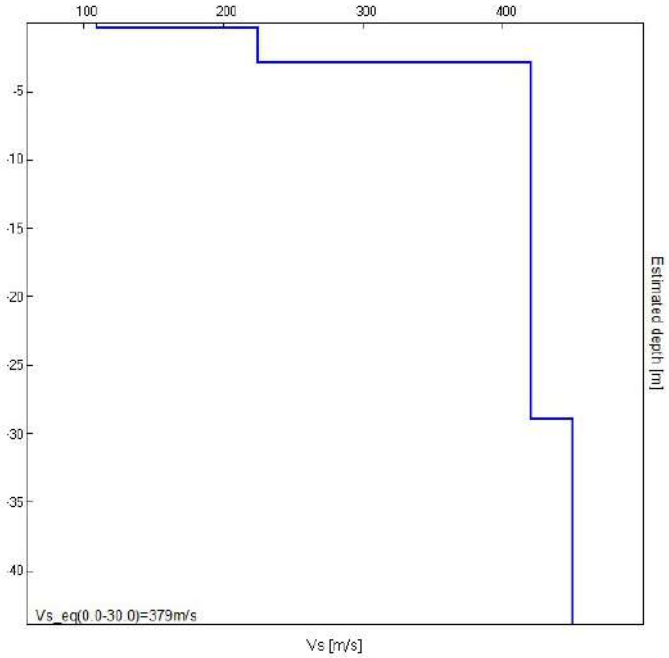


Tabella 1. Velocità caratteristiche delle onde S nei vari tipi di suolo [cfr. Borcherdt, 1994]

TIPO DI SUOLO	V_S min [m/s]	V_S media [m/s]	V_S max [m/s]
ROCCE MOLTO DURE (es. rocce metamorfiche molto poco fratturate)	1400	1620	-
ROCCE DURE (es. graniti, rocce ignee, conglomerati, arenarie e argilliti, da mediamente a poco fratturati)	700	1050	1400
SUOLI GHIAIOSI e ROCCE DA TENERE A DURE (es. rocce sedimentarie ignee, tenere, arenarie, argilliti, ghiaie e suoli con > 20% di ghiaia)	375	540	700
ARGILLE COMPATTE e SUOLI SABBIOSI (es. sabbie da sciolte a molto compatte, limi e argille sabbiose, argille da medie a compatte e argille limose)	200	290	375
TERRENI TENERI (es. terreni di riempimento sotto falda, argille da tenere a molto tenere).	100	150	200

>$FFRUGLQJ WR WKH 6(6$0 (3OHDVH UHIHU WR WKH HIRUH LQWHUS... *XLGHOLQHV DQG D IXUWKHU GHWDLOHG H[SODQDWLRQ DW *ULOOQD\ WKH IROORZLQJ WDEOHV @

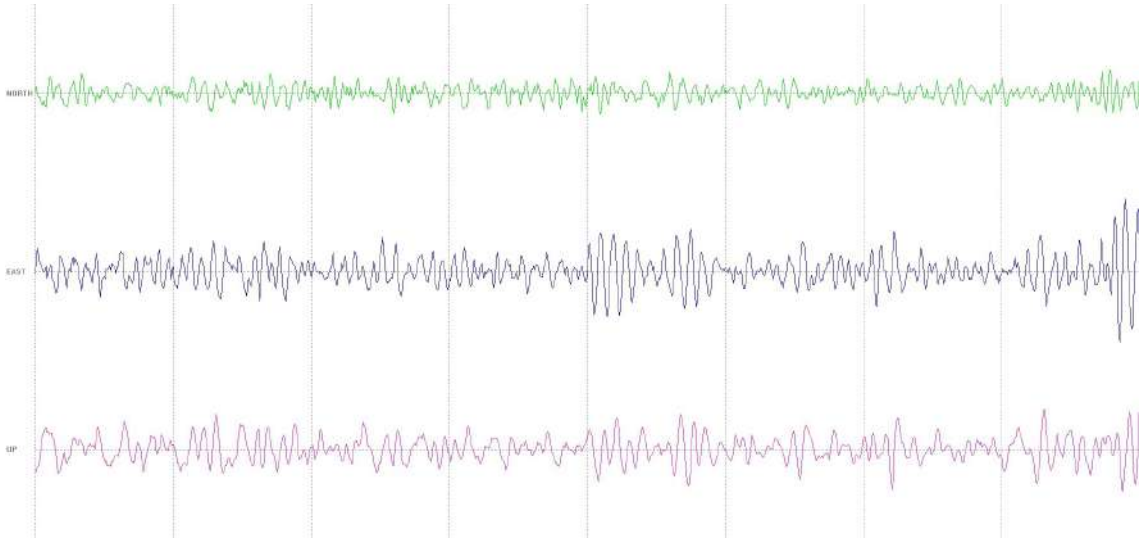
0D[+ 9 DW " +] LQ WKH UDQJH +]

