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/** ----- 09 FAULTS -----
/**
/** FILE NAME:          09_Faults.txt
/** AUTHOR:            RENEE SCHICKER
/** SCRIPT CREATED:    15 DECEMBER 2008
/** LAST UPDATED/MODIFIED: 30 SEPTEMBER 2009
/**
/** The scripts may be supplied in a more readily useable format if the work is acknowledged
/** CONTACT:      Renee_Schicker@hotmail.com
/**
/** STARTS IN:      ARC
/** SCRIPT USED BY:  00_MASTER.txt
/** USES THE SCRIPT: CheckProgEdit.txt          (CREATED: 02 MARCH 2009)
/**
/** INPUT COVERS:
/**      faults (setup script)      D:\Renee_GIS\Output_data\Organised\02_Setup\faults
/**      faults (Auckland QMAP)
/**      D:\Renee_GIS\Input_data\GNS_QMAP\Auckland\covers\faults
/**      faults (Waikato QMAP)
/**      D:\Renee_GIS\Input_data\GNS_QMAP\Waikato\covers\faults
/**      mask_rotorua D:\Renee_GIS\Output_data\Organised\02_Setup\mask_rotorua
/**      dem_bnd      D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd
/**
/** OUTPUT COVERS:      region_faults          Faults_Dist
/** OUTPUT GRID:        faultgrid
/**
/** TEMP. COVERS:
/**      Roto_faults          roto_faults2
/**      Auck_faults         Waik_faults
/**      QMAP_faults         fbuff%dist_1%
/**      fbuff%dist_2%       fbuff%dist_3%
/**      fbuff%dist_4%       fbuff%dist_5%
/**      fbuff%dist_6%       fb%dist_5%_%dist_6%
/**      fb%dist_4%_%dist_6% fb%dist_3%_%dist_6%
/**      fb%dist_2%_%dist_6% faults_buff
/**
/** FUNCTIONS USED:      &CALL          &ROUTINE      &RETURN
/**                     &TYPE          &IF &THEN      [EXIST]
/**                     KILL            BUFFER          ADDITEM
/**                     &RUN            EDITCOVER (EC)   EDITFEATURE (EF)
/**                     SELECT          CALCULATE        SAVE
/**                     QUIT (Q)         UNION            DROPITEM
/**                     &SETVAR          CLIP             POLYGRID
/**                     APPEND
/**
/** PURPOSE:             CREATES SETS OF BUFFER REGIONS AROUND FAULT LINE LINEAR
/**                     FEATURES THEN COMPOUNDS INTO ONE LAYER AND
/**                     INTERMEDIATE LAYERS (CREATED TO GET TO FINAL LAYER) ARE
/**                     DELETED
/**
/** ..... HISTORY.....
/** 15 DECEMBER 2008      9_fault_buff.txt created, a working adaptation of the

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/**		Buffer_test1.txt test script (last modified 17 AUGUST 2008) I didn't
/**		get to working stage. 3_clip.txt individual clip script created
/**		specifically to be run from a master script as part of the processing
/**		of parameters for Waikato region. Important to check input exists
/**		before processing.
/**	02 MARCH 2009	CheckProgEdit.txt script added to save having to write the process.
/**	9-12 MARCH 2009	Formatted and listed everything, added descriptions and history.
/**	12 MARCH 2009	Modified and updated by adding a set of variables which should
/**		make changing the distance values a lot quicker (only have to set at
/**		top/start at the "&SETVAR" commands). Have changed file name to
/**		08_fault_buff.txt from 9_fault_buff.txt. Now run from
/**		00_MASTER.txt instead of 0_parent.txt.
/**	27 APRIL 2009	Check script is consistent with others, update script information.
/**		Added CLIP faults_buff by region_bnd and KILL faults_buff
/**		afterwards.
/**	30 APRIL 2009	(15_Rasterise.txt) First attempt to rasterise vector data using
/**		POLYGRID
/**	31 APRIL-05 MAY 2009	The faults_dist layer converted to GRID excellently.
/**	10 JUNE 2009	Combined Faults content from 04_Clip.txt and 15_Rasterise.txt with
/**		08_fault_buff .txt to make 10_Faults.txt. Have also combined a few
/**		of the existing routines (Edit_1 and Edit_2) and tidied up some of
/**		the processes (Kill, getting rid of Exist_1 and Exist_2).
/**		Now clip by DEM_Bnd instead of Region_Bnd.
/**	20 JUNE 2009	Use QMAP faults where possible and 1millfaults for Rotorua.
/**		Should give better outcome. Had to add additional clip and APPEND
/**		stages in Clip1 routine to make this modification. Added All_areas
/**		routine to union the buffered fault layer over the DEM_Bnd layer
/**		and assign all areas outside the buffer zones 0. This will reduce the
/**		number of NO DATA (-9999) values made when rasterised.
/**	30 SEPTEMBER 2009	Added speareate workspaces for each script, so have to add file path
/**		to find input files, also corrected input and output sections.

