



Pohjois-Suomi

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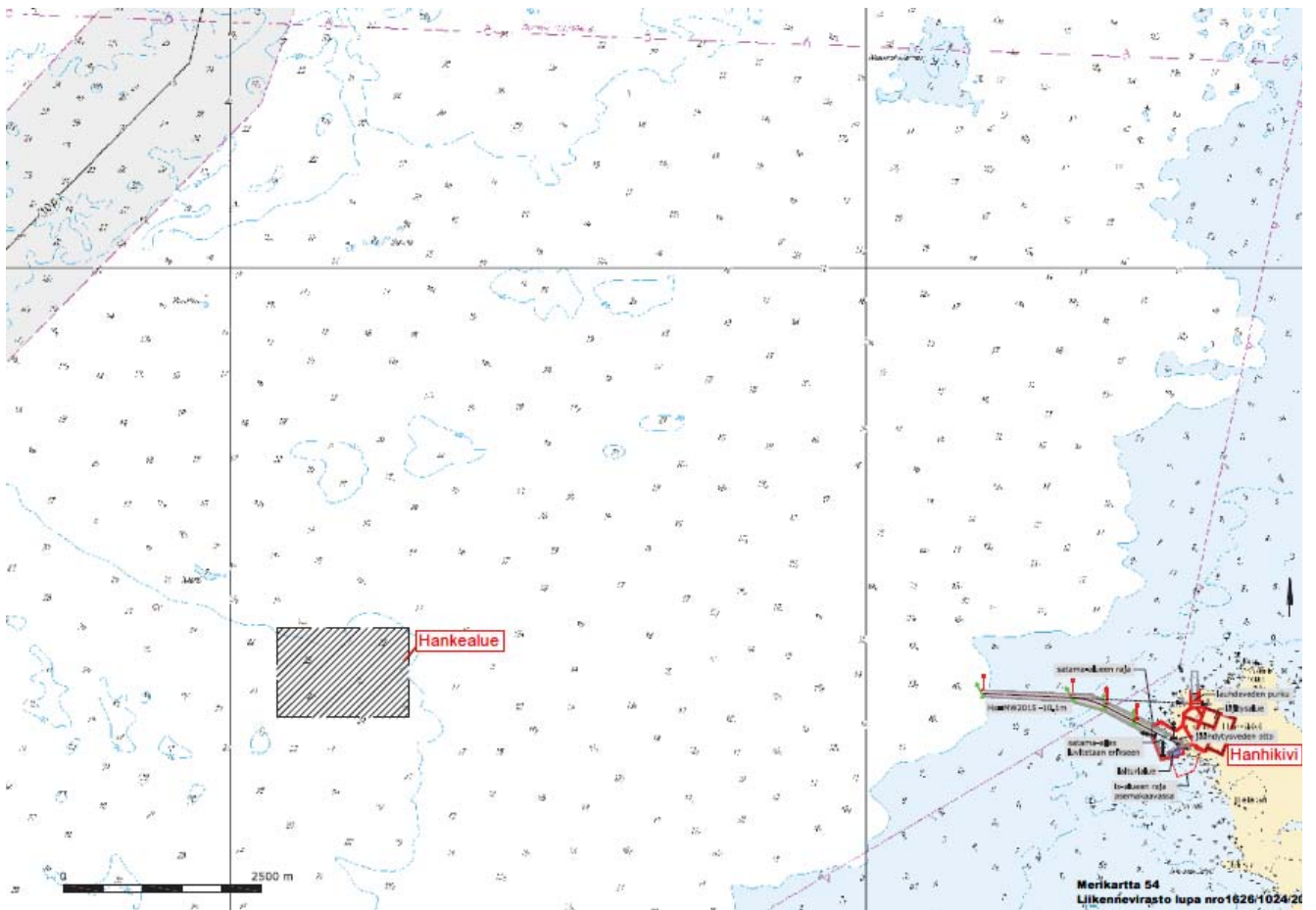
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± f HOL QH VXXQWDXWXLYDW MRNR ORXQDDV
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Taulukko 2. BBI indeksi Ponar-näytteistä. (Leinikki ja Syväranta 2012).

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Q I W H K W \ M H Q N D L Y X M H Q P D V V R M D H L Y L H G I P H U
K D N L M D Q K D O O L Q Q D V V D R O H Y L O O D P D D D O X H L O
N I \ W W I P I I Q P \ | K H P P L Q P \ | V Y I \ O I M D V D W D P D D O X
V L V V D V \ Q W \ Y L H Q P D V V R M H Q O I M L W \ N V H H Q / I M L
R L W X R O H Y D Q H Q L P P L O O I I Q P

0LNIOL PLWIIQ \GLQYRLPDODLWRVKDQNNHHVHHQ
YRLGD K\|G\QWII PDD DOXHLOOD PHULOIMLWHHW
DUYLROWD \KWHHQVI QRLQ NLINQWURWHORUQ
UDNHQQHWHRUHH WWWU V W O D W X X M L U R I W D Y I P R
PXNDQD YI\OI MD VDWDPD DOXHLGHQ \OOISLWRU

0HULOIMLW\NVHHQ DUYLRLGDDQ DOXVWDYDWWL Y
7DXOXNRVVD HVLWHWW\WPUIUSHUXVWFX SRKMDWX
GHWWXLKLQ VDYLPIIULLQ /IMLW\VDXHHOOD PDV
KRSSHULVWD PHUHQSRKMDDQ /IMLW\VDXHHWWD
OH HL ROH WDUYH UDNHQQWDD YDOOHMD WDL PXL

0HULYI\OIQ MD VDWDPD DOWDDQ RVDOWD \OOISL
QRLQ YXRWWD 7DUYLWWDHVVD \OOISLWRUXRS
PXXQ PXDVVD ODLYDOLLNHQQHWWI YDUWHQ <OC
RQ DUYLRLWX UXRSSDXVWDUYH MD ODDMXXV KXF