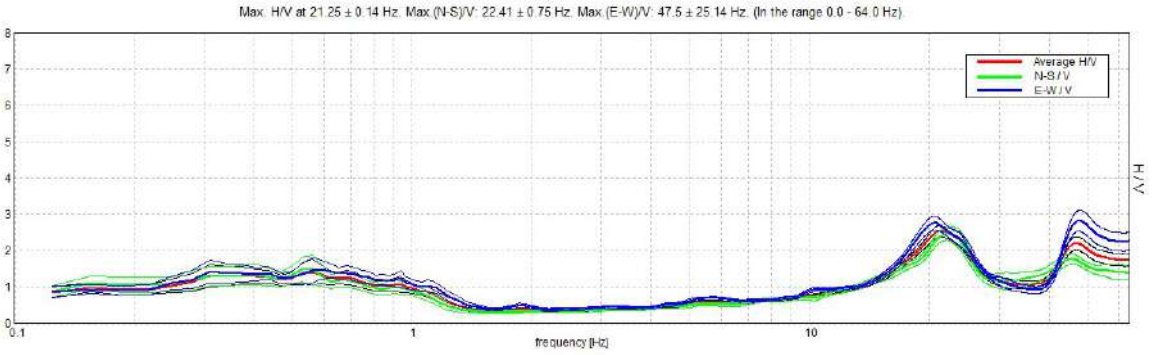
&ULWHULD IRU D UHOLDEOH + 9 FXUYH >$OO VKRXOG EH IXOILOOHG@			
! z	!	2.	
(!	!	2.	
V$ I IRU I I LI !I +] V$ I IRU I I LI I +]	([FHHGHG RXW RI	2.WLPHV	
&ULWHULD IRU D FOHDU + 9 SHDN >$W OHDVW RXW RI VKRXOG EH IXOILOOHG@			
([LVW LQ @ +	+]	2.	
([LVW LQ (_ +	+]	2.	
$!	!	2.	
ISH >$ I V$ I @ " I	_ _	2.	
V HI		2.	
V$ I T I		2.	

/z	ZLQGRZ OHQJWK
Qz	QXPEHU RI ZLQGRZV XVHG LQ WKH DQDO\VLV
Qc /z Q I	QXPEHU RI VLJQLILFDQW F\FOHV
I	FXUUHQW IUHTXHQF\
I	+ 9 SHDN IUHTXHQF\
VI	VWDQGDUG GHYLDWLRQ RI + 9 SHDN IUHTXHQF\
HI	WKUHVKROG YDOXH IRU WKH VWDELOLW\ FRQGLWLRQ
$	+ 9 SHDN DPSOLWXGH DW IUHTXHQF\ I
$+ 9 I	+ 9 FXUYH DPSOLWXGH DW IUHTXHQF\ I
I ±	IUHTXHQF\ EHWZHHQ IZKLFK $$
I	IUHTXHQF\ EHWZHHQ IZKLFK $$
V$ I	VWDQGDUG GHYLDWLRQ RI $+ 9 I WKH IDFWRU E\ ZKLFK WKH PHDQ FXUYH VKRXOG EH PXOWLSOLHG RU GLYLGHG
VORJ+ 9 I	VWDQGDUG GHYLDWLRQ RI WKH ORJ $+ 9 FXUYH
T I	WKUHVKROG YDOXH IRU WKH VWDELOLW\ FRQGLWLRQ