/*******
 /*******

/* Set variables	
&SETVAR dist_1 = 100	/* Lowest value for distance
&SETVAR dist_2 = 250	
&SETVAR dist_3 = 500	
&SETVAR dist_4 = 1000	
&SETVAR dist_5 = 2000	
&SETVAR dist_6 = 5000	/* greatest value for distance
/*&CALL Clip_1	/* Was originally in 04_Clip.txt
/*&CALL buffer	
/*&CALL Edit_1	/* USES: CheckProgEdit.txt
/*&CALL union	
/*&CALL &CALL kill	
/*&CALL Edit_2	/* USES: CheckProgEdit.txt
&CALL Clip_2	
&CALL All_areas	
&CALL Rasterise	/* was originally in 15_Rasterise.txt

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&RETURN
/*****
&ROUTINE Clip_1
&IF [EXIST region_faults -COVER] &THEN KILL region_faults
&IF [EXIST Auck_Faults -COVER] &THEN KILL Auck_Faults
&IF [EXIST Waik_Faults -COVER] &THEN KILL Waik_Faults
&IF [EXIST roto_faults -COVER] &THEN KILL roto_faults
&IF [EXIST roto_faults2 -cover] &THEN KILL roto_faults2

CLIP D:\Renee_GIS\Output_data\Organised\02_Setup\faults
D:\Renee_GIS\Output_data\Organised\02_Setup\mask_rotorua roto_faults LINE 1
CLIP roto_faults D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd Roto_Faults2 LINE 1
&IF [EXIST roto_faults -COVER] &THEN KILL roto_faults
&TYPE faults clipped to Rotorua sector

CLIP D:\Renee_GIS\Input_data\GNS_QMAP\Auckland\covers\faults
D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd Auck_Faults LINE 1
CLIP D:\Renee_GIS\Input_data\GNS_QMAP\Waikato\covers\faults
D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd Waik_Faults LINE 1

APPEND region_faults
Auck_Faults
Waik_Faults
Roto_faults2
END

&IF [EXIST Auck_Faults -COVER] &THEN KILL Auck_Faults
&IF [EXIST Waik_Faults -COVER] &THEN KILL Waik_Faults
&IF [EXIST roto_faults2 -cover] &THEN KILL roto_faults2

/*&IF [EXIST faults -COVER] &THEN KILL faults
&TYPE Don't need nz faults, as clipped to region so have deleted
&RETURN

/*****
&TYPE running fault buffer process...
&ROUTINE buffer          /* buffer faults

BUFFER region_faults fbuff%dist_1% # # %dist_1% # LINE ROUND
BUFFER region_faults fbuff%dist_2% # # %dist_2% # LINE ROUND
BUFFER region_faults fbuff%dist_3% # # %dist_3% # LINE ROUND
BUFFER region_faults fbuff%dist_4% # # %dist_4% # LINE ROUND
BUFFER region_faults fbuff%dist_5% # # %dist_5% # LINE ROUND
BUFFER region_faults fbuff%dist_6% # # %dist_6% # LINE ROUND
&RETURN

/*****
&ROUTINE Edit_1
/* add string class for id

&TYPE Add a column to each buffer layer...

