

!"#\$%&'()*+,-./:;<=>?@

G!!2#=/0!#\$1427'3#3103/7!3';#*5!0':94\$%136/145/':%48#:0!7':4348#:0!
#\$5!8):3)*#:18'\$.:483!36#3!:/5!3'!36/!3'*74543?!'.!*/7#*#34'\$!/'.. '*30,!D6*')%6!
4\$3/*540847:4\$#*?*/0/#*86G!36/!>' '=!/ 276#04</0!36#3!0'84#:#!6/#:4\$%136*')%6!
A)0348/!40!)%/\$3:?!\$//5/5!3'!0' '36/!36/!5//7!0'***';!#\$5!6/#:136/!7#4\$!:/..3!>?!
36/!/\$ '*2')0!0:#)%63/*0!;')\$50G!#\$5!:/36#*%?!'.!:'\$%&3/*2!3*#)2#18#)0/5!>?!
36/!M6/A)!N@/A)0!2#00#8*/0!.*'2!PQRS!3'!PQTR,-!'

U6#3!40!\$//5/5!3'!8)*!/!0/*4')0!#\$5!%*#9/!6)2#\$!*4%630!94':#34'\$0G!0)86!
#0!2#00#8*/V!+!>:/:4/9/!36#3!0'84#:#!6/#:4\$%136*')%6!A)0348/!7*7'0/5!>?!
1#2#2'3'!40!#!948342&8/\$3/*5!0':)34'\$!3'!%*'00!6)2#\$!*4%630!94':#34'\$0!'\$!
#!:#*%/!08#:/G!0)86!#0!36/!2#00#8*/!'!.!8494:4#\$0G!#0!;/::!#0!#\$!/'..8349/!
#77*'#86!3'!*/7#*#34'\$!#\$5!*/8'\$84:4#34'\$!4\$!36/'*?!#\$5!4\$!7*#8348/,,!E>'9/!
#::G!8494:4</5!2/2>/*0!'!.!0'84/3?!2)03!7#*34847#3/!#\$5!#77*'#86!36/0/!
94':#34'\$0!.*'2!#!\$;/;!7/*07/8349/,,!+0!

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"?\$% 2#\$! B6//! / 24%*#3/5!3'!36/! X,";!4\$! PQ\R! ; 436!36/!6/:7! '!.! C4\$!
 1 ')\$%&6 ; #G! #! H'*/#\$! %'9/*\$2/\$3! '..484#:\$/#*! 36/! /\$5! '!.! 36/!@'0/'\$!
 I ?\$#03?,!!B6//J0!7:#\$! ; #0!3'!03'7!36/!@#7#\$/0/!#%*/004'\$! ; 436!36/!6/:7! '!.!
 36/!X,"^{#B}!+!\$!PQ\T0!B6//!#77/#:/5!3'!X,";!-*/045/\$3!D6/'5'*/!B' '0/9/:3!3'
 0)77' *3!H'*/#J0!4\$5/7/\$5/\$8/G!>)3!6/!0/\$0/5!36#3!36/! X,";! -*/045/\$3!6#5!
 36' *')%6:?!5/8/49/5!642,[#]!+!\$!PQPQG! B6//!3*4/5!3'!#33/\$5!36/! -#*40! - /#8/
 M'\$.*/\$8/!#0! -*/045/\$3! '!.!36/! -*'9404'\$#:!L'9/*\$2/\$3! '!.!36/!B/7)>:48! '!.!
 H'*/#!>)3! ; #0!)\$#>:/!3'!A'4\$!>/8#)0/! '!.!'77'0434'\$!>?!4\$3/*\$#34'\$#:!]>4%!

