Implementation Guide for the RTR Tool for Tier 2 and 3 Screens of Multipathway Impacts from Facility Emissions of PB-HAPs

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This document is an implementation guide for the tool that conducts the Tier 2 human health and ecological screens as well as parts of the Tier 3 screens. Detailed descriptions of these screens can be found in technical support documents.[1] Those details are not repeated here. Note that the Tier 3 plume-rise and time-series screens discussed here have steps that must be performed outside of this tool, as discussed in the technical support documents and in the implementation guides for other tools.

1. Home Page

Description

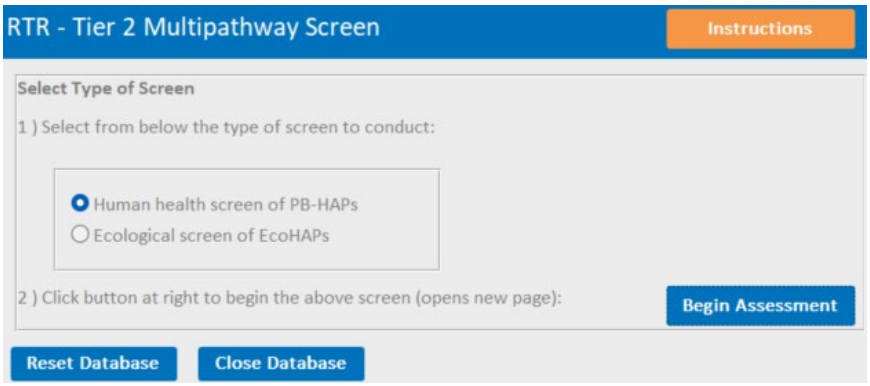
(Figure 1-1) This is the first (home) page of the tool. On subsequent pages, clicking "Return Home" will take you back to this page.

Actions

Select which PB-HAP screen you would like to conduct, and click "Begin Assessment" to go to the main page of the human health screen (see Section 2) or the ecological screen (see Section 3).

Alternatively, click "Reset Database", which clears out any user-input tables and working tables and then closes the database (Microsoft Access will also perform a compact-and-repair cleanup activity). "Close Database" is the same as "Reset Database" except without clearing out any data. These resetting and closing processes may take a moment, and the application will close when complete. Clicking "Instructions" will open this document.

Figure 1-1. Tool Home Page



2. Human Health Screen

2.1. Main Page

Description

(Figure 2-1) You will conduct all functions of the human health screen from this page, or from subsequent pages that will appear when you click buttons on this page. You must conduct the steps sequentially—that is, first Step 1 as noted on the page, then Step 2, and so on down the page.

[1] See: Technical Support Document for the TRIM-Based Multipathway Tiered Screening Methodology for RTR. Also: Technical Support Document for the Environmental Risk Screen for RTR. Both prepared by ICF for the U.S. EPA. Current versions: February 2026.

Green buttons signify mandatory functions, while blue buttons are optional. Step 1 also is mandatory. Gray buttons have been disabled for the reasons stated in this document.

Some functions may take from one moment to tens of minutes to complete—each step will display a message on the computer screen when complete.

We describe each step in the subsections below. Note that Tier 3 time-series screens currently are not supported within this tool.

Figure 2-1. Main Page for Human Health Screen

2.2. Step 1: Scenario Description

Description

Under Step 1 on the main page of the human health screen (see the top of Figure 2-1), the text entered under “Scenario Description” and “Date of Screen” will be used as part of the names of tool output files.

Actions

In the "Scenario Description" text box, enter a short text string that describes the screen you are conducting. In the "Date of Screen" text box, enter today's date in YYYYMMDD format.

You do not need to click any buttons here—simply type into the text boxes.

2.3. Step 2: Import Results of Tier 1 Screen; Add Metadata

Output of Tier 1 Screen

Description

The output of the Tier 1 screen, which you should develop outside of this tool (i.e., with the Tier 1 screening tool), is incorporated into the Tier 2 screen under "Step 2" on the main page of the human health screen (see Figure 2-1).

Actions

Click the "Output of Tier 1 Screen" button to begin importing the table of results from the Tier 1 screen. The import table must be a table in a separate Microsoft Access file, and no other file type is allowed.

We show in Table 2-1 the data fields and data types that the tool requires for this import table. The field names do not need to match what we show in Table 2-1 because this tool will help you link your field names to the field names that the tool expects to use (as discussed later in this subsection).

Table 2-1. Format of Imported Tier 1 Screen Results for Human Health

Field Name	Data Type	Description
Src Cat	Short Text	Custom text label for the source category
Facility ID	Short Text	Facility identifier
Lat	Number (Double)	Representative facility latitude (in decimal degrees)
Long	Number (Double)	Representative facility longitude (in decimal degrees)
PB-HAP Grp	Short Text	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".
Chem	Short Text	Name of PB-HAP chemical (see Table 2-2)
Emiss (TPY; chem)	Number (Double)	Facility-total emissions of the PB-HAP chemical (TPY)
TEF (chem)	Short Text	Human health toxicity equivalency factor for PB-HAP chemical (1 for mercury, cadmium, and arsenic; relative to BaP for POMs; relative to TCDD for dioxins/furans)
EEF (chem)	Short Text	Tier 1 human health exposure equivalency factor for PB-HAP chemical (1 for mercury, cadmium, and arsenic; relative to BaP for POMs; relative to TCDD for dioxins/furans)
REF (chem)	Short Text	Tier 1 human health risk equivalency factor for PB-HAP chemical (product of "TEF" and "EEF")
Date REF Created	Short Text	Date when REF was created or modified (just informational)
Emiss*REF (TPY; chem)	Number (Double)	Exposure- and toxicity-weighted facility-total emissions of PB-HAP chemical (product of "Emiss" and "REF")
Scrn Thresh (TPY; grp)	Number (Double)	Tier 1 human health screening threshold emission rate for PB-HAP group (TPY)
Date Scrn Thres Created	Short Text	Date when screening threshold emission rate was created or modified (just informational)
SV (chem)	Number (Double)	Tier 1 human health screening value ("Emiss*REF (TPY; chem)" divided by "Scrn Thresh (TPY; grp)")

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; TPY = short tons per year (short ton = 2,000 pounds); BaP = benzo(a)pyrene; POM = polycyclic organic matter; TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin.