7KUHVKROG YDOXHV IRU V DQG V$					
)UHT UDQJH >+]@			±	±	±
HI >+]@	I	I	I	I	I
T I IRU V$ I					
ORJ T I IRU VORJ I					

6(55$&$35,2/$)+*965
,QVWUXPHQW 75=
'DWD IRUPDW E\WH
)XOO VFDOH >P9@ Q D
6WDUW UHFRUGLQJ (QG UHFRUGLQJ
&KDQQHO ODEHOV 1257+ 6287+ ($67 :(67 83 '2:1
7UDFH OHQJWK K $QDO\VLV SHUIRUPHG RQ WKH HQWLUH
6DPSOLQJ UDWH +]
:LQGRZ VL]H V
6PRRWKLQJ W\SH 7ULDQJXODU ZLQGRZ
6PRRWKLQJ





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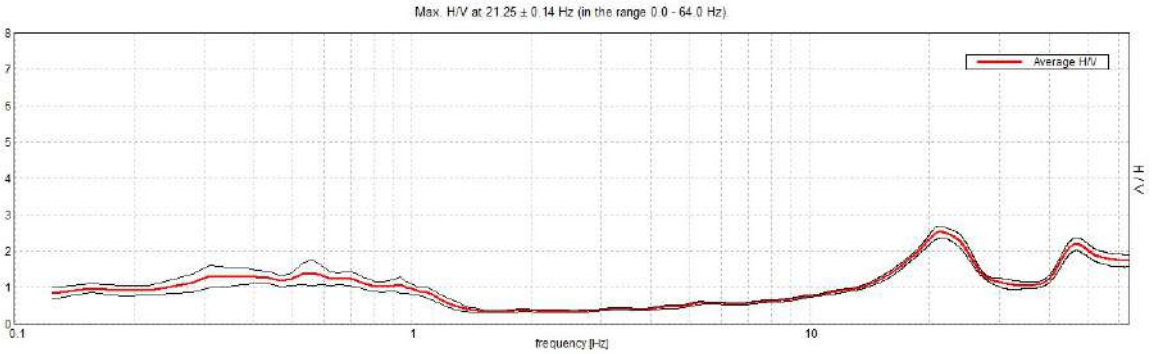

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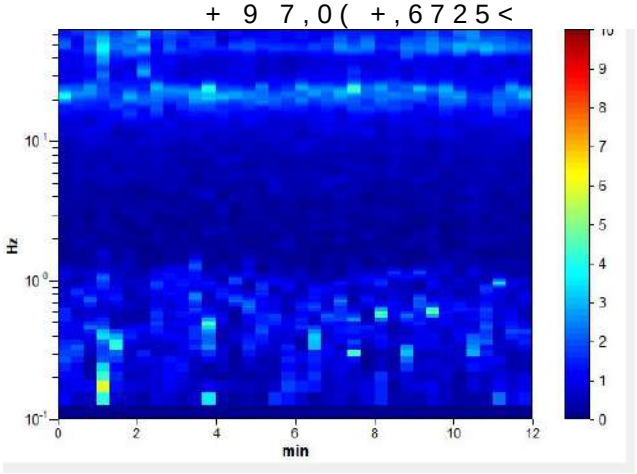

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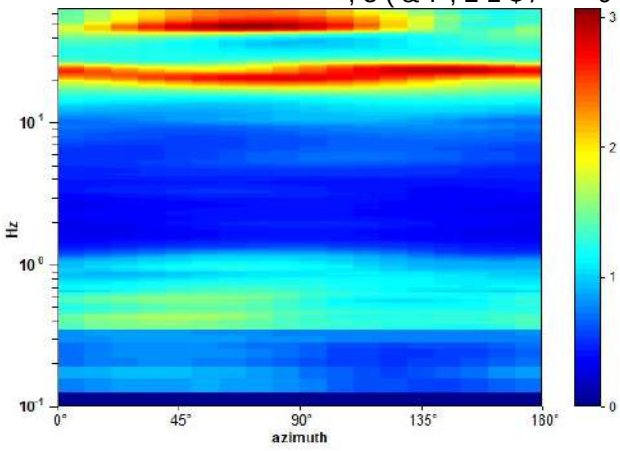