!"#\$%&'!\$()*+, &*(' - . ' &

/7/#3/5:?!#0=/5!X,"!"/8/3#*?!'!"3#3!/M'*5/::!()::!3'!0)77'*3!36!/H'*/#\$!
%'9/*\$2/\$3!4\$!.4%634\$%!. '*!36/!4\$5/7/\$5/\$8/!'!.!H'*/#,#/!
+\$!@)\$!/PQRPG!-*/045/\$3!H42!H' '!*/4\$03#3/5!"?\$%2#\$!B6!/G!;6'!;#0!4\$!
36/!X,"G!#\$5!0)>2433/5!36/!8*/5/\$34#:0!'!.!36/!'..484#:#*/7*/0/\$3#349/!'!.!36/!

'.!%*/#3!7' ;/*0,\$-!! (' ; /9/*0! -*/045/\$3!B' '0/9/:3!545!\$ '3!8' \$0):3! ; 436! '*!
\$'34.?!#\$?#H'*/#\$7/'7:/'! !.640!9404'\$,\$-!!D640!*/8=:/00\$/00!#\$5!' 24004'\$!545!
\$'3!*/07/83!36/!9#:)!/\$5!074*43! ' !:4>/*#:!4\$3/*\$#34' \$#:40 2 !36#3!36/!X," ,! ; #0!
7*')5! '.0! #5\$! /00/\$34#::?! 0/*9/5! #0! #! 5/\$4#;! ' ! H'*/#J0! *4%63! 3'! 0/:.&
5/3/*24\$#34'\$,!

-*/045/\$3!B' '0/9/:3!#\$5!" '94/3! -*/045/\$3!@'0/76! a400#*4'\$ '9486!"3#:4\$!
9/*>#:?!#%*/5!#3!36/!1#:3#M'\$./*/\$8/!4\$! [/>*)#*?!PQRT!36#3!36/!X," ,!#\$5!
" '94/3!X\$4'\$! ; '):5!54945/!36/!H'*/#\$! -/\$4\$0):#!4\$3!'!')36!#\$5!Z' *360!#\$5!
36/!" '94/3!X\$4'\$! ; '):5! '88)7?!36/!\$ '36/*\$!7#*3!' .!36/!H'*/#\$! -/\$4\$0):#!
; 64:/!36/!X," ,! ; '):5!54945/!#\$5!'88)7?!" ')36!H'*/#\$, \$/!!U 64:/!7*/7#*4\$%! . '*!
36/! 1#:3#M'\$./*/\$8/0!36/!X," ,! "3#3/! I /7#*3 2 /\$3!36')%63!36#3!36/!H'*/#\$!
-/\$4\$0):#! ; #0!\$ '364\$%! 2 '*/!36#3!8':#3/*#:. '*!\$/% '34#34'\$0,\$0!!D6/!X," ,!6#5!
36/!4\$3/\$34'\$!' .'88)7?4\$%!#\$5!549454\$%!36/!H'*/#\$! -/\$4\$0):#!# 2 '\$%!0/9/*#:
8')\$3*4/0,\$1!! I /0743/!7/*8/494\$%!B)004#!#0! #!_) /034'\$#>:/!\$#34'\$G!4\$!'*5/*!3'
#864/9/!36/!%#:#!' !. ; 4\$4\$%! U '*:5! U #*!+! ; 64:/! 24\$424<4\$%!36/!5#2#%/!3'
36/!X," ,! 24:43#*?0! -*/045/\$3!B' '0/9/:3!A'4\$5!6#50! ; 436!36/!5/94!#\$5!#0=/5!
"3#:4\$!3' !7#*34847#3/!4\$!36/! [#*!Y#03! [* '\$3!3' !#9'45!36/!:#*%/*!*40=! ' !: '04\$%!36/!
; #*, \$2!