The values of "Date REF Created" and "Date Scrn Thresh Created" are not critical to Tier 2 screen—your import table must have values for these fields, but the tool does not operate on the values.

We show in Table 2-2 the acceptable contents of the "PB-HAP Grp" and "Chem" fields—no other values will be understood by the tool.

Table 2-2. Acceptable Names of PB-HAP Groups and Chemicals

PB-HAP Grp	Chem
Arsenic	Arsenic Compounds
Cadmium	Cadmium Compounds
Methyl Mercury (Hg2)	Methyl Mercury (Emitted as Divalent)
Dioxin	1,2,3,4,6,7,8,9-Octochlorodibenzofuran
Dioxin	1,2,3,4,6,7,8,9-Octochlorodibenzo-p-dioxin
Dioxin	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dioxin	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Dioxin	1,2,3,4,7,8,9-Heptachlorodibenzofuran
Dioxin	1,2,3,4,7,8-Hexachlorodibenzofuran
Dioxin	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,6,7,8-Hexachlorodibenzofuran
Dioxin	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,7,8,9-Hexachlorodibenzofuran
Dioxin	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,7,8-Pentachlorodibenzofuran
Dioxin	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Dioxin	2,3,4,6,7,8-Hexachlorodibenzofuran
Dioxin	2,3,4,7,8-Pentachlorodibenzofuran
Dioxin	2,3,7,8-Tetrachlorodibenzofuran
Dioxin	2,3,7,8-Tetrachlorodibenzo-p-dioxin
POM	1-Methylnaphthalene
POM	2-Acetylaminofluorene
POM	2-Methylnaphthalene
POM	3-Methylcholanthrene
POM	7,12-Dimethylbenz[a]Anthracene
POM	Acenaphthene
POM	Acenaphthylene
POM	Anthracene
POM	Benz[a]anthracene
POM	Benzo(a)fluoranthene
POM	Benzo(c)phenanthrene
POM	Benzo(e)pyrene
POM	Benzo(g,h,i)fluoranthene
POM	Benzo(ghi)perylene
POM	Benzo[a]pyrene
POM	Benzo[b]fluoranthene
POM	Benzo[j]fluoranthene
POM	Benzo[k]fluoranthene
POM	Benzofluoranthenes
POM	beta-Chloronaphthalene
POM	Carbazole
POM	Chrysene
POM	Dibenz[a,j]acridine
POM	Dibenzo[a,h]anthracene
POM	Dibenzo[a,i]pyrene
POM	Fluoranthene
POM	Fluorene
POM	Indeno[1,2,3-c,d]pyrene
POM	PAH, total
POM	Perylene
POM	Phenanthrene
POM	Polycyclic organic matter
POM	Pyrene
POM	Retene

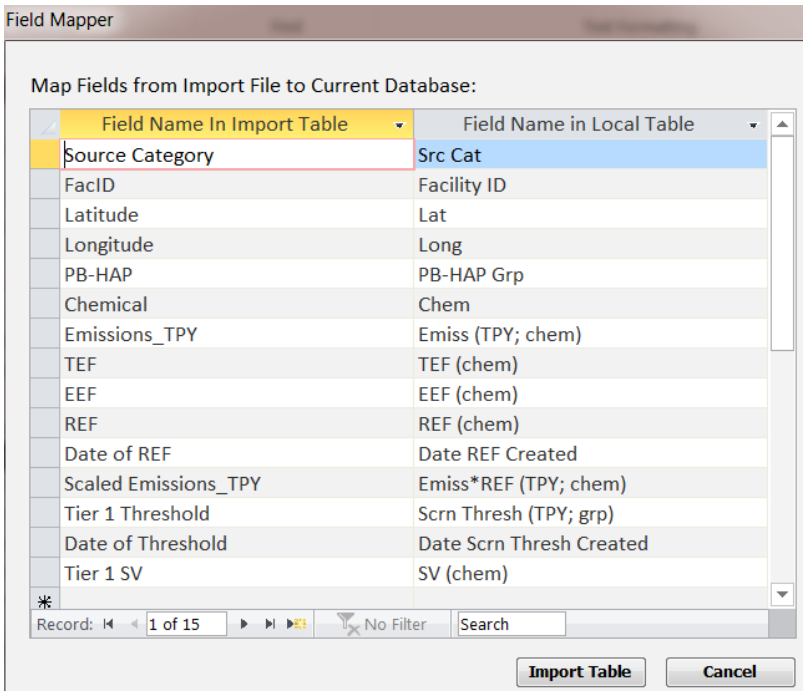
Note: PB-HAP = persistent and bioaccumulative hazardous air pollutant.

Upon clicking the button, the tool will open a Windows Explorer window and you must navigate to the Microsoft Access file containing the Tier 1 results table. After selecting the file to import from, the tool will display a list of tables in that Microsoft Access file, and you must select the appropriate table to import.