6HXUDDYDVVD RQ HVLWHWW\ DUYLR OIMLWHWIIY
VD K\|G\QWIPLQH Q PDD DOXHLOOH HL ROH PDKG
NLLQWRWHRUHHWWLVWHQ NXXWLRLGHQ PXXQWD
RLNVL RQ VDYLPPDDOOD NI\WHWW\ NHUURLQWD

5XRSSDXV NDLYXNRKG	.RNRQDLV HPNWU	P.IRURQDLV PUWU	P6DMLPD PNWU	D6DYLDPD PUWU	D0XX LUW PDD PNWU	0XX LUWR PDD PUWU
0HULYI\OI						
6DWDPD DOODV MD YHGHQRWW	RUDNHQQH					
-IIKG\W\VYHGHQ RWRQ YDUD\KWH\V						
-IIKG\W\VYHGHQ SXUNX XRPD						
<+7((16b						

7RLPHQSLWHLGHQ DMRLWXV MD NHVWR

0HULOIMLW\VDOXHWWD RQ WDUNRLWXV NI\WWII U
UXRSSDXVPDVVRMHQ VLMRLWWDPLVHHQ 5DNHQW
WIIQ DOXVWDYDQ DLNDWDXOXQ PXNDLVHVWL NRC
DOXVWDYLD UXRSSDXVWRLPHQSLWHLGHQ WRWHX
VLVVI PHULYI\OIQ VDWDPDUDNHQWHLGHQ MD MII
MIKG\W\VYHGHQ YDUDEB\WNRQJDNPIQWHLGHQ MIKC
SXUNXUDNHQWHLGHQ UDNHQWDPLVHQ YHVLRLNH
.XQQRVWXVUXRSSDXNVLD WHKGIIQ UDNHQWDPLV
NDDQ

.LLQWHLVW|WLHGRW

/IMLW\VDOXH VLMRLWWXX YDOWLRQ RPLVWXNVHV
MLW\VDOXH VLMDLWVHH 6XRPHQ XONRLVLOOD DC
0HWVIKDOOLWXNVHQ KDOOLQQDVVD

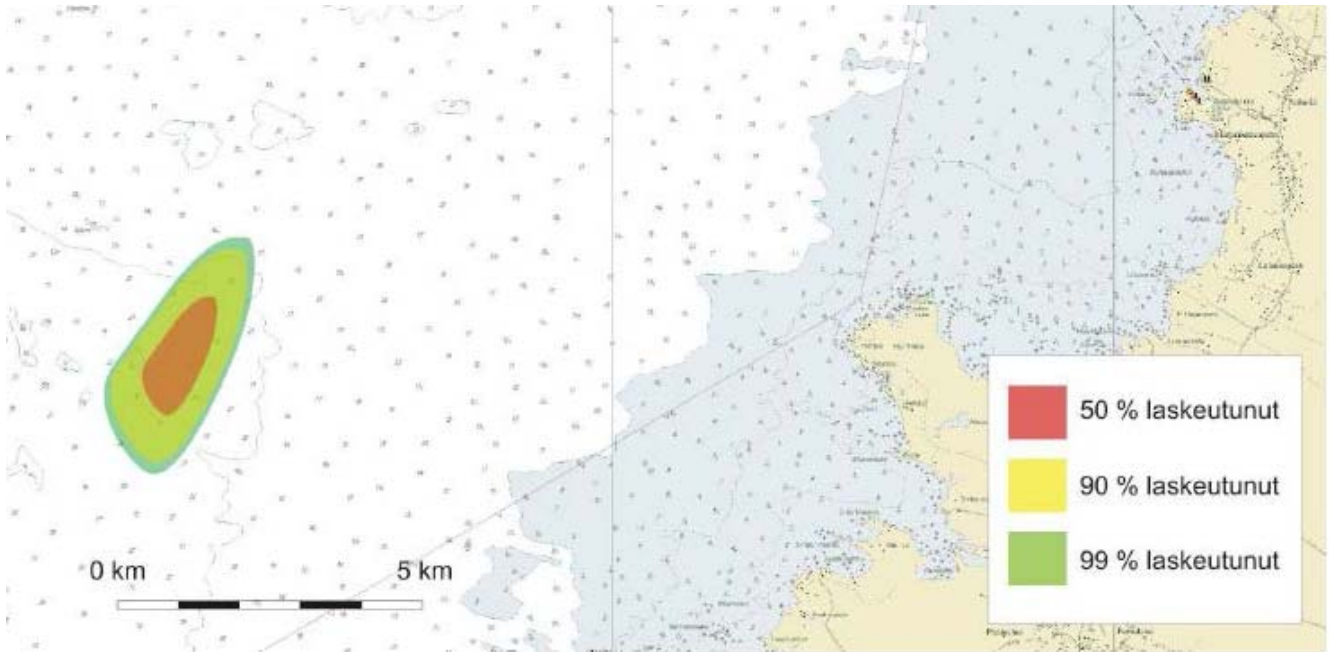
+DQNHWWD NRVNHYDW VRSLPXNVHW MD VXRVWXPXNVHW

+DNHPXVDVLDNLUMRLKLQ HL VLVIOO\ PHULOILW\
WXPXNVLD

+DQNNHHQ YDLNXWXNVHW

9DLNXWXVDOXHUDMDXNVHW

+DQNNHHQ YDLNXWXNVHW OI MLWHW WIYI VWI PDWHULDD
QHPLVHHQ MD VLWI NDXWWD NDODVWRRQ MD NDC
DOXH YDLNXWXVDOXH RQ HVLWHWW\ VHXUDDYD



Kuva 2. Meriläijityksessä syntyvien vaikutusten (samenema) vaikutusalue.