"4\$8/!/##:?!PQRRG!X," ,! I /7#*3 2 /\$3! ' ! I /./0/!#\$5!"3#3/! I /7#*3 2 1793.035- 17TJETQ0.43 (1) 10659



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!"#\$%&'!\$()*+, &*(' - . ' &

4\$!36/!.)3)*, %#!X, ", %'9/*\$2/\$3!'.484#:0!/** '\$/')0:?!5/845/5!36#3!43!40!>/33/#!
\$'3!3'!#77*'9/!36/!-*'940'\$#:!L'9/*\$2/\$3!'!36/!B/7)>:48!'!H'*/#,
+\$!E7*4:!PQRTG!X, ", !Z#9?!M64/!.!'!'! "3#..!@#2/0! ['**/03#:#\$5!E*2?!
"/8*/3#*?!(/\$*?! "3420'\$!)%*/5!36/!X, ", ! "3#3/! I /7#*32/\$3!3'!#>#\$5'\$!36/!
9#%)/!\$'34'\$!'!3*)03//0647!#\$5!8' 27:/3/:?! '88)7?136/!3/**43'*4/0!0')%63!>?!
36/!X, ", %\$!!! "6'*3:?!#.3/#!

` 88)7#34 '\$!2)03!>/!3/ 27 '*#*?#5!\$ '3#83#015 ' 24#\$3!03#3/!7 ' ; /,*!!D6/!
 400)/! ; #0! ; 6/36/*!36/!X," ,!'88)7#34 '\$! ' .!')36!H'*/#! ; #0!A)034.4/5!)\$5/!
 4\$3/*\$#34 '\$#!:# ; ,!! I 45!36/!X," ,! 24:43#*?!94/ ; !36/!H'*/#\$! - /\$4\$0):#!#0!#\$!
]'88)74/5^!#*/#V!!` *! ; #0!43!0//!\$#0#!]:4>/*#3/5^!#*/#V!!D6/!X," ,!4\$8:)5/5!36/!
 H'*/#\$!- /\$4\$0):#!4\$!36/!8#3/% '*?!' .!'88)74/5!3/**43 '*?!/9/\$!36')%6!36/!M#4* '!
 I /8:#*#34 '\$!06'):5! 6#9/! 8:/#*:*?!03#3/5! 36#3! H'*/#!06'):5! >/!3*/#3/5!#0!#!
]:4>/*#3/5^! */%4 '\$,^\$! ! D6/! X," ,! 545! \$ '3! /9/\$! 54034\$%)406! >/3 ; //!\$! 36/!
]'88)74/5^!#\$5!]:4>/*#3/5^!#*/#0!' .!36/!H'*/#\$!- /\$4\$0):#,-^!

('5%/J0!7 ':48?!#5940/*!540#%*/5! ; 436!36/!X," ,!-*/045/\$3J0!7:#\$! . '*!36/!
 .)3)*/! .!36/!H'*/#\$!- /\$4\$0):#!! (/!* /7 '*3/5!3'!36/!"/8*/3#*?!' .!'3#3/!36#3!6/!
 >/:4/9/5G! .* ' 2!>'36!] 2 '*#!#5!7*#8348#:#03#\$57 '4\$300^!36#3!36/!8 '\$8/73! ' .!
 3*)03//0647!8'):5!\$'3!>/!#77:4/5!3'!36/!H'*/#\$!- /\$4\$0):#0!#\$5!36#3!43!06'):5!
 >/!5*'77/5,-^!!E! 2 '\$36!>/ . '*!/36/!C '08' ; !D*47#*343/!M '\$./*/\$8/G! ('5%/!
 8' 2 2/\$3/5!3'!36/!@'4\$3!M64/.0! ' .!'3#...!36*')%6! C8E*36)*e!]H'*/#0! ; #3!
 4\$5/7/\$5/\$8/! 2 '*!/!36#\$!#\$?364\$%#\$5! ; #3!43! \$ ' ; !,!,!,!,! D6/!043)#34 '\$!4\$!
 "')36! H'*/#! 2#=#0! /W3*/ 2 /:?! ./*34:/! %*')\$5! . '*! /03#>:406 2/\$3! ' .!
 M' 2 2)\$40 2!,!,!,!,!\$!36/!24\$50!' .#::!H'*/#\$0!fD*)03//0647J!6#%0!'9/*36/ 2!
 #0!#!0 ; '*5!' .! I#2 '8:/0,!,!,!43!40!427'0/5!\$ ' ; ! '*!#3!#\$?!.)3)*/!34 2 /!43!40!
 >/:4/9/5! 7'004>:/! 36#3! 36/! H'*/#\$! 7/ '7:/! ; 4::! #83)#::?! #5! 76?048#::?!
 */9':3,^~!