After selecting the table to import and clicking "Import Table" on that page, the tool will open up a page allowing you to tell the tool how to map the fields you are importing to the fields that the tool expects to see in this table. We show an example in Figure 2-2. The field names from a hypothetical import table are on the left ("Source Category", "FacID", and so on). If any imported field names already match the expected field names, they will be shown on the right and you do not need to modify those entries. If an imported field name does not match the expected field name, the entry on the right will be blank and

you must click on that empty cell and use the pull-down menu to select the appropriate matching field name. In the example in Figure 2-2, none of the imported field names on the left matched the expected field names, so all entries on the right were blank to start with and we clicked on each cell one-by-one to assign the appropriate field name as shown. Click "Import Table" when complete.

Figure 2-2. Crosswalk for Field Names in Imported File of Results from the Tier 1 Screen for Human Health



Note: The field names shown on the left here are from a hypothetical example table of Tier 1 outputs.

Output of HEM Inhalation Risk Modeling

Description

Providing this output is optional, but you still must click the "Inhalation Data, Excel Format" button, even if it is to tell this tool that you do not have that file.

The file that you can choose to upload here is one of the outputs of the EPA's HEM model—the multipathway risk file produced in HEM's "Summarize Risk" step. A mock-up example of this file is shown in Figure 2-3.

Figure 2-3. Mock-up Example of HEM Multipathway Inhalation Risk File

Src Cat	Facility ID	Rural/ Urban	Octant or MIR	Chem, Centroid, or Discrete	Fips + Block	Lat	Lon	Population	Total Inhalation Cancer Risk	Total Inhalation As Cancer Risk	Total Inhalation PAH Cancer Risk	Total Inhalation D/F Cancer Risk
[Source Category Name]	[Facility ID]	R	MIR	All HAP	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	2	7.54757E-08	4.1079E-08	0	2.32775E-08
[Source Category Name]	[Facility ID]	R	MIR	As	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	2	7.54757E-08	4.1079E-08	0	2.32775E-08
[Source Category Name]	[Facility ID]	R	MIR	PAH		0	0	0	0	4.1079E-08	0	2.32775E-08
[Source Category Name]	[Facility ID]	R	MIR	D/F	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	2	7.54757E-08	4.1079E-08	0	2.32775E-08
[Source Category Name]	[Facility ID]	R	E	Centroid	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	4	2.00719E-08	1.03616E-08	0	6.90531E-09
[Source Category Name]	[Facility ID]	R	NE	Centroid	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	12	1.63927E-08	8.38416E-09	0	5.73871E-09
[Source Category Name]	[Facility ID]	R	S	Centroid	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	2	7.54757E-08	4.1079E-08	0	2.32775E-08
[Source Category Name]	[Facility ID]	R	SE	Centroid	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	2	4.57475E-08	2.77885E-08	0	1.04395E-08
[Source Category Name]	[Facility ID]	R	SW	Centroid	[15-character census block ID]	latitude (decimal degrees)	longitude (decimal degrees)	3	1.10482E-08	5.85524E-09	0	3.60793E-09

Note: To make this an anonymous example, some contents have been replaced by descriptions inside brackets telling you what the contents should be.

The Tier 2 tool can incorporate these inhalation risks into some of its outputs related to the farmer and gardener exposure scenarios. It will display the inhalation risks side-by-side with the farmer and gardener risks, as well as sum together the inhalation and farmer/gardener risks. This is entirely optional.

When you click the "Inhalation Data, Excel Format" button, the first prompt will ask you if you have an inhalation risk file you wish to use. If you click "No", you will then be asked if you have already imported the output of the Tier 1 screen (in the previous step)—if you click "No", you should do that step, then come back to this step and select the appropriate responses; if you click "Yes", no further action is required. If you click "Yes" to use an inhalation risk file, you will be asked to navigate to select that file and then match the source category name from the Tier 1 screening output with the name from this inhalation risk file (in a window similar to that shown in Figure 2-2).

Optional Custom Data

Description

Under "Step 2" on the main page of the human health screen (see Figure 2-1), you may import custom versions of tables that the tool already has default versions of. Importing these custom tables is optional, and the tables must be imported from other Microsoft Access files (no other file types are accepted).

The core of this tool is its matrix table of Tier 2 adjustment factors. The tool uses these to adjust the Tier 1 screening results based on conditions identified here in Tier 2, which creates the Tier 2 screening results. This step currently is disabled due to incomplete functionality.

The tool also is pre-populated with the names and locations of hundreds of surface meteorology stations throughout the US (see Table A-1 in the Appendix) and statistics of wind speed, wind direction, mixing height, and precipitation for those stations. The tool (under Step 3, discussed in Section 2.4) can identify which of these stations is closest to each facility you are screening. Alternatively, you may use this import step to specify your own custom matches between your facilities and the surface meteorology stations in the tool. This step is not commonly conducted and has not been thoroughly tested; we cannot guarantee the correct operation of this step.

The tool is pre-populated with information on thousands of lakes in the US. You may use your own custom lake database instead. The "Custom Lake Dataset" is a table of data for lakes relevant to your screen. If you provide this table, then later under Step 3 (discussed in Section 2.4) you may direct the tool to use your custom table; otherwise, the tool will use the default national lake database already contained in the tool. This step is not commonly conducted and has not been thoroughly tested; we cannot guarantee the correct operation of this step.

Actions

Custom Tier 2 Adj. Factor Matrix

This functionality currently is disabled due to incomplete functionality. You still have the option to directly edit the matrix tables, which are named "tbl_1_Tier2_Matrix_HHFisher", "tbl_1_Tier2_Matrix_HHFarmer", "tbl_1_Tier2_Matrix_HHGardenerRural", and "tbl_1_Tier2_Matrix_HHGardenerUrban", for the fisher, farmer, rural gardener, and urban gardener receptors, respectively.

