

APPENDIX B
Meteorological

APPENDIX B

METEOROLOGICAL INFORMATION

B-1 METEOROLOGICAL DATA FOR 2015

USEW collects on-site data from instruments located 15 feet above the southeast corner of the receiving building roof and is approximately the same height as the roof of the lab building and the overburden placed on top of trenches 1- 6. However, much of the overburden was removed in 2009 and the trailer was moved approximately 100 yards to the east. These changes should reduce local topography effects. It was discovered in 2014 that the anemometer was not turning as it should, reducing the measured wind velocity. The USEW data was not used to determine wind frequency for 2015.

Wind Frequency data was obtained from the Hanford Meteorological Station (HMS), which was collected by the MESOWEST (<http://mesowest.utah.edu/>). HMS is approximately 1 mile from our facility, and has similar weather. Attachment B-2 is the wind rose for the Hanford Meteorological Station for 2015.

The wind usually blows from the NW, and it is the strongest from the SW.

2015 average temperature: 14.2 C

2015 precipitation: 16.5 cm/year

ATTACHMENTS

B-1 Hanford Weather Summary

B-2 Wind Rose

Attachment B-1
Hanford Weather Summary



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

January 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, TRACE OR MORE, 0.25 OR MORE, BAROMETRIC PRESSURE (IN.), AVERAGE FOR THE MONTH, DEPARTURE FROM NORMAL, HIGHEST, LOWEST, NUMBER OF DAYS WITH: GREATEST IN 24 HOURS, GREATEST ON GROUND, WIND (50-FT LEVEL), AVERAGE SPEED (MPH), DEPARTURE FROM NORMAL, HEATING DEGREE DAYS (BASE 65°F), PEAK GUST, TOTAL FOR THE MONTH, DEPARTURE FROM NORMAL, SEASONAL TOTAL (SINCE JULY 1), SEASONAL DEPARTURE FROM NORMAL.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

February 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, TRACE OR MORE, 0.25 OR MORE, 0, BAROMETRIC PRESSURE (IN.), AVERAGE FOR THE MONTH, DEPARTURE FROM NORMAL, HIGHEST, LOWEST, NUMBER OF DAYS WITH: GREATEST IN 24 HOURS, GREATEST ON GROUND, WIND (50-FT LEVEL), AVERAGE SPEED (MPH), DEPARTURE FROM NORMAL, HEATING DEGREE DAYS (BASE 65°F), PEAK GUST, SW @ 48, ON, 7, TOTAL FOR THE MONTH, DEPARTURE FROM NORMAL, SEASONAL TOTAL (SINCE JULY 1), SEASONAL DEPARTURE FROM NORMAL, DRY BULB (°F), WET BULB (°F), REL. HUM. (%), DEW PT. (°F), AVERAGE PSYCHROMETRIC DATA, CLOUDY, 17, DUST, 0, RELATIVE HUMIDITY EXTREMES (%), HIGHEST, 99, ON, 14+, LOWEST, 15, ON, 28.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

MARCH 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, TRACE OR MORE, 0.25 OR MORE, 1, BAROMETRIC PRESSURE (IN.), AVERAGE FOR THE MONTH, DEPARTURE FROM NORMAL, HIGHEST, LOWEST, NUMBER OF DAYS WITH: MAXIMUM 32 OR BELOW, MAXIMUM 90 OR ABOVE, MINIMUM 32 OR BELOW, MINIMUM 0 OR BELOW, HEATING DEGREE DAYS (BASE 65°F), TOTAL FOR THE MONTH, DEPARTURE FROM NORMAL, SEASONAL TOTAL (SINCE JULY 1), SEASONAL DEPARTURE FROM NORMAL.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

APRIL 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, TRACE OR MORE, 0.25 OR MORE, 0, BAROMETRIC PRESSURE (IN.), AVERAGE FOR THE MONTH, DEPARTURE FROM NORMAL, HIGHEST, LOWEST, NUMBER OF DAYS WITH:, WIND (50-FT LEVEL), HEATING DEGREE DAYS (BASE 65°F), AVERAGE PSYCHROMETRIC DATA, RELATIVE HUMIDITY EXTREMES (%).