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```
/* additem <in_info> <out_info> <item_name> <item_width> <output_width> <item_type>
```

```
ADDITEM fbuff%dist_1%.pat fbuff%dist_1%.pat buff_dist1 5 5 I  
ADDITEM fbuff%dist_2%.pat fbuff%dist_2%.pat buff_dist2 5 5 I  
ADDITEM fbuff%dist_3%.pat fbuff%dist_3%.pat buff_dist3 5 5 I  
ADDITEM fbuff%dist_4%.pat fbuff%dist_4%.pat buff_dist4 5 5 I  
ADDITEM fbuff%dist_5%.pat fbuff%dist_5%.pat buff_dist5 5 5 I  
ADDITEM fbuff%dist_6%.pat fbuff%dist_6%.pat buff_dist6 5 5 I
```

```
/** MAKE EDITS
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```
/* Need to use ArcEdit so run the associated script to do this
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```
&RUN d:\renee_gis\scripts\CheckProgEdit.txt
```

```
&TYPE entering buffer distances into new individual buff_dist attribute columns
```

```
/* enter buffer distances
```

```
EC fbuff%dist_1%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist1 = %dist_1%  
SAVE
```

```
EC fbuff%dist_2%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist2 = %dist_2%  
SAVE
```

```
EC fbuff%dist_3%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist3 = %dist_3%  
SAVE
```

```
EC fbuff%dist_4%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist4 = %dist_4%  
SAVE
```

```
EC fbuff%dist_5%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist5 = %dist_5%  
SAVE
```

```
EC fbuff%dist_6%  
EF polygon  
SELECT for INSIDE = 100  
CALCULATE buff_dist6 = %dist_6%  
SAVE
```

```
Q
```

```

&RETURN
/*****
&ROUTINE union
/*UNION <in_cover> <union_cover> <out_cover> {fuzzy_tolerance} {JOIN | NOJOIN}

&IF [EXIST faults_buff -COVER] &THEN KILL faults_buff ALL
&TYPE multi stage union begins...
UNION fbuff%dist_5% fbuff%dist_6% fb%dist_5%_%dist_6%
UNION fbuff%dist_4% fb%dist_5%_%dist_6% fb%dist_4%_%dist_6%
UNION fbuff%dist_3% fb%dist_4%_%dist_6% fb%dist_3%_%dist_6%
UNION fbuff%dist_2% fb%dist_3%_%dist_6% fb%dist_2%_%dist_6%
UNION fbuff%dist_1% fb%dist_2%_%dist_6% faults_buff
&RETURN

/*****
&ROUTINE kill

&IF [EXIST fbuff%dist_1% -COVER] &THEN KILL fbuff%dist_1% ALL
&IF [EXIST fbuff%dist_2% -COVER] &THEN KILL fbuff%dist_2% ALL
&IF [EXIST fbuff%dist_3% -COVER] &THEN KILL fbuff%dist_3% ALL
&IF [EXIST fbuff%dist_4% -COVER] &THEN KILL fbuff%dist_4% ALL
&IF [EXIST fbuff%dist_5% -COVER] &THEN KILL fbuff%dist_5% ALL
&IF [EXIST fbuff%dist_6% -COVER] &THEN KILL fbuff%dist_6% ALL

/* check for existing copies before processing - delete if exist to proceed
&IF [EXIST fb%dist_5%_%dist_6% -COVER] &THEN KILL fb%dist_5%_%dist_6% ALL
&IF [EXIST fb%dist_4%_%dist_6% -COVER] &THEN KILL fb%dist_4%_%dist_6% ALL
&IF [EXIST fb%dist_3%_%dist_6% -COVER] &THEN KILL fb%dist_3%_%dist_6% ALL
&IF [EXIST fb%dist_2%_%dist_6% -COVER] &THEN KILL fb%dist_2%_%dist_6% ALL

&RETURN

/*****
&ROUTINE Edit_2

ADDITEM faults_buff.pat faults_buff.pat buff_dist 5 5 I

/* Need to use ArcEdit so run the associated script to do this
&RUN d:\renee_gis\scripts\CheckProgEdit.txt

&TYPE entering all buffer distances into new buff_dist attribute column
/* enter buffer distances