9HVLVW|YDLNXWXNVHW

9HGHQODDWX MD SRKMDRORVXKWHHW

6XXULQ RVD Q OI MLWHW WIYI VWI PDWHULDD
NDD MRND ODVNHXWXX QRSHDVWL MD VDPHXVY
W\VDXHHQ VLVIOOH 0LNIOL OI MLWHW WIYI PDVV
PP VDPHXVYDLNXWXNVHW YRLYDW XORWWXD ±
6DPHXWWD LOPHQHH WXROORLQ OIKLQQI SRKMDQ
ORVWHQ SHUXVWHHOOD RQ DUYLRLWX HWWI VDF
WD DOXHLOOD WDL QLLGHQ OIKHLV\GHVVI RQ HS

0DOOLODVNHOPHQ SHUXVWHHOOD OI MLW\VWRLP
WDVROOH VHOYIVWL DOOH YXRURNDXGHQ NXOXH
RPLQDLVXXNVLVWD MD OI MLW\NVHQ WHKRVWD UL
QHSLWRLVXXGHVWD HL YIOWWIPIWWI ROH HQII KD
V\|VWI NXYDVVD HVLWHWW\ WHRUHHWWLQHQ PDM
WDSDXNVLVVD VXXUHPSL NXLQ DOXH MROOD YDI

0\|V OI MLW\VDXHHQ SRKMDQ ODDWX YDLNXWWD
PIIUIIQ OI MLW\VWLODQWGHXWWDQ+ BQKLDXHHQ OWD
WHLGHQ SHUXVWHHOOD SRKMD OI MLW\VDXHHQ

OIMLW\VNXRUPLHQ YDLNXWXNVHVWD \PSIU|LYIIQ
0DKGROOLVHVWL UHVXVSHQGRLWXQXW KLHNND C
YLUWDXVWHQ PXNDQD ROH WRGHQQIN|LVWI 7XO
PLWDWXLOOD YLUWDXVQRSHXNVLOOD OIMLW\NVH
NHPD PDWND HQQHQ NLLQWRDLQHHQ XXGHOHHQ
OXRNDD NXQ OIMLWHWWIYIQ PDWHULDDOLQ OD
PP V PLNI YDVWDD MIOGLWQXNMHLFD NI\WHWW\I
SHXWWD KLHQRLPPDOOH KDYDLWXOOH UDHNRRO
PDNDDVWL VHNRLWWXPLVHQ DQVLRVWD .RNHPX
MDVVD WDYDWWDYDW NRYDW VDYLPDVVDW S\|Y
UXRSSDXNVHQ HWWI OIMLW\NVHQ DLNDQD HLNI P
UXRSSDXNVHW WHKGIIQ NDXKDUXRSSDXNVHOOD
SIIRVD ROLVL VDYHD ODDMHQLVL OHYLIPLVDOXH
HGHOOLVHVVI NXYDVVD HVLWHW\VWI DOXHHVWD

/DDMLPPLODDQ 6XRPHQ RORVXKWHLVVD VDPHXV
RQ KDYDLWWX ± NLORPHWULQ HWILV\IGHOOI YD
MHQ WXORVWHQ SHUXVWHHOOD RQ HULWWILQ HS
WXNVLD YRLWDLVLXKLLKDDVWD QDQVHD DO KHLV\

3RKMDQOIKHLVHW YLUWDXNVHW YRLYDW NXOMHV
P|V YDUVLQDLVHQ OIMLW\MMLNVBQXHHQD WHK
WDXVWHQ SHUXVWHHOOD NRYLPPDW YLUWDXNVH
ORXQDDQ VXXQWDDQ MROORLQ NLLQWRDLQHHQ
HSIWRGHQQIN|LVWI

/IMLWHWWIYLVVI UXRSSDXVPDVVRLVVD HL ROH W
RYDW PHUHHQ OIMLW\VNHOSRLVLD 5XRSDWWDYL
WHWW\ KDNHPXNVHHQ

9HVLNDVYLOOLVXXV MD SRKMDHOILPHW

/IMLW\VDOXHHOOD HL NDVYD YHVLNDVYHMD PHUH
HHOOD HL VLWHQ HVLLQQ\ DUYNNDLWD PHUHQD
WXLVL YDKLQNRMD

/IMLW\VDOXHHOOD SRKMDHOILPHW KDXWDXWXYDV
MDHOILPLVW| SDODXWXXXWDDYDQVDDYXRNMMVDP OI
SXWWXD

.DODVWR

.DORLKLQ YDLNXWWDYLD PHNDQLVPHMD OIMLW\N
KDELWDDWLQ PHQHW\V MD YLUWDXVRORVXKWHLC
PHUNLW\V DUYLRLWLLQ YIKILVHNVL /IMLW\VDOXH
WXVWHQ DOXHHOOD HL ROH NDORMHQ OLVIIQW\P
MDLWVHYDW OIKHLVLOOI PDWDOLNRLOOD QRLQ N
KHXWXYDQ YHGHQVDPHQXNVHQ NXONHXWXPLQH
P QILOOH DOXHLOOH RQ HSIWRGHQQIN|LVWI /

YDHOOXVVLLDQ YDHOOXVDOXHWVOMKHXVONGHHVOM
W\NVLOOI YRL ROOD DMRLWWDLVWD YDLNXWXVW
9DLNXWXNVHW RQ HVLWHWW\ NRRWXVWL VHXUDD

Taulukko 4. Läjittämisen kaloihin ja kalojen ravintokohteisiin aiheuttamat vaikutukset, vaikutusmekanismit ja niiden mekittävyys (Kala- ja vesitutkimus 2012c, Liite 8)