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

May 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

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Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, TRACE OR MORE, 0.25 OR MORE, 1, BAROMETRIC PRESSURE (IN.), AVERAGE FOR THE MONTH, DEPARTURE FROM NORMAL, HIGHEST, LOWEST, NUMBER OF DAYS WITH: GREATEST IN 24 HOURS, GREATEST ON GROUND, WIND (50-FT LEVEL), AVERAGE SPEED (MPH), DEPARTURE FROM NORMAL, HEATING DEGREE DAYS (BASE 65°F), PEAK GUST, TOTAL FOR THE MONTH, DEPARTURE FROM NORMAL, SEASONAL TOTAL (SINCE JULY 1), SEASONAL DEPARTURE FROM NORMAL.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON
LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

June 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Rows 1-31 and summary rows SUM and AVG.

NOTES:

- (1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.
(2) "T" in Columns 7-9 denotes a trace.
(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), WIND (50-FT LEVEL), MISCELLANEOUS NUMBER OF DAYS, RELATIVE HUMIDITY EXTREMES (%). Rows include monthly averages and extremes.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON
LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

July 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows 1-31 and SUM/AVG.

NOTES:

(1) Unless otherwise specified, the daily summary period is from midnight to midnight Pacific Standard Time.

(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), WIND (50-FT LEVEL), MISCELLANEOUS NUMBER OF DAYS, RELATIVE HUMIDITY EXTREMES (%). Includes sub-sections for precipitation, wind, and humidity.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON
LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

August 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows 1-31 and summary rows SUM and AVG.

NOTES:

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(2) "T" in Columns 7-9 denotes a trace.
(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), WIND (50-FT LEVEL), MISCELLANEOUS NUMBER OF DAYS, RELATIVE HUMIDITY EXTREMES (%). Includes sub-sections for precipitation, wind, and humidity.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

September 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows 1-31, SUM, and AVG.

NOTES:

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(2) "T" in Columns 7-9 denotes a trace.

(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), WIND (50-FT LEVEL), MISCELLANEOUS NUMBER OF DAYS, RELATIVE HUMIDITY EXTREMES (%). Includes sub-sections for precipitation, wind, and humidity.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

October 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows 1-31, SUM, and AVG.

NOTES:

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(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), RELATIVE HUMIDITY EXTREMES (%). Includes sub-sections for precipitation, temperature, wind, and humidity.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON
LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

November 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows for days 1-31 and summary rows (SUM, AVG).

NOTES:

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(2) "T" in Columns 7-9 denotes a trace.
(3) The Langley (Col. 15) is the unit used to denote one gram calorie/cm².

Summary table with columns: TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION (IN.), MISC. PHENOMENA NOTATIONS USED IN COL. 17, BAROMETRIC PRESSURE (IN.), SOLAR RADIATION (LANGLEYS), WIND (50-FT LEVEL), MISCELLANEOUS NUMBER OF DAYS, RELATIVE HUMIDITY EXTREMES (%). Includes sub-sections for precipitation, wind, and humidity.



CLIMATOLOGICAL DATA

HANFORD METEOROLOGY STATION

25 MILES N.W. OF RICHLAND, WASHINGTON

LATITUDE 46° 34' N., LONGITUDE 119° 36' W., ELEVATION (GROUND) 733 FEET

MONTH

December 2015

Main data table with columns: DATE, TEMPERATURE (°F) (3-FT LEVEL), PRECIPITATION, WIND (50-FT LEVEL), AVERAGE REL HUM %, SOLRAD (LANGLEYS), SKY COVER (TENTHS FROM SUNRISE TO SUNSET), FRONTS AND MISC. PHENOMENA. Includes rows 1-31, SUM, and AVG.