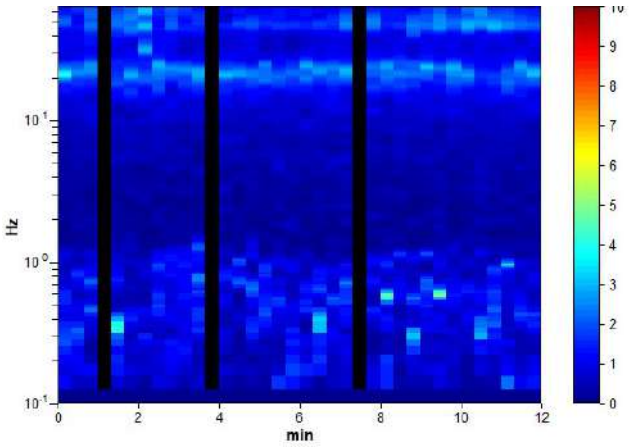

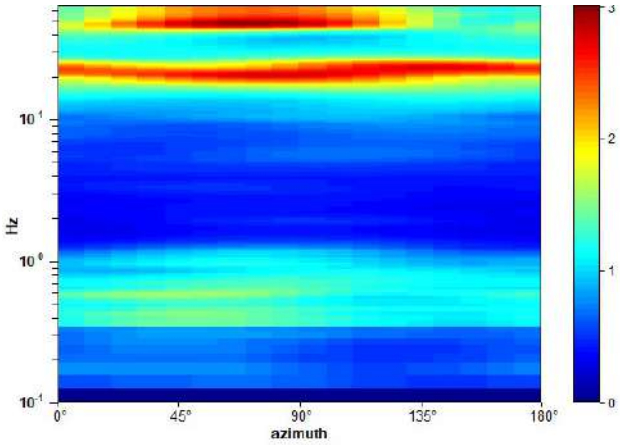

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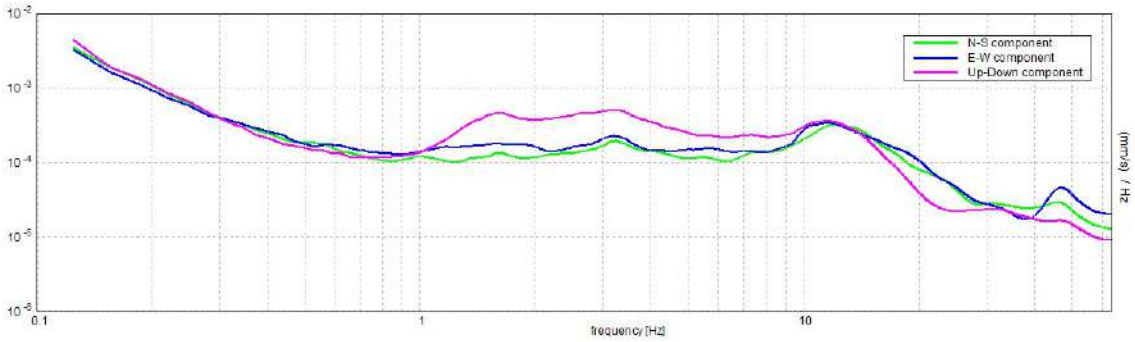