EC faults_buff
EF polygon

SELECT for buff_dist6 = %dist_6%
CALCULATE buff_dist = %dist_6%

SELECT for buff_dist5 = %dist_5%
CALCULATE buff_dist = %dist_5%

```

```
SELECT for buff_dist4 = %dist_4%
CALCULATE buff_dist = %dist_4%
```

```
SELECT for buff_dist3 = %dist_3%
CALCULATE buff_dist = %dist_3%
```

```
SELECT for buff_dist2 = %dist_2%
CALCULATE buff_dist = %dist_2%
```

```
SELECT for buff_dist1 = %dist_1%
CALCULATE buff_dist = %dist_1%
```

```
SAVE
Q
```

```
/** drop_items - delete unneeded variables since they've served their purpose
```

```
/* delete temporary attribute columns
&TYPE goodbye temporary buff_dist variables
```

```
DROPITEM faults_buff.pat faults_buff.pat BUFF_DIST1 BUFF_DIST2 BUFF_DIST3 BUFF_DIST4
BUFF_DIST5 BUFF_DIST6
```

```
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_1%# FBUFF%dist_1%-ID
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_2%# FBUFF%dist_2%-ID
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_3%# FBUFF%dist_3%-ID
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_4%# FBUFF%dist_4%-ID
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_5%# FBUFF%dist_5%-ID
DROPITEM faults_buff.pat faults_buff.pat FBUFF%dist_6%# FBUFF%dist_6%-ID
```

```
DROPITEM faults_buff.pat faults_buff.pat Buff_dist1 Buff_dist2 Buff_dist3
DROPITEM faults_buff.pat faults_buff.pat Buff_dist4 Buff_dist5 Buff_dist6
```

```
DROPITEM faults_buff.pat faults_buff.pat FB%dist_2%_%dist_6%# FB%dist_2%_%dist_6%-ID
DROPITEM faults_buff.pat faults_buff.pat FB%dist_3%_%dist_6%# FB%dist_3%_%dist_6%-ID
DROPITEM faults_buff.pat faults_buff.pat FB%dist_4%_%dist_6%# FB%dist_4%_%dist_6%-ID
DROPITEM faults_buff.pat faults_buff.pat FB%dist_5%_%dist_6%# FB%dist_5%_%dist_6%-ID
```

```
&RETURN
/*****
```

```
&ROUTINE Clip_2
/** Clip end result.
&IF [EXIST Faults_Dist -COVER] &THEN KILL Faults_Dist ALL
CLIP faults_buff D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd Faults_Dist POLY 1
```

```
&IF [EXIST faults_buff -COVER] &THEN KILL faults_buff
&RETURN
/*****
```

&ROUTINE All_areas

&IF [EXIST Faults_Dist2 -COVER] &THEN KILL Faults_Dist2 ALL
UNION Faults_Dist D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd Faults_Dist2
ADDITEM Faults_Dist2.pat Faults_Dist2.pat Fault_dist 5 5 I

/* Need to use ArcEdit so run the associated script to do this
&RUN d:\renee_gis\scripts\CheckProgEdit.txt
&TYPE entering all buffer distances into new Fault_dist attribute column
/* enter buffer distances

EC Faults_Dist2
EF polygon

SELECT ALL
CALCULATE Fault_dist = -9999

SELECT for GRID-CODE = 1
CALCULATE Fault_dist = 0

SELECT for buff_dist = %dist_6%
CALCULATE Fault_dist = %dist_6%

SELECT for buff_dist = %dist_5%
CALCULATE Fault_dist = %dist_5%

SELECT for buff_dist = %dist_4%
CALCULATE Fault_dist = %dist_4%

SELECT for buff_dist = %dist_3%
CALCULATE Fault_dist = %dist_3%

SELECT for buff_dist = %dist_2%
CALCULATE Fault_dist = %dist_2%

SELECT for buff_dist = %dist_1%
CALCULATE Fault_dist = %dist_1%

SAVE

Q

DROPITEM Faults_Dist2.pat Faults_Dist2.pat DEM_BND# DEM_BND-ID GRID-CODE
DROPITEM Faults_Dist2.pat Faults_Dist2.pat Faults_Dist# Faults_Dist-ID Buff_dist
&RETURN

/*****

&ROUTINE Rasterise

&IF [EXIST faultgrid -GRID] &THEN KILL faultgrid ALL
POLYGRID faults_dist2 faultgrid Fault_DIST

25

Y

&RETURN