Custom Meteorology Station Assignments

Click this button to import this optional table. The table must contain the fields as shown in Table 2-3, where the source-category names and facility identifiers match what you provided in the imported table of Tier 1 results, and where the meteorology station identifiers (WBANs) are selected from those available in the tool (we show in Table A-1 of Appendix A all surface stations whose data are incorporated into the tool). If you choose to use this optional import step, do not later click the "Conduct Meteorology Proximity Calculations" under Step 3 (discussed in Section 2.4)—this will overwrite your import here. This step is not commonly conducted and has not been thoroughly tested; we cannot guarantee the correct operation of this step. You still have the option to directly edit the meteorology station assignment table, which is named "tbl_4_Met_Match."

Table 2-3. Format of Optional Custom Table of Meteorology Station Assignments

Field Name	Data Type	Description
Src Cat	Short Text	Custom text label for the source category (must match the imported table of Tier 1 results)
Facility ID	Short Text	Facility identifier (must match the imported table of Tier 1 results)
WBAN	Short Text	Identifier for the surface meteorology station

Note: WBAN = Weather Bureau-Army-Navy.

Custom Lake Dataset

Click this button to import this optional table. The table must contain the fields as shown in Table 2-4. This will not replace the default national lake data table. If you want the tool to use your custom table, you must select that option later in Step 3 (discussed in Section 2.4); otherwise, the tool will use the default national lake data already in the tool. This step is not commonly conducted and has not been thoroughly tested; we cannot guarantee the correct operation of this step. You still have the option to directly edit the custom lake table, which is named "tbl_10_User_LakesPonds."

Table 2-4. Format of Optional Custom Table of Lake Data

Field Name	Data Type	Description
Name	Short Text	Name of lake
Area_km2	Number (double)	Surface area of lake (km^2)
Area_acres	Number (double)	Surface area of lake (acres)
Lon	Number (double)	Representative lake longitude (in decimal degrees)
Lat	Number (double)	Representative lake latitude (in decimal degrees)
Note	Short Text	Optional user notes
HumanHealth_Exclude	Yes/No	Indicate whether or not the lake should be excluded from the screen
HumanHealth_ExcludeReason	Short Text	If "HumanHealth_Exclude" = Yes, provide a short reason here
ObjectID	Short Text	Arbitrary unique identifier for the lake

Note: km^2 = square kilometers.

Metadata

Description

At the bottom of "Step 2" on the main page of the human health screen (see Figure 2-1), with the "Add Description for Each of the Above Files" button, the tool provides a place for you to enter several descriptors for the configuration of your Tier 2 screen.

Actions

Click the button to provide short text descriptions of the Tier 1 screen results that you have imported as well as the lake data and meteorology assignments you are using.

2.4. Step 3: Conduct Proximity Calculations

Lake Page

Click "Open Lake Page" in Step 3 of the main human health page (see Figure 2-1) to facilitate the identification of all lakes (meeting user-specified criteria) that are within a user-specified distance of each facility.

Description

The lake page (see Figure 2-4) allows you to identify certain limiting criteria for which lakes to use in your screen. We list below the criteria.

- Minimum and maximum lake areas: All lakes within this specified range of surface areas (in acres) are included in the screen
- Maximum distance from the facility to the lake: All lakes whose centerpoints are within this distance (in km) of a facility are included in the screen
- Lake dataset: Use the default national lake dataset already in the tool, or use a custom lake dataset that you imported in Step 2 (as discussed in Section 2.3)
- Lake types: This selection is only valid when you are using the default national lake dataset, and types are related to whether it is a lake/pond or reservoir, the hydrographic category (intermittent or perennial), and use (storage, treatment, etc.)
- Excluded lakes: Select whether specific lakes should be excluded from your screen

You may also add lakes to the dataset here.

This part of the tool will then identify all qualifying lakes within the specified distance of all your facilities.

Actions

If you elected to import your own table of lake data (as discussed in Section 2.3), then select "Use imported custom lake dataset" at the top-right of this page; otherwise, select "Use existing USGS lake dataset" (which is the default selection).

In the text fields at the top of this page, you may modify the default allowable lake surface areas (default is 25–100,000 acres inclusive) and maximum allowable distance from facility to lake centerpoint (default is 50 km).

At the center of the page, you may use the "Add" and "Remove" buttons to modify the types of water bodies allowed in the assessment (the default allowed types are already included on the right panel shown in Figure 2-4). This step is only valid when you are using the existing national lake dataset already

in the tool. This step is not commonly conducted and has not been thoroughly tested; we cannot guarantee the correct operation of this step.