/IMLWWIPLVH YDLNXWXVPH	SDYNDLWV MXXV	DLNXWXV HQ ODD	WHQ PHUNL \$MDOOLQH	WWIY\IV \$NYLVRVX YXXVDVH	YBBD
.DORLKLQ	/LVIIQW\QHH OLLNHQWHH PXW DLKH PHOX	ODDMD SURRE WWDPD	/W\WDLNDL PXWWD WRL	QHQ LVWXYD	\$UYLRLWX N\QWLI OIMLW\
NLMQWVLDLQ	QHYDLNXWXV	ODDMD P	/W\WDLNDL PXWWD WRL	QHQ LVWXYD	0DNVLPYDLNXW WHKW\ PDOOLQ .LLULNNL E 6DPHQXV SIIRVLQ SRKMDQ WXQXP
+PEQWDDWLQ	W\V MD YLU WRNVHW	SDLNDOO DIXMLPX	3QWQ DOXHHOOD	DLQHQ YIKIL	9LUWDDPDPXXW SLHQLI (L WXXR NXWXDOXHLWD HLNI WIYII YDLNXWXV WRRQ
.DORMHQ UDY NRKWHLVLLQ HOILPHW MD SODQNWRQ	YLIQWV\VWHQ BRKMDLN HOILQ	ODDMD P	LIMLW\VN YDLNXWXV NDLQHQ WRLVWXYD	RVPDQHQ OIK\WDL PXWWD	0DNVLPYDLNXW WHKW\ PDOOLQ .LLULNNL E 6DPHQXV SIIRVLQ SRKMDQ WXQXP
+PEQWDDWLQ	W\V MD YLU WRNVHW	SDLNDOO DIXMLPX	3QWQ DOXHHOOD	DLQHQ YIKIL	9LUWDDPDPXXW SLHQLI

9HVLDOXHLGHQ NI\WW||Q VHNI YLUNLVW\NVHHQ NRKGLVW

.DODVWXV

.DODVWXNVHOOH DLKHXXVYDLNXWXVWPHQDQVIMLW
VDPRMD NXLQ HGHOOLVHVVI NDSSDOHHVVD OXHW

/IMLW\VDOXHHOOD HL ROH S\QWLSDLNNRMD PXV
W\ WDL KILULLQW\ OIMLW\VDOXHHQ OIKHOOI WD
NRLOOD /LVINVL SURRPXUHLWWLHQ YDUUHOOD F
WIOO|LQ WSDKWXQXW S\G\VWHQ ULNNRXWXPLV
SIIOWI

6DPHXGHQ OHYLIPLVHQ PDNVLPYDLNXWXVDOXHH
ODVWDMMLHQ S\QWLSDLNNRMD 1ILOOI S\QWLSDL
RQ PDKGROOLVWD 9RLPDNNDLPPLQ NDUNRWWXY
NLNVL VLLND 9DLNXWXVDOXHHOOD HL ROH NXLW
NDODVWXV SDLQRWWXX \PSIU|LYLOOH PDWDOLNR

9DHOOXVNDORMHQ RVDOWD RQ PDKGROOLVWD H
NDORMD 6DPHXV HVLLQW\ NXLWHQNLQ SIIRVLQ
WXPdq \KWH\GHVVI 9DHOOXVNDODW HVLPHUNLN

NHUURNVHVVD MRVVD VDPHXVYDLNXWXNVHW RY
 DUYLRLGD ROHYDQ K\Y\Y\Q VDWXQQDLVWD MD PHU

6DDOLLQ PIIUIIQ YDLNXWWDD YLLYHHOOI P\|V MF
 UDXNVHQD HVW\ KHLNNHQHH WDL SRLNDVWHQ N
 9DLNXWXVWHQ DUYLRLQQLQ SHUXVWHHOOD WIPI

/IMLW\NVHQ YDLNXWXNVHW RQ HVLWHWW\ NRRWX

Taulukko 5. Läjittämisen kalastukseen aiheuttamat vaikutukset, vaikutusmekanismit ja niiden mekit-
 tävyys (Kala- ja vesitutkimus 2012c, Liite 8)

/IMLWWIPLVH YDLNXWXVPH	QSDYNLWVW DLNXWXV	WHQ PHUNL WWIY\ V	
.DODVWXNVH	H\QMLW\VWHQ W\QHHQ OLL SURRPXW DLKHXW WDPD PHOX MD KILUL NDODVWXNV	ODDMD RDLOHYD	3LWNIDLND LQHQ YIK LQHQ 3URRPXUHLW
D\K\H\W\WHQ	WDPD NLLQW NXWXV	ODDMD RDLOHYD	0DNVLPYDLNXW WHKW\ PDOOLQXV .LLULNNL E 6DPHQXV SIIRVLQ SRKMDQ WXQXP PDVV
3\ QWLSDLN	NRMHQ PHQHW\ V	SDLNDOO OIMLW\VDOXHHOOD MD SURRPXUHL WLOOI	LQHQ YIK LQHQ 3URRPXUHLW YHUNNRS DLNND

9HVLOLLNHQQH

/IMLW\VDOXH HL VLMRLWX ODLYDYI\|OIOOH \$OXH
 OLLNNXX OIKLQQI HWHOI SRKMRLVVXXQQDVVD /I
 YDLNXWXNVLD YHVLOLLNHQWHHOOH

0XX YLUNLVW\VNI\|WW|

/IMLW\VDOXHHOOD HL ROH YLUNLVW\VNI\|WW|I

.XOWWXXULSHULQW||Q NRKGLVWXYDW YDLNXWXN

\$OXHHOOD HL ROH PDLVHPDOOLVLD DUYRMD HLN
 KHGXG YDLNXWXNVLD PDLVHPDDQ /IMLW\VDOXHH
 WLHGRVVD ROHYLD K\ON\MI WDL YHGHQDODLVLD

+DQNNHHQ K\|G\W MD PHQHW\NVHW

)HQQRYRLPDQ RVDNNDLGHQ \KWHHQODVNHWWX V
 7:K YXRGHVVD PLNI RQ OIKHV NRNR PDDQ
 6IKN|I WDUYLWVHYDW WHROOLVXXV NDXSSD SD
 NRWLWDORXGHW (UL WHROOLVXXGHQ DODW RYD
)HQQRYRLPDQ RVDNDVNXXQQDVVD

)HQQRYRLPD 2\ HVLWWII NDODWDORXVPDNVXQ VX
RVDOWD HXURD UDNHQWDPLVYXRVL 0DNVX
NHVNXXNVHOOH MD VLOOI NRPSHQVRLGDDQ KDQNM
ORXGHOOLVWD YDKLQNRD