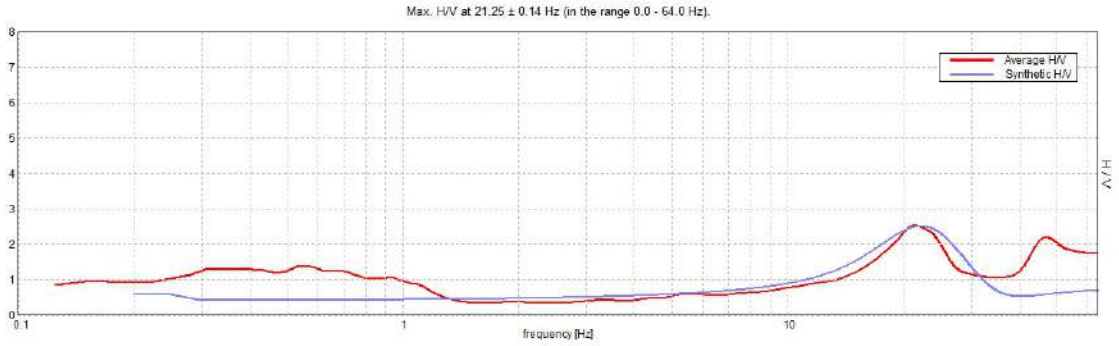

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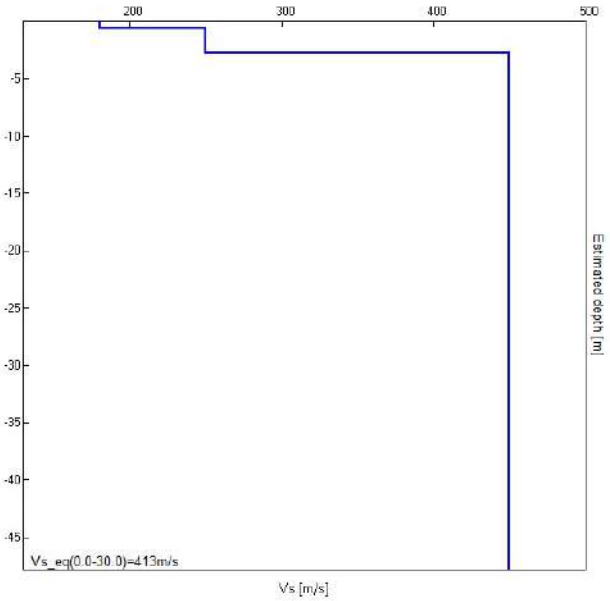
3URIRQG	6SHVVRUH VLV	9HORFLWj RQGH 9V P V
LQI	LQI	

9VBHT P V



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>$FFRUGLQJ WR WKH 6(6$0(3OHDVH XVH GHILQLWLRQV ... *UL0DOD ... LQWHUSUHWLQJ WKH@ROORZLQJ WDEOHV

0D[+ 9 DW “ +] LQ WKH UDQJH +]

&ULWHULD IRU D UHOLDEOH + 9 FXUYH >$OO VKRXOG EH IXOILOOHG@			
! z	!	2.	
(c !	!	2.	
V_A I IRU I I LI !I +] V_A I IRU I I LI I +]	([FHHGHG RXW RI WLPHV	2.	
&ULWHULD IRU D FOHDU + 9 SHDN >$W OHDVW RXW RI VKRXOG EH IXOILOOHG@			
([LVW LQ @ +	+]	2.	
([LVW LQ @ +	+]	2.	
$!	!	2.	
I_SH >$ I V_A I @ “ I	_ _	2.	
V HI		2.	
V_A I T I		2.	

l_w	ZLQGRZ OHQJWK
n_w	QXPEHU RI ZLQGRZV XVHG LQ WKH DQDO\VLV
n_c $l_w n_w I$	QXPEHU RI VLJQLILFDQW F\FOHV
I	FXUUHQW IUHTXHQF\
I	+ 9 SHDN IUHTXHQF\
V_f	VWDQGDUG GHYLDWLRQ RI + 9 SHDN IUHTXHQF\
HI	WKUHVKROG YDOXH IRU WKH VWDELOLW\ FRQGLWLRQ
$	+ 9 SHDN DPSOLWXGH DW IUHTXHQF\ I
$_{H/V}$ I	+ 9 FXUYH DPSOLWXGH DW IUHTXHQF\ I
I±	IUHTXHQF\ EHWZHHQ ... ZKLFK $$
I	IUHTXHQF\ EHWZHHQ ... ZKLFK $$
V_A I	VWDQGDUG GHYLDWLRQ RI $ ... WKH VWDQGDUG GHYLDWLRQ VKRXOG EH PXOWLSOLHG RU GLYLGHG
$V_{ORJH/V}$ I	VWDQGDUG GHYLDWLRQ RI ORJ $ ...
T I	WKUHVKROG YDOXH IRU WKH VWDELOLW\ FRQGLWLRQ

7KUHVKROG YDOXHV IRU V_f DQG V_A					
)UHT UDQJH >+]@			±	±	±
HI >+]@	I	I	I	I	I
T I IRU V_A I					
ORJT I IRU V_{ORJ} I					