Assignment 1 Report



Due date: 26 August 2016

Weighting: 25% (250 marks)

1. Student Details

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| Student name: |  |
| Student number: |  |

2. Spreadsheet Details

Provide a list of sheets in the spreadsheet and their contents.

3. Streamflow Data

**BASIC STREAMGAUGE DATA**

* Provide a table of the basic gauge information **5 marks**
* Provide a photograph of the control weir **5 marks**
* Provide an image showing the creek cross section at the streamgauge **5 marks**
* Provide an image of the rating curve and answer the gauging questions. **5 marks**
* Make a comment of the adequacy of the rating curve based on this information. **5 marks**

**MISSING DATA**

* Provide a monthly discharge timeseries plot and state the % of missing data **10 marks**

4. Annual Series Flood Frequency Analysis

**ANNUAL SERIES ANALYSIS**

* Provide a table of the water years in chronological order with the peak discharge for each year and the number of months of missing data for each year. Highlight the water years when the amount of missing data is unacceptable. **10 marks**
* Table the Annual Series discharges, ranked in order. State the number of water years (N) included in the Annual Series, allowing for missing data. **10 marks**
* Tabulate the Annual Series statistics (mean and standard deviation of log(discharges) and skew) for both cases of with and without the lowest 9 floods. **10 marks**
* Provide graphs of the Annual Series, fitted LP3 distribution and 5% & 95% confidence limits for both cases of with and without the lowest 9 floods. **20 marks**
* Report the design discharge estimates for the specified ARIs for both cases of with and without the lowest 9 floods **10 marks**

5. Partial Series Flood Frequency Analysis

**PARTIAL SERIES ANALYSIS**

* State the number of floods (K) included in Partial Series and the corresponding discharge threshold. **5 marks**
* Table the Partial Series discharges, ranked in order. Show the rank, the month and the peak discharge. **10 marks**
* Provide a regression plot with fitted equation. Report the floods that were excluded from the regression. **10 marks**
* Provide a Partial Series frequency chart **10 marks**
* Report the design discharge estimates for the specified ARIs **10 marks**

6. RFFE design discharge estimates

* Provide a catchment plan showing the catchment boundary and centroid for Emu Creek upstream of the streamgauge **20 marks**
* State the key information to use RFFE, including the centroid and streamgauge coordinates, and catchment area. **5 marks**
* Table the RFFE design discharge estimates for the specified ARIs **10 marks**

7. Assessment of January 2011 flood rainfalls

* Provide plots of the January 2011 flood hydrograph and rainfall from the Water Portal **10 marks**
* Provide an IFD rainfall depth table covering ARIs from 1 to 100 years and durations from 1 to 24 hours at the gauge location, including the time of concentration values **10 marks**
* Give the following details of the January 2011 storm associated with the flood peak: total rainfall for the two-day rainfall event, the observed rainfall intensity corresponding to the time of concentration of the catchment, the AEP of this rainfall intensity and the approximate AEP of the peak flood discharge **10 marks**

8. Selection of design discharge estimates

* Compile the design discharge estimates in a single table **5 marks**
* Plot the estimates on linear ARI-Q scale (include also the selected design discharges, from the next step) **10 marks**
* Table your selected design discharge estimate for each ARI and provide statements to justify your selection **10 marks**