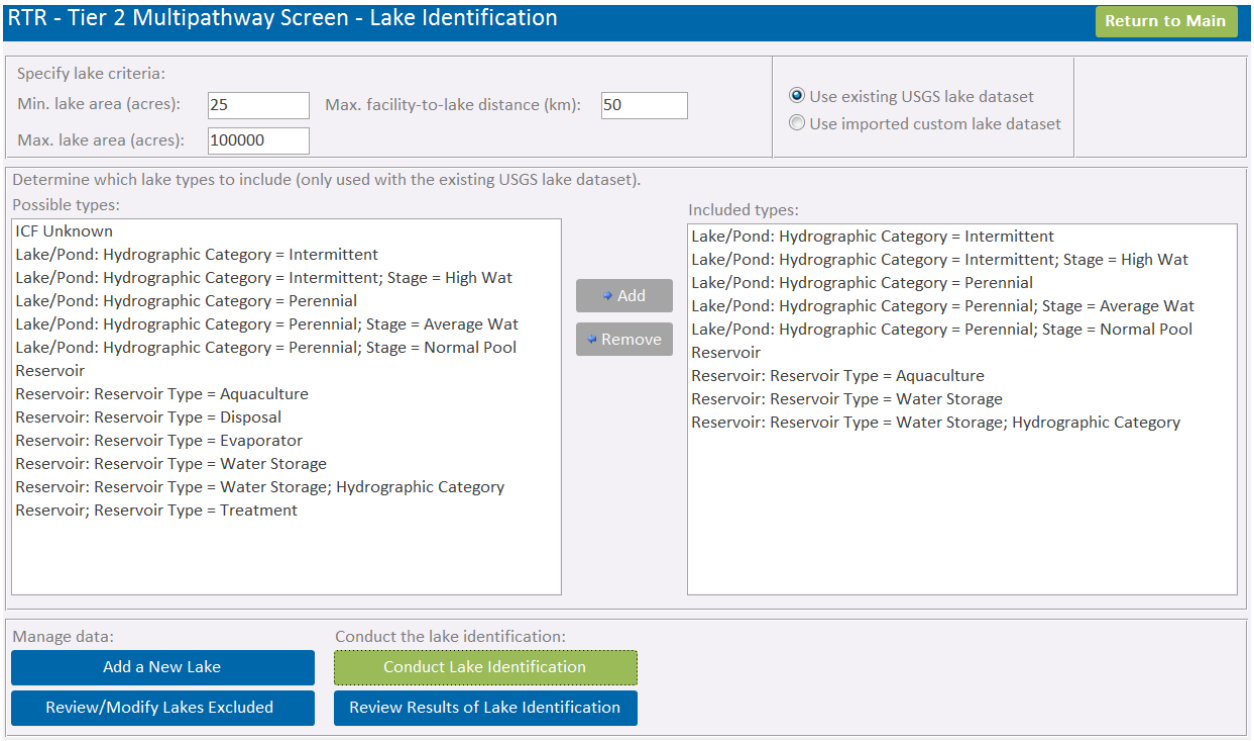
If you wish to add a water body not currently included in the lake dataset, click "Add a New Lake" at the bottom of the page and use the form that appears to add information about the water body. You must supply values for all fields shown.

In RTR Tier 2 screens to date, EPA has elected to exclude some lakes from the screens because further investigation suggested the lakes have dried up, are used for industrial or wastewater purposes, or are closed to public access (etc.). You may review these excluded lakes, or lakes that you have excluded in your custom lake dataset, by clicking the "Review/Modify Lakes Excluded"—you may remove exclusion designations there so that they will be included in your screen, if you wish.

When you have made all the above selections and modifications, click "Conduct Lake Identification". This step might take a moment or more, but a text box will appear on your computer screen when it is complete. If you wish, when this step is complete, you may click the "Review Results of Lake Identification" to see a list of all qualifying lakes that the tool matched to each facility—this will also show the direction of the lake relative to the facility (e.g., "N" indicates lake is to the north of the facility) as well as the distance between the lake centerpoint and the facility.

Click "Return to Main" to exit the lake page and resume the screen procedures.

Figure 2-4. The Lake Page



Meteorology Proximity Calculations

Description

If you imported the optional table of meteorology station assignments in Step 1 (as discussed in Section 2.3), then skip this step.

Otherwise, the "Conduct Meteorology Proximity Calculations" in Step 3 of the main human health page (see Figure 2-1) will identify the surface meteorology station (from data stored in the tool) closest to each of your facilities. The dataset of surface meteorology data is already stored in the tool—we show the stations in Table A-1 of Appendix A.

Actions

Click the button to conduct the facility-to-station matches.

2.5. Step 4: Conduct Tier 2 Screen and View/Export Results

Description

Under Step 4 of the main human health page (see Figure 2-1), the tool will conduct the Tier 2 screen and enable you to view and export the results. The screen, and subsequent generation of individual output tables and the export of those tables, may take from one moment to tens of minutes.

Actions

Click "Conduct Tier 2 Screen" to complete the Tier 2 screen of your facilities. A message box will appear on your computer screen when the calculations are complete.

You may then click on the blue buttons to view summaries of the screen results (which are described below), and they will appear as tables within the tool. You must right-click on the table tabs at the top to close them individually.

View Summary of Results

This table is named "Results_HH_T2_SummaryOutput" here; it is named "Results, Summary-level" in the Access-file export and "T2_HH_Summary" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-5.

The table summarizes the numbers of facilities that did not screen out, separately by PB-HAP group and by the fisher and hypothetical farmer and gardener scenarios. Tier 1 screen results are also displayed for reference (note that Tier 1 screening values aggregate the exposure to the fisher and hypothetical farmer together for a single receptor; Tier 1 has no gardener). Facilities with the largest screening values are also identified (note: screening value is the ratio of facility emissions, weighted by risk-equivalency factor, to the PB-HAP's screening threshold emission rate). This table also indicates the number of facilities in the source category, which simply reflects the number of facilities provided in the input file. For this number to be calculated correctly, you should be sure your input file has all facilities represented in it, even if they do not emit any of the assessed PB-HAPs; otherwise, if you only screen a subset of source category facilities, you may manually edit this facility count, or remove the column altogether if you have no use for it. For the farmer and gardeners, a second set of these counts and maximum values are presented which incorporate the inhalation risks (if you chose to import them).