NOTES:

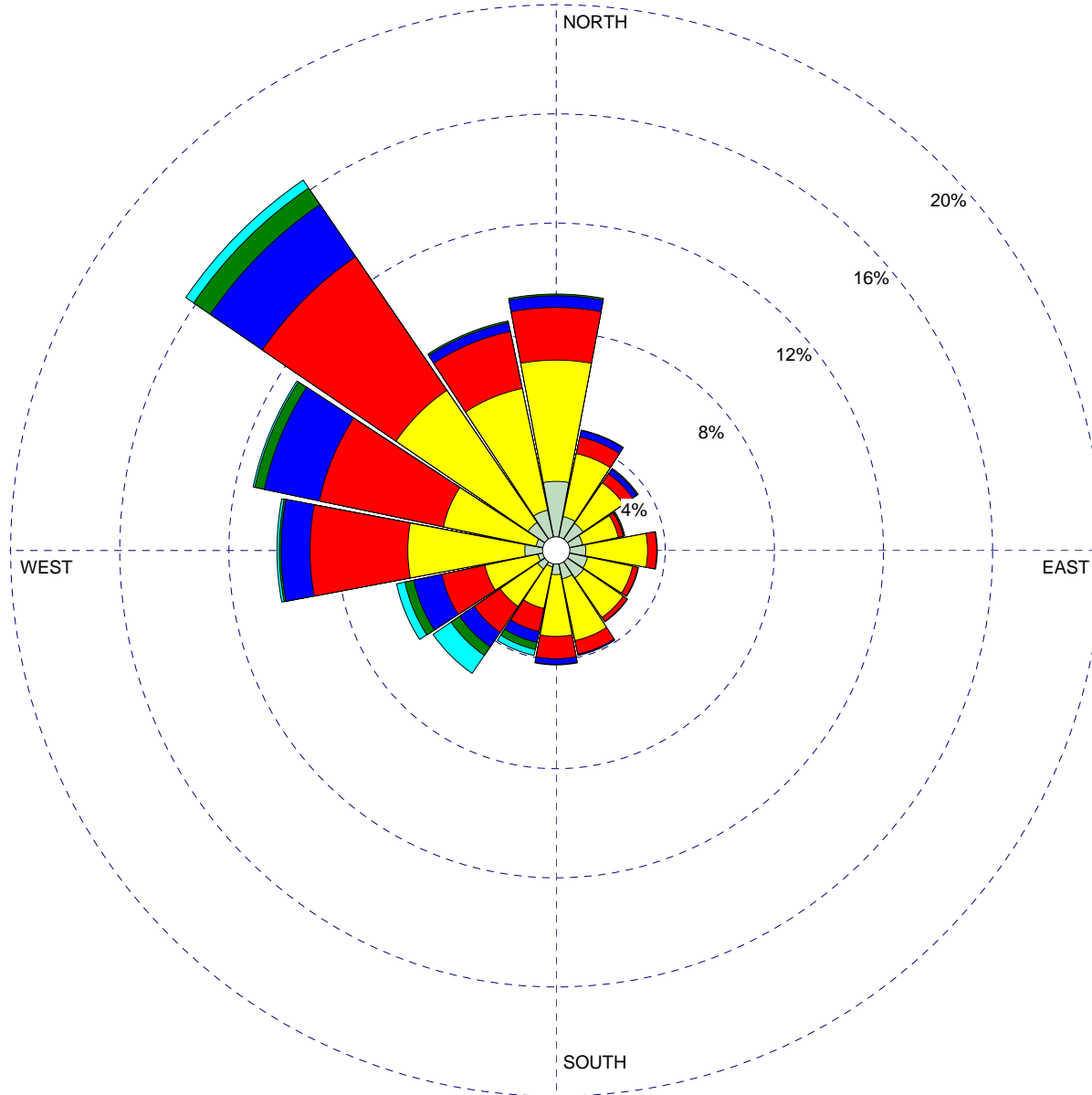
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Attachment B-2
Wind Rose



**WIND SPEED
 (Knots)**

- >= 22
- 17 - 21
- 11 - 17
- 7 - 11
- 4 - 7
- 1 - 4

Calms: 0.00%

COMMENTS:

Data is at the Hanford Met Station (HMS), collected by Mesowest (University of Utah).

COMPANY NAME:

USECOLOGY WASHINGTON

MODELER:

S. Murphy

DATE:

5/12/2016

PROJECT NO.:

2015 USEW AER