.RUYDXVDVLDW DPPDWWLNDODVWDMLHQ NDQVVD
HQQHQ WIVVI KDNHPXNVHVVD WDUNRLWHWWXMHC

7DUNNDLOX

+DNHPXNVHVVD RQ HVLWHWW\ WDUNNDLOXVXXQC
MDWNXYDWRLPLVLQ VDPHXVPLWWDXNVLQ 3RKMD
WDUNNDLOXQ UDNHQWDPLVHQ DLNDLVHQ WDUNN
WDUNNDLOXOOD VHXUDWDDQ DPPDWWLNDODVWX
NHQQHWW MD SRLNDVWXRWDQWRD 0\|V NDODW
UDNHQWDPLVHQ DLNDDQ MD VHQ MIONHHQ

.DODVWRQ UDNHQQHWW VHOYLWHWIIQ &RDVWDC
NDVWHQ VHXUDQWD WRWHXWHWDDQ VLLDQ MD P
NI VLODNDQ RVDOWD *XOI 2O\PSLD S\|G\NVHOOI
DOXHHQ DPPDWWL MD YDSDD DMDQNDODVWDMLC

9DOPLVWHOXOXSDKDNHPXV MD VHQ SHUXVWHOXW

+DNLMD KDNHH YDOPLVWHOXOXSD W|LGHQ DORI
YRLPDLVHNVL WXOHPLVWD

<GLQYRLPDODLWRVKDQNNHHQ NRRNQDLVXXV RQ
MD DMDOOLVHVWL SLWNINHVWRLQHQ 6H HGHOO
WI \KWHHQVRYLWWDPLVWD PLQNI YXRNVL UDNHC
DMRLWWXYDW YHVLWDORXVOXYDQYDUDLVHW WR
OLVHVVD DMDVVD KDNHPLXNHVWQY 19UDHPLQW HVXHOYD
UDMRLWWXYDW DOXHHOOLVHVWL VXSSHDOOH YH
NI\WW|WDUNRLWXNVHHQ MD MRQND YHVLOXRQQR
KILVLI MD RVLWWDLQ WLODSILVLI

0HULYI\OIQ VDWDPD DOWDDQ ODLWXULQ MIIKGV
MIIKG\W\VYHGHQ YDUDRWWDR LXRPD QI GFRONH W WII W
YDLKHLVWXVWD NRVND N\VHLVHW YHVLUDNHQQX
QDOOLVHQ NRRNQDLVXXV BHWQRELVNVWDDH VUUBOOL
WDL UDNHQWHLWD 6DPDQDLNDLVHVWL WRWHXWI
NHQWHHQ MD XRPDQ HGHOO\WWIPIW YHVLUDNHQ
WHWWDYD PDKGROOLVLPDQ \KWIMDNVRLVHVWL
VIIRORVXKWHHW MD DYRMBVIOND WGHQISLWXXHWW
UDNHQWDPLVDMDQ MDNRQHLRGLPDQV MKNRNDVWD K\|
VINVL VXKWHHOOLVHQ VXSSHDOOD YHVLDQXHHOC
NDOXVWRQ NI\W|Q WDUNND RSWLPRLQWLD

0HULDOXHHOOD WHKWIYIWI UXRSSDXNVHVVD VD
KHHVVD VDWDPD DOWDDQ DDOORQPXUWDMMLHQ U
PXUWDMDOOD VLMDLWVHYD UXRSSDXVPDVVRMHQ

KHWL UDNHQWDPLVHQ DONXYDLKHHVVD 7IPI PDK
KLQ VRYHOWXYLHQ PDVVRMHQ NXOMHWWDPPLVHQ
YDLKHHW RYDW ULLSSXYDLVLD WRLVLVWDDQ MR
VHXUDDYDVVD MIUMHLDVXNHVHWVKGOMLWYXHG HQ RWV
ORNDQDYD VDWDPD DOODV MD PHULYI\OI VHNI M
OHULDOXHHQ UXRSSDXNVLVWD VDDWDYDOOD ORX
DDOORQPXUWMDW YDOPLLNL \$DOORQPXUWDM
WDPD DOWDDQ HWWI PHULYI\OIQ DOXHHQ ORXKLC
PIIUIQ VDDPLVHNVL DDOORQPXUWDMIRLOODNLIWYW
YI\OI MD VDWDPD RQ UXRSDWWX /DLWXULD WXOC
YDLKHHQ HGHOO\WWIPLHQ VXXUWHQ NRPSRQHQW
GHQ RWRUDNHQWHHQ W\|SDGRQ UDNHQWDPLVH
DOWDDQ SDWROLQM VQ VSLWSXROHOORWMLXWID U
G\W\VYHGHQ RWRUDNHQWHHQ PDDOHLNNDXNVH
W\|SDGRQ UDNHQWDPLVHQ MIONHHQ -IIG\W\VYH
PLQH Q HGHOO\WWII W\|SDGRQ UDNHQWDPLVWD

(GHOOI PDLQLWXXMHQ YHVLVW|W|LGHQ RKHOOD
W\VYHGHQ SXUNXUDNHQWHHQ W\|SDGRQ HGHOO\
YHGHQDODLQH ORXKLQWD 7IPIQ MIONHHQ UDNH
UHHW K\|G\QWIHQ VDWDPD DOXHHQ UXRSSDXNVLV
W\VYHGHQ SXUNXUDNHQWHHQ PDDOHLNNDXNVHW
W\|SDGRQ UDNHQWDPLVHQ MIONHHQ -IIG\W\VYH
PLQH Q HGHOO\WWII W\|SDGRQ UDNHQWDPLVWD 6
MHQ W|LGHQ NDQVVD HWHQH H SXUNX XRPDQ UXR

OHULOIMLW\VDOXH RQ ROHHOOLQH RVD PHULYI\
G\W\VYHGHQRWRUDNHQWHLGHQ MD XRPDQ WRLPLQWDNRNRQDLVXXV
WHLVWD UXRSDWWDYDW K\|W\NI\WW||Q NHOSDDF
WIIQ