Table 2-5. Contents of the Tier 2 Human Health Summary Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat Info			
Src Cat	Src Cat	User-provided name of source category	

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Num Facil in Src Cat	Num Facil in Src Cat	In the Tier 1 output file provided as input to this tool: (1) Total number of facilities (2) Number of facilities emitting this PB-HAP Grp	
Num Facil Emitting this Grp	Num Facil Emitting this Grp		
Tier 1			
T1 Num Facil SV ≥ 2	Num Facil SV ≥ 2[a]	Number of facilities with a Tier 1 SV ≥ 2[a]	Font and shading are pink/red if ≥ 1
T1 Max SV	Max SV	(1) Largest Tier 1 SV (2) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T1 Facil with Max SV	Max Facil ID		
Tier 2			
Num Facili SV ≥ 2[a]			
T2 Num Facil Fish SV ≥ 2	Fisher: With Agg Impacts	Number of facilities with a Tier 2SV ≥ 2[a] for the fisher: (1) Considering any multi-facility impacts on the lakes (2) Not considering multi-facility impacts on the lakes	Font and shading are pink/red if ≥ 1
T2 Num Facil Fish SV ≥ 2 No Agg Impacts	Fisher: Without Agg Impacts		
T2 Num Facil Farm SV ≥ 2	Farmer	(1) Number of facilities with a Tier 2 SV ≥ 2[a] for the farmer (2) Same for the rural gardener and urban gardener	
T2 Num Facil RurGard SV ≥ 2	Rural Gardener		
T2 Num Facil UrbGard SV ≥ 2	Urban Gardener		
T2 Num Facil Inh+Farm SV ≥ 2	Inh+Farmer	(1) Number of facilities with a [Tier 2 farmer SV + inhalation risk] ≥ 2[a], only shown for "PB-HAP Grp" = "Total Cancer (Arsenic+POM+Dioxin)" (2) and (3) Same for the rural gardener and urban gardener	
T2 Num Facil Inh+RurGard SV ≥ 2	Inh+Rural Gardener		
T2 Num Facil Inh+UrbGard SV ≥ 2	Inh+Urban Gardener		
Max			
Fisher			
T2 Max Fisher SV	SV	(1) Largest Tier 2 SV for the fisher, considering any multi-facility impacts on the lakes (2) Indicator if multiple facilities were impacting the lake(s) that were part of (1) above (Y or N) (3) Same as (1) above but removing any multi-facility impacts on the lakes (4) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T2 Max Fisher SV Agg Impacts?	Agg Impacts?		Shaded blue if "Y"
T2 Max Fisher SV Before Agg Impacts (If App)	SV Before Agg Impacts (If Applicable)		Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max Fisher SV	Facil ID		
Farmer			
T2 Max Farmer SV	SV	(1) Largest Tier 2 SV for the farmer (2) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max Farmer SV	Facil ID		
Rural Gardener			
T2 Max RurGard SV	SV	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max RurGard SV	Facil ID		

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Urban Gardener			
T2 Max UrbGard SV	SV	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max UrbGard SV	Facil ID		
Inh+Farmer			
T2 Max Inh+Farmer SV	SV	(1) Largest Tier 2 farmer SV + inhalation risk, only shown for "PB-HAP Grp" = "Total Cancer (Arsenic+POM+Dioxin)" (2) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max Inh+Farmer SV	Facil ID		
Inh+Rural Gardener			
T2 Max Inh+RurGard SV	SV	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max Inh+RurGard SV	Facil ID		
Inh+Urban Gardener			
T2 Max Inh+UrbGard SV	SV	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]
T2 Facil with Max Inh+UrbGard SV	Facil ID		

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value. A record is shown for each "PB-HAP Grp", even where the screening did not include emissions of that PB-HAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

View Facility-level Results

Several tables appear upon clicking this button, as noted below.

HH_T2_Facility_Sort

This table is named "HH_T2_Facility_Sort" here; it is named "Results, Facility-level" in the Access-file export and "T2_HH_Facility" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-6.

This table shows the screening results for each PB-HAP and for each facility in your screen. Facility IDs, locations, and associated meteorology station IDs are shown, as are the Tier 1 screening values and Tier 2 fisher, farmer, and gardener screening values. The Tier 2 fisher information indicates if deposition of the PB-HAP from other nearby facilities in the screen are included in the Tier 2 fisher screening values. The locations of the hypothetical farm and garden also are provided. If you chose to import inhalation risks, information on those will be displayed and incorporated, too.

Table 2-6. Contents of the Tier 2 Human Health Facility Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	(1) Facility identifier	
Lat	Facil Lat	(2) and (3) Its representative latitude and longitude (in decimal degrees)	
Long	Facil Long		
WBAN	Facil Met WBAN	Identifier for the meteorology station matched to this facility	
Urban or Rural	Facil Urban or Rural	Facility urban or rural status according to the inhalation risk file (if used)	

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Tier 1			
T1 SV (grp)	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Largest Value			
Fisher			
T2 SV Fisher (grp)	SV	(1) Tier 2 SV for the fisher, considering any multi-facility impacts on the lakes (2) Indicator if multiple facilities were impacting the lake(s) that were part of (1) above (Y or N) (3) Same as (1) above but removing any multi-facility impacts on the lakes	Font and shading are pink/red if ≥ 2[a]
T2 Fisher Agg Impacts?	Agg Impacts?		Shaded blue if "Y"
T2 SV Fisher Before Agg Impacts (If App; grp)	SV Before Agg Impacts (If Applicable)		Font and shading are pink/red if ≥ 2[a]
Farmer			
T2 SV Farmer (grp)	SV	(1) Largest Tier 2 SV for the farmer (2) Its directional octant[b] (3) Distance (in km) from facility to modeled farm	Font and shading are pink/red if ≥ 2[a]
Farmer Oct	Oct		
Facility-Farm Dist (km; bin)	Dist from Facil (km)		
Rural Gardener			
T2 SV Rural Gardener (grp)	SV	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
Rural Gard Oct	Oct		
Facility-Garden Dist Rural (km; bin)	Dist from Facil (km)		
Urban Gardener			
T2 SV Urban Gardener (grp)	SV	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]
Urban Gard Oct	Oct		
Facility-Garden Dist Urban (km; bin)	Dist from Facil (km)		
Farmer + Inhalation			
Max Farmer+Inhal	Total Value	(1) Largest Tier 2 farmer SV + inhalation risk, only shown for "PB-HAP Grp" = "Total Cancer (Arsenic+POM+Dioxin)" (2) and (3) Tier 2 farmer SV and inhalation risk components of (1) above (4) Corresponding directional octant[b] (5) Distance (in km) from facility to inhalation risk location (6) and (7) Corresponding latitude and longitude (in decimal degrees) of the inhalation risk location being used. Notes: "Max Farmer+Inhal" may be 0 if inhalation risk data were not used or if inhalation risks were not available for this octant but this octant still had the largest SV. "Inhal Distance from Facil for Max Farmer+Inhal (km)", "Inhal Lat for Max Farmer+Inhal", and "Inhal Long for Max Farmer+Inhal" will be 0 if "Inhal Risk at Max Farmer+Inhal" = 0.	Font and shading are pink/red if ≥ 2[a]
Farmer SV at Max Farmer+Inhal	Farmer Value		
Inhal Risk at Max Farmer+Inhal	Inhalation Value		
Oct of Max Farmer+Inhal	Oct		
Inhal Distance from Facil for Max Farmer+Inhal (km)	Inhalation Dist from Facil (km)		
Inhal Lat for Max Farmer+Inhal	Inhalation Lat		
Inhal Long for Max Farmer+Inhal	Inhalation Long		
Rural Gardener + Inhalation			