(' ; /9/*G!#>')3!3/\$!5#?0!:#3/*G! . '*/4%\$!24\$403/*0!' .!36/!X," ,!G!d*43#4\$G!#5!
 36/! " '94/3! X\$4 '\$! 2/3!4\$! C '08' ; !#5! #%*/5! 3'! /03#>:406!#! 7* '9404 '\$#:
 % '9/*\$ 2/\$3!#\$5!3*)03//0647!' \$!36/!H'*/#\$!- /\$4\$0):#,-^!! U 436!*/%#*5!3' !36/!
 .)3)*/! ' .!36/!3/**43 '*?G!36/! 2#A '*!#83 '*0!7*/0/\$3/5! '\$:?!54..*/\$3!45/#0!#\$5!
 7'0434 '\$0,!! D6/! 2 '03!06' 8=4\$%!364\$%!40!36#3! 36/!X," ,!545! \$ '3!4\$. '* 2!#\$?!
 H'*/#0!#>')3!36/!7* '8/00!#\$5!8 '\$3/\$30!' .!0)86!#!>4%!86#\$\$%/G

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! " # \$ % & ' ! \$ ' () * + , & * (' - . ' &

Z#9?,⁻²!D640! ; #0!>/8#)0/!36/!6/*' /0! ' .!36/0/! ; #*0!4\$0403/5!36#3!36/!X," ,!
2#4\$3#4\$!03*483!8 '\$3*':!'9/*!3/**43'*4/0!5/04%\$#3/5!#0!3*)03//06470!.'*!03*#3/%48!
/#0'\$0!4\$!#/#0!'88)74/5!>?!@#7#\$/0/!. '*8/0, -^B!

E.3/*!36*//! 2 '\$360!' .!'88)7?4\$%!36/!*/%4'\$!0')36!' .!36/!Fc36!7#*#::/!G!
36/! X," ,! 24:43#*?! %'9/*\$2/\$36! :/5! >?! L/\$/*#;! ('5%/0! /03#>:406/5! 36/!
')\$5#34'\$!' .!36/!7':4348#;!03*)83)*/!' .!7'03 ; #*!'')36!H'*/# ,[#]!!E 2 /*48#\$0!
8/\$3/*/5!'\$('5%/!'\$'3!'\$:?!>)4:3!#\$!/W8:)049/!03*)83)*/G!>)3!#:0'!86'0/!36/!
7/'7:!/ ; 6'! ; '):5!'7/*#3/!36/0/!03*)83)*/0, -^S!!D640!86'48/!2#5/!>?!36/!X," ,!
24:43#*?!6#5!#!7*' .')\$5427#83!'\$!H'*/#\$!0'84/306590.1694cBt(4) - 2 ((!) 10 (#)0.2694)58 (6,40sq.54000.

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%# / ,)*(.0%\$!*+, &

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/\$/ 2 ?!' .!36/!X\$43/5!"3#3/0^!#\$5!36)0!J0)>A/83!3' !36/!7*'9404' \$0!#\$5!36/!3/* 2 0!
' .!36/!0)**/\$5/*, ^/B! ! +\$! '\$/!5#?G!H'*/#\$0!8# 2 /!3'!>!/!*/%#5/5!#0!6'034:/!
'*8/0!>?!36/!X,"!24:43#*? ,/#!