+DNLM DOWD YDDGLWDDQ \GLQYRLPDODLWRNVHQ
HQUJLDODLQVIIGIQQ|VVI MD 6IWHLO\WXUYDNHVM
WXUYDOOLVXXVWDVVRQ WDDYXDWDPXWHDQ (GRVQ)
HWWI MIIKG\W\VYHVLWXLQDHDODDQ RQ WNDMHR LVV
ORXKLQWDW\|W RQ WHKWIYI HQQHQ \GLQYRLPDOD
GHQ EHWRQLYDOXMHQ DORLWWDPLVWD 7XQQHO
VHQ NDLYDQWRRQ S\W\NXLOXOOD MRWHQ QIPI
PDODODLWRVNDLYDQQRVVD YRLGDDQ DORLWWD
YHGHQ RWRR MD SXUNXUDNHQWHLGHQ W\|SDGR
WRVWD DOHWDDQ RWWDD NI\WW||Q MD MIIKG\W\
-IIG\W\VYHGHQ YDUDRWRXRPDQ VXONXUDNHQV
WHKWIYI MR SDLNDOOD ROHYDQ NDOXVWRQ WDN
NDPLVWD YDLNND LWVH VXONXUDNHQWHHQ RVD
HQQHQ ODLWRNVHQ NI\WW||QRWRD

9DOPLVWHOHYLHQ WRLPHQSLWHLGHQ VHXUDXNVH
GROOLVWD SXUNDD MD W\| HQQDOOLVWDD VHNI \
KLQJRW NRUYDWD KDNLM DQ DVHWWDPDVWD YDN

SIIW|V NXPRWDDQ WDL OXYDQ HKWRMD PXXWHWD
ORXVKDQNNHHQ WRWHXWWDPLVWD YDOPLVWHOHO
YDOPLVWHOXOXSD VLOOI YDOPLVWHOHYDW WRL
WD PXXOOH YHVLHQ NI\W|OOH WDL OXRQQROOH M
WDD .\VHLVWHQ WRLPHQSLWHLGHQ VXRULWWDPI
WD RVLQ SDODXWWD HQQDOOHQ VLLQI WSDSX
WDL OXYDQ HKWRMD PXXWHWDDQ YHVLODLQ O
WII HWWI YDNXXGHNVL DVHWHWDDQ PHULOIMLW
HXURD +DNLMD P|V VXR VWXX VLLKHQ HWW
VHVWL PIIUIWWIYIW NRUYDXNVHW QRVWHWDDQ M
W|LGHQ DONDHVVD OXSDYLUDQRPDLVHQ K\YINV\F

+DNLMD RQ VLWWHPPLQ ODXVXQWRMHQ PXLVWX
WDPDVVDDQ VHOLW\NVHVVI WRGHQXW HVLWWIQ
DVHWHWWDLVL PLNI OIMLW\NVHQ N\VHHVVI ROOH
WIQW||Q

+\$.(08.6(67\$ 7,('277\$0,1(1

\$OXHKDOOLQWRYLUDVWR RQ YHVLODLQ OXYXQ
NXXOXWWDPDOOD DVLDVWD DOXHKDOOLQWRYLUD
QXW WLODLVXXGHQ PXLVWXWVWHQ WHNHPLVHH
NHPXNVHQ MRKGRVWD YLLPHLVWIIQ +DNH
MXONDLVWX 5DDKHQ 6HXWX QLPLVHVVI VDQRPD
RQ HULNVHHQ OIKHWHWW\ DVLDNLUMRLVWD LOPH

\$OXHKDOOLQWRYLUDVWR RQ YHVLODLQ OXYXQ
PXNVHQ MRKGRVWD ODXVXQQRQ 3RKMRLV 3RKMD
\PSIULVW|NHVNXNVHQ \PSIULVW| MD OXRQQRQYD
HOLQNLQR OLLNHQQH MD \PSIULVW|NHVNXNVH
NHQQHYLUDVWRQ PHULYI\OINVLN|OWI 0XVHRYLU
NXQQDQ \PSIULVW|QVX ~~MD XNDLVDQRPDLVHQ~~ R

/\$8681127

3RKMRLV 3RKMDQPDDQ HOLQNLQR OLLNHQQ
\PSIULVW| MD OXRQQRQY ~~MD XNDLVDQRPDLVHQ~~ V
HWWI KDNHPXNVHQ PXNDLQHQ SXKWDLGHQ UXF
PHULDXXHOOH HL QI\ ~~WVXINLDDQRPDLVHQ~~ W
HWXD +DNLMDQ PDLQLWVHPDW \OOISLWRUXRS
KDQNNHLQD /IMLWWIPLVHVWI HL HQQDOWD DU
XONRSXROLVLOOH MD WRLPHQSLWHHW YRLGDD
VLHQ NI\W|OOH OXRQQROOH WDL OXRQQRQ WF

(VLWHWW\ YHVLVW| MD SRKMDHOILQWDUNNDLQ

9DOPLVWHOHYLVWD W|LVWI HL QI\WWILVL DLKH
OXRQQROOH MD VHQ WRLPLQQDOOH KXRPDWW

+DNHPXNVHVVD WRGHWDDQ SRKMDHOILPLVW|Q
PXXWDPDVVD YXRGH\RSXVWXD\NLNOD DOXHWV
KHPPLQ NI\WWIPIIQ KDNHPXNVHVVD HVLWHW\Q
DOXHHQ \OOISLWRUXRSSDXNVLVVD V\QW\YLHQ
GHQ UXRSDWWDYLHQ PDVVRMHQ SXKWDXV VHO
OIMLW\VDXHHOOH 0LNIOL OIMLW\VDXHHOOH
GHQ YIOHLQ HL DOXHHQ SRKMDHOILPLVW| SIV
OIMLW\WRLPLHQ YIOLVVI /IMLW\VDXHHOOH V
SDXVPDVVRMD

+DNHPXNVHVVD KDHWDQ OXSDD WRLPLOOH
PDLQLWDDQ NXLWHQNLQ HWWI DOXHWWD YRLC
DOXHHQ \OOISLWRUXRSSDXNVLVVD V\QW\YLHQ
PXNVHVVD HVLWHWIIQ HWWI PHULYI\OIQ MD VD
UXRSSDXVYIOLQ DUYLRLGDDQ ROHYDQ QRLQ