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Max Rural Gard+Inhal	Total Value	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
Rural Gard SV at Max Rural Gard+Inhal	Rural Gardener Value		
Inhal Risk at Max Rural Gard+Inhal	Inhalation Value		
Oct of Max Rural Gard+Inhal	Oct		
Inhal Distance from Facil for Max Rural Gard+Inhal (km)	Inhalation Dist from Facil (km)		
Inhal Lat for Max Rural Gard+Inhal	Inhalation Lat		
Inhal Long for Max Rural Gard+Inhal	Inhalation Long		
Urban Gardener + Inhalation			
Max Urban Gard+Inhal	Total Value	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]
Urban Gard SV at Max Urban Gard+Inhal	Urban Gardener Value		
Inhal Risk at Max Urban Gard+Inhal	Inhalation Value		
Oct of Max Urban Gard+Inhal	Oct		
Inhal Distance from Facil for Max Urban Gard+Inhal (km)	Inhalation Dist from Facil (km)		
Inhal Lat for Max Urban Gard+Inhal	Inhalation Lat		
Inhal Long for Max Urban Gard+Inhal	Inhalation Long		

Notes: WBAN = Weather Bureau-Army-Navy; PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; km = kilometer. A record is shown for each "PB-HAP Grp" at each facility, even where the screening did not include emissions of that PB-HAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

HH_T2_FacilityExceed_Sort

This table is named "HH_T2_FacilityExceed_Sort" here; it is named "Results, Fac-level Exceed, NonCanc2 Canc100" in the Access-file export and "T2HHFacility_Cancer>=100_NC>=1" in the Excel-file export discussed further below under Export Results.

This table has the same format as the table above, but the only records shown are those where the Tier 2 fisher screening value or the Tier 2 farmer or gardener screening values are ≥ 2 when rounded to the nearest whole number (i.e., ≥ 1.5) for chemicals evaluated for non-cancer impacts (mercury and cadmium) or are ≥ 100 (no rounding) for chemicals evaluated for cancer impacts (arsenic, dioxins/furans, and POM). The shading used in the Excel-file export reflects these ≥ 2 and ≥ 100 criteria.

HH_T2_FarmGardenInhal_Sort

This table is named "HH_T2_FarmGardenInhal_Sort" here; it is named "Results, FarmerGardenerInhalation Details" in the Access-file export and "T2_HH_FarmGardenInhalDetails" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-7.

This table displays the results for farmer and gardener receptors at every evaluated octant and distance, only for the "Total Cancer (Arsenic+POM+Dioxin)" chemical group. It also breaks down the results by animal product and produce item.

Table 2-7. Contents of the Tier 2 Human Health Farmer/Gardener Details Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	(1) Facility identifier (2) and (3) Its representative latitude and longitude (in decimal degrees)	
Facility Lat	Facil Lat		
Facility Long	Facil Long		
Urban/Rural	Facil Urban or Rural	Facility urban or rural status according to the inhalation risk file (if used)	
PB-HAP Grp	PB-HAP Grp	"Total Cancer (Arsenic+POM+Dioxin)"	
Tier 1			
T1 SV (grp)	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Ingestion			
Location			
Oct	Oct	(1) Tier 2 directional octant[b] (2) Distance (in km) from facility to modeled farm or garden[c]	
Facility-Farm Dist (km; bin)	Dist from Facil (km)		
SV			
T2 SV Farmer (grp)	Farmer	(1) Tier 2 SV for the farmer (2) and (3) Same for the rural gardener and urban gardener (4), (5), and (6) Indicators for whether (1), (2), and (3) above are the largest among all combinations of "Oct" and "Facility-Farm Dist (km; bin)" (Y or N)	Font and shading are pink/red if ≥ 2[a]
T2 SV Rural Gardener (grp)	Rural Gardener		
T2 SV Urban Gardener (grp)	Urban Gardener		
Largest SV for Facility and PB-HAP Group?			
Largest T2 SV Farmer (grp)	Farmer		Font is bold orange if "Y"
Largest T2 SV Rural Gardener (grp)	Rural Gardener		
Largest T2 SV Urban Gardener (grp)	Urban Gardener		
Total Inhalation Cancer Risk (All HAPs)			
Inhalation Risk (in a million)	Value (in a million)	(1) Inhalation risk divided by 1E-06 (i.e., X in a million) (may be 0 if inhalation risk data were not used or if inhalation risks were not available for this octant) (2) Distance (in km) from facility to inhalation risk location (0 if "Inhalation Risk (in a million)" = 0) (3) and (4) Latitude and longitude (in decimal degrees) of the inhalation risk location (0 if "Inhalation Risk (in a million)" = 0)	Font and shading are pink/red if ≥ 2[a]
Inhalation Facility-Receptor Dist (km)	Dist from Facil (km)		
Inhalation Lat	Lat		
Inhalation Long	Long		
Ingestion SV + Inhalation Risk			

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Value			
Farmer+Inhalation	Farmer	(1) Sum of "T2 SV Farmer (grp)" and "Inhalation Risk (in a million)" (2) and (3) Same for the rural gardener and urban gardener (4), (5), and (6) Indicators for whether (1), (2), and (3) above are the largest among all combinations of "Oct" and "Facility-Farm Dist (km; bin)" (Y or N)	Font and shading are pink/red if ≥ 2[a]
Rural Gardener+Inhalation	Rural Gardener		
Urban Gardener+Inhalation	Urban Gardener		
Largest Val for Facil and PB-HAP Group?			
Largest Farmer+Inhalation	Farmer		Font is bold orange if "Y"
Largest Rural Gardener+Inhalation	Rural Gardener		
Largest Urban Gardener+Inhalation	Urban Gardener		
Farmer Media			
SV			
T2 SV Farmer (grp) Soil	Soil	(1) Soil SV component of "T2 SV Farmer (grp)" (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	Font and shading are pink/red if ≥ 2[a]
T2 SV Farmer (grp) Exposed Vegetable	Exp Veg		
T2 SV Farmer (grp) Protected Vegetable	Prot Veg		
T2 SV Farmer (grp) Exposed Fruit	Exp Fruit		
T2 SV Farmer (grp) Protected Fruit	Prot Fruit		
T2 SV Farmer (grp) Root Vegetable	Root Veg		
T2 SV Farmer (grp) Beef	Beef		
T2 SV Farmer (grp) Total Dairy	Dairy		
T2 SV Farmer (grp) Pork	Pork		
T2 SV Farmer (grp) Poultry	Poultry		
T2 SV Farmer (grp) Eggs	Eggs		
Frac SV			
Frac T2 SV Farmer (grp) Soil	Soil	(1) "T2 SV Farmer (grp) Soil" divided by "T2 SV Farmer (grp)", rounded to 2 decimal places (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	
Frac T2 SV Farmer (grp) Exposed Vegetable	Exp Veg		
Frac T2 SV Farmer (grp) Protected Vegetable	Prot Veg		
Frac T2 SV Farmer (grp) Exposed Fruit	Exp Fruit		
Frac T2 SV Farmer (grp) Protected Fruit	Prot Fruit		
Frac T2 SV Farmer (grp) Root Vegetable	Root Veg		
Frac T2 SV Farmer (grp) Beef	Beef		
Frac T2 SV Farmer (grp) Total Dairy	Dairy		
Frac T2 SV Farmer (grp) Pork	Pork		
Frac T2 SV Farmer (grp) Poultry	Poultry		
Frac T2 SV Farmer (grp) Eggs	Eggs		
Rural Gardener Media			
SV			
T2 SV Rural Gardener (grp) Soil	Soil	(1) Soil SV component of "T2 SV Rural Gardener (grp)" (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	Font and shading are pink/red if ≥ 2[a]
T2 SV Rural Gardener (grp) Exposed Vegetable	Exp Veg		
T2 SV Rural Gardener (grp) Protected Vegetable	Prot Veg		
T2 SV Rural Gardener (grp) Exposed Fruit	Exp Fruit		
T2 SV Rural Gardener (grp) Protected Fruit	Prot Fruit		
T2 SV Rural Gardener (grp) Root Vegetable	Root Veg		
T2 SV Rural Gardener (grp) Beef	Beef		
T2 SV Rural Gardener (grp) Total Dairy	Dairy		
T2 SV Rural Gardener (grp) Pork	Pork		
T2 SV Rural Gardener (grp) Poultry	Poultry		
T2 SV Rural Gardener (grp) Eggs	Eggs		
Frac SV			
Frac T2 SV Rural Gardener (grp) Soil	Soil	(1) "T2 SV Rural Gardener (grp) Soil" divided by "Frac T2 SV Rural	
Frac T2 SV Rural Gardener (grp) Exposed Vegetable	Exp Veg		
Frac T2 SV Rural Gardener (grp) Protected Vegetable	Prot Veg		

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Frac T2 SV Rural Gardener (grp) Exposed Fruit	Exp Fruit	Gardener (grp) Soil", rounded to 2 decimal places (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	
Frac T2 SV Rural Gardener (grp) Protected Fruit	Prot Fruit		
Frac T2 SV Rural Gardener (grp) Root Vegetable	Root Veg		
Frac T2 SV Rural Gardener (grp) Beef	Beef		
Frac T2 SV Rural Gardener (grp) Total Dairy	Dairy		
Frac T2 SV Rural Gardener (grp) Pork	Pork		
Frac T2 SV Rural Gardener (grp) Poultry	Poultry		
Frac T2 SV Rural Gardener (grp) Eggs	Eggs		
Urban Gardener Media			
SV			
T2 SV Urban Gardener (grp) Soil	Soil	(1) Soil SV component of "T2 SV Urban Gardener (grp)" (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	Font and shading are pink/red if ≥ 2[a]
T2 SV Urban Gardener (grp) Exposed Vegetable	Exp Veg		
T2 SV Urban Gardener (grp) Protected Vegetable	Prot Veg		
T2 SV Urban Gardener (grp) Exposed Fruit	Exp Fruit		
T2 SV Urban Gardener (grp) Protected Fruit	Prot Fruit		
T2 SV Urban Gardener (grp) Root Vegetable	Root Veg		
T2 SV Urban Gardener (grp) Beef	Beef		
T2 SV Urban Gardener (grp) Total Dairy	Dairy		
T2 