E0!' .!" /73/ 2>/*!PQRTG!36/!' \$:?! ; *433/\$!:# ; ! '\$!24:43#*?!'88)7#34'\$! ; #0!
8'54.4/5!4\$!D6/!(#%)/!M'\$9/\$34'\$!+a!' \$!K#\$5!U#*0G! ; 6486! ; #0!7*/7#*/5!#3!
36/!b\$5! (#%)/!- /#8/!M'\$./*/\$8/!4\$!PQ\S,

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!"#\$%&'!\$()*+, &*(' - . ' &

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"3#3/G! ; 6 '!94043/5!" ')36!H'*/#4\$!Z '9/ 2>/!*PQRTG!0)77' *3/5!3640!4\$434#349/, /2!!
C8M: '?J0!*/#0'\$4\$%103/ 2 2 /5!.*' 2!640!./#*36#3!8' 2 2)\$4030! ; '):5!3#=#/'9/!*
"')36!H'*/#^{OB}!

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%# / ,)*(.0%\$!*+, &

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d?!364*5! ; //=! '!.!Z'9/2>/*!PQRTG! L/\$/*#:('5%/!#\$5!640!#45/0!6#5!
0')%63! 3'! */7:#8/! -*/045/\$3! B' '0/9/:3J0! 7:#\$! 3'! %'9/*\$! 36/! H'*/#\$!
-/\$4\$0):#,^{1B}!!

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!"#\$%&'()*+,-./&



I)*4\$%136/!/##:?!03#%/!'!.!4>/#34'\$0!36/!X"ECL+H!]/64*/5!2#\$?!7* '&
@#7#\$\$/0/!7':48/!'..48/*0!;6'!6#5!>/3*#?/5!36/4*!' ;\$!\$#34'\$^4\$!'*5/*13'15/3/*!
8' 2 2)\$403!36*/#30,²#!

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%# / ,)*(.0%\$!*+, &

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##\$*86403G!#\$5!4\$5/7/\$5/\$8/!#83494030G!>)3!#:0'!36'0/!;6'!; /*/!:4=/:?!3'!
'77'0/!36/!X,"!124:43#*?!7*/0/\$8/!'!\$!36/!H'*/#\$!-/\$4\$0):#,#B%!

D6/!D*)2#\$!I'83*4\$/G!400)/5!'!\$!C##86!PbG!PQRS^{#B}!.*#2/5!36/!5'83*4\$/
#0!7##*3!'!##!8'\$.:483!>/3; //!\$!5/2'8*#8?^!#\$5!]3'3#:43#*4#\$402G^!#\$5!E86/0'\$!

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!"#\$%&'()*+,-./&

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!"#\$%&'()*+,&*(-. '&

2'*/!#77#/\$3!4\$!36/!7'03&;#!7/*4'5,!-*/045/\$3!B' '0/9/:3J0!8'\$8/73! '!.!
3*)03//0647G!36/!X,",!E*2?!['*8/J0!'88)7#34'\$!'.' ' ')36!H'*/#G!36/!X,",!#5!
X," ,",B!549404'\$G!36/!M':5!U#*G!:/ .3&*4%63!8' '7/*#34'\$G!/38,G! ; /*/#::!36/!*/0):3!
'!#!7* '#8349/!#3343)5/,!!D6/!X," ,!24:43#*?! . '*8/!4\$54*/83:?!*):/5!@#7#G!#\$!
/\$/2?!8')\$3*?G!#\$5!7)*0)/5!#!*/9/*0/!8')*0/!3!'!8*/#3/!#\$!#::4#8/G!>)3!43!
54*/83:?!*):/5! " ')36!H'*/#G!#!8': '\$?!3'!>/!7*'3/83/5!#\$5!#! ;#*948342!
8')\$3*?G!#\$5!43!/03#>:406/5!>*)3#:#5' 24#\$8/!#\$5!8'\$3* ' :! '9/*!43!#0!4!.!43! ; /*/!
#13/**43'*4#:#\$\$/W#34'\$!\$#34'\$,!

E3!36#3!342 /G!36/!\$#34'\$#:#!45/\$343?! ' .!36/!X," ,! ; #0!3 ; '&