0LNIOL Q\W KDHWDYD OXSD ROLVL YRLPDVVD
MD VDWDPD DOXHHQ \OOISLWRUXRSSDXNVHW H
OXWWD HL Q\W KDHWDYDOD YXRGHQ OX
WIPIIQ UXRSSDXVPDVV ~~MDXHNH0LHV000DQ~~ YDQK
MRKWXHQ

+DNHPXNVHQ PXNDDQ OIMLW\NVHOOI YRLGDDQ
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VHW NDODVWRRQ

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VI

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YIOOI NI\WW|RLNHXGHPLOD HQXG BQORWQNW HQI R
MDOOH P\|QQHWIIQ RLNHXV DOXHHQ NI\WWIPLV
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PRP

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VXPPDOOD SLWILVL SDODXWWD \PSIULVW| HQ
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<9\$ PHQHWWHO\I MRQND SHUXVWHHOOD DUYL
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VLQDLVWD NDLYRNDUWRLWXVWD HL ROH WHKW
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HL ROH S\|V\Q\W RWWDPDDQ HL ROH SHUXVW
DORLWWD 7RWHDPXV HWWI HL WRGHWWX SL
WD PLWIIQ WIVVI WSDXNVHVVD NRVND QI\WW

.DODVWRWXWNLPXNVHVVD PLHOLSLWHHVVI RQ
UIMI\W\VWHQ YDLNXWXVWD WXWNLPXNVHHQ YI
NLWW\ UIMI\W\VDMDQNRKWLD /LLWH NXYD
NDLUDXNVLD WRWHXWHWLLQ PHONHLQ NRNR
NDD 9DLNXWXNVLD HL YRL VLYXXWDD YDDQ
KILUL|WW|PIQI DMDQNRKWDD

.DODVWXVWXWNLPXNVHVVD PLHOLSLWHHVVI R
QDQ DOXHHOWD OIKWHYI NDODVWXV HWHOI VWI
LOPDQ SHUXVWHOXMD 5DMDXVWHQ SHUXVWHO

/LQQXVWRYDLNXWXNVRQWDXRWHXOHL\$LOVHHVMWW
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OXW SDLNRLQ MRLOWNLQ RVLQ W\|G\WWIYI 9
WXVWD HL WXOLVL WDKDOOLVHVWL DLKHXWWD
SDUDQWDPDDQ 0P (UNNL ,OXNVHQ WXWNLPXV
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6LLDQ MD ORKHQ YDHOOXVUHLWLW MD XVHLGH
NV OLLWH % DPPDWLNDODVWDMLHQ LOPR
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(VLWHWW\ NDODWDORXGHOOLQHQVDPDNVXD
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Tuulivoimaloiden sijoittuminen

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Läjitettävän massan laatu

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Kalataloustarkkailu

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NDQVVD

Luvanmyöntämisen edellytykset ja valmistelulupa

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NI\W|OOH WDL OXRQQROOH MD VHQ WRLPLQQD
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Kalatalousmaksu

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Hankkeen vaikutukset, pohjanlaatu ja haitta-aineet

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YVA-menettely ja periaatepäätös

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VD

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Vakuus

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Kaava

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36\$9, NDQVVD

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/DSLQ (/< NHVNXV

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PHUHQ SRKMDDQ HL WXOH PIIUIWI NRUYDXVWD PI
VHOOH HGXOOH DLKHXYDD KDLWDD HL YRL DUY
WRGHWXQ PXNDLVHVWL \OHLVHQ HGXQ NDQQDOW

+DQNNHHVWD DLKHXYDW PHQHW\NVHW ILMW
PDWWLNDODVWDMLOOH NRLWXYDW KDLWDW MRL
SLPDDQ 0LNIOL KDLWWRMHQ NRUYDDPLVHVWD H
SDQHPDDQ NRUYDXVDVLD YLUHLOOH OXSDPIIUI\N
NDLNNLLQ YHVLWDORV\WLDLHONNRIUYDXQWHQ NRNRQ
QRLQ HXURD PLWI YRLGDDQ SLWII KDLWWRM
DQWDYDQD OXNXQD 0XXW\WINR\H W\LDV\W\I\PHQ\H\W\W
DUYLRLGHQ DLKHXXG

(WXYHUWDLOXQ ORSSXWXORV

+DQNNHHVWD VDDWDYD PHUNLWWIYI K\|W\ RQ YIC
HQ \GLQYRLPDODLWRNVHQ WRWHXWXPLVHVWD +
MHQ MD KDLWWRMHQ UD KDLPRIOHL Q\H\Q\ D W\DSFLXNW H
QHQ MRWHQ YHUWDLOXVVD NRURVWXX QLLGHQ D

+DQNNHHVWD \OHLVL OIGX LVODLH \M\ D W\ D\ Y\ D\ O\|H\ \ R\ C
YHUUDWWXQD VLLWI \H\ HIG\X\LOOCH V\IRL W\K\Y\L\W\ Q\ V\H\O
PDLQLWWX KXRPLRRQ RWWDHQ OXYDQ P\|QWIPLV
W\YIW

/XYDQ PIIUIDLNDLVXXV

/XSD RQ P\|QQHWW\ KDNH P\X\N\ F\H\Q\ I\B\X\N\ D\L\V\H\Q\ D \. \P
YXRGHQ PIIUIDLND RQ SLGHWWIYIQI ULLWWIYIQI
SDXVPDVVRMHQ OIMLW\VWHQ WRWHXWWDPLVHNV

/XSDPIIUI\NVHW

7|LGHQ VXRULWWDPLQHQ

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OIMLW\V WSDKWXX PDKGROOLVLPDQ KDLWDWW

\$OXHKDOOLQWRYLUDVWR RQ SIIW|NVHOOIIQ QUR
G\W\VYHGHQ SXUNXUDNHQWHLGHQ UDNHQWDPLV
PXNVHQ \$OXHKDOOLQWRYLUDVWR RQ NXLWHQNL
DOXHOOH P\|V MIIKG\W\VYHGHQ SXUNXUDNHQW
UI\NVHVVI HVLWHW\LQ HGHOO\W\NVLQ ODVVRMHQ
QHQ OXSD MRV VXXQQLWHOPD PXXWWXX ROOHH

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OHUNLWWIYLPPIW YDLNXWXNVHW NDODVWROOH D
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PLQHQ .DORMHQ UDYLQWRNRKWHLGHQ PXXWRN
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.RUYDXNVHW

)HQQRYRLPD 2\ RQ S\UNLQ\W VRSLPDDQ KDQNNH
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9HVLODLQ OXYXQ † Q PRPHQWLQ NRKWD
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+DNLMDQ PXNDDQ \GLQYRLPDODLWRNVHQ UDNHQ
ODLQVIIIGIQQ|VVI MD 6IWHLO\WXUYDNHVNXNVHQ <
VXXVWDVVRQ VDDYXWWDPLQH Q HGHOOWWII HWW
ULNDLYDQQRQ VHNI YHVLVW|UDNHQWDPLVHQ ORX
YRLPDODLWRNVHQ UDNHQXVWHQ MD UDNHQWHL
KLQWDW|LWI VLVIOW\OXSDPKQ NHPXNWDHQR MD QVVD \
VLWHOWIYIQI ROHYLHQ YI\OIQ VDWDPDQ MD YHG
VHHQ /LVINVL ORXKLQWDW|LWI VLVIOW\ MIKQ\W
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NHQWDPLVHHQ MD VHQ VXMXYDDQ OISLYLHPLVHH
NINHVVRLQH \$OXHKDOOLQWRYLUDVWR NDWVRR
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9HVLODLQ OXYXQ † Q PXNDDQ YDOPLVWHOXO
PLVWHOHYDW WRLPHQSLWHHW YRLGDDQ VXRULW
OH WDL OXRQQROOH MD VHQ WRLPLQQDOOH KXRI
PHQSLWHLGHQ VXRULWWDPLVHQ MIONHHQ RORW
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PXXWHWDDQ +DOOLWXNVHQ HVLW\NVHVVI HGXVM
GLVWDPLVHNVL +(WW\RQWVWLVWBOPLVWHOXO
VIIQQ|NVHQ VRYHOWDPLVDODD HL ROH UDMDWWX
P\|QWII NDLNHQW\SSLVLOOH MD NRNRLVLOOH KI
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7RWHXWXQHVVWD YDOPLVWHOXOXSDDQ WDL DLH
YIVWI RLNHXVNI\WIQQ|VWI HL O|\G\ MXXULNDDQ H
YDQ KDLWDQ WXRWWDPLVHQ N\QQ\VWI ROLVL NIV

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WRWHXWXQHVVVD RLNHXVNI\WIQQ|VVI ROOXW SH

+DQNNHHQ VXXULOODND ~~QQ\WDMVDP~~ ~~IRQLHOYDIQHVL~~ LQI
VHYDD PHUNLW\VWI UDWN DLVXNI\WIQQ|VVI (VLPH
OIQ MD VDWD PD DOWDDQ UXRSSDXVWD UXRSSDX
HHQ WI\WW|I XXGHQ ODLWXULQ UDNHQWDPLVWD
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P\|QQHWWLLQ \ONWU UXR~~S~~SDXNVHHQ MD OIMLW\N
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OXYDOOD WHKWIYLVWI W|LVWI DOXHHQ SLHQHQW
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9HVLQDLQ OXYXQ † Q PRPHQWLVVD VIIGHWII
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HULOOLVWI YDNXXWWD \$OXHKDOOLQW~~DR~~ ~~YPLLV~~ ~~DWH~~ ~~OR~~
SDDQ OLLWW\YIQ HXURQ VXXUXLQHQ YDNX
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9DOLWXVYLUDQ ~~BRKMRHQ~~ 6XRPHQ DOXHKDOOLQWRYLUDVWRQ SIIW|N
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3RKMRLV 6XRPHQ DOXHKDOOLQWRYLUDVWRRQ

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VDDWWDD NRVNHD VHNI YDLNXWXVDOXHHOOD \PSI
OXQ WDL YLLKW|L ~~VHNGHQRGELVDFLWKGILLWMMHVLG~~ \W
DVL DQRPDLVHW NXQQDW (/ < NHVNXXNVHW NXQWLH
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- YDOLWWDMDQ QLPL MD NRWLNXQWD
- SRVWLRVRLWH SXXHOLQQXPHUR MD PDKGROOLQH
NHYDW LOPRLWXNVHW YDOLWWDMDOOH YRLGDDQ
RQ QLLVWI LOPRLWHWWDYD 9DDVDQ KDOOLQWR RL
N|SRVWL YDDVD KDR#RLNHXV IL
- PLOWI NRKGLQ DOXHKDOOLQWRYLUDVWRQ SIIW|NV
- PLWI PXXWRNVLD ~~DOXHSIDVQNDWRO~~ YLUDVGLWDDQ W
- SHUXVWHHW MRLOOD PXXWRVWD YDDGLWDDQ
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WRLPLWHWD VIKN|LVHVWL WHOHNRSLROOD WDL V

9DOLWXNVHQ ~~OL~~ ~~VDWLHXX~~ VNLUMHOPIIQ RQ OLLWHWWIYI
- DVL DNLUMDW MRLKLQ YDOLWWDMD YHWRDD YDDW
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- PDKGROOLVHQ DVL DPLHKHQ YDOWDNLUMD WDL WR
DVL DPLHKHQ WRLPLYDOODVWD
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PLVWI

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2LNHXGHQNI\QW ~~LDONW~~ WMDMDOWD SHULWIIQ DVL DQ NIVLWWHO\VWI 9
NI\QWLPDNVX HXURD 7XRPLRLVWXLQWHQ MD HUI
VXRULWVHLVWD SHULWIIYL VWI PDNVXLVWD DQQHW
WDSDXNVLVWD MRLVVD PDNVXD HL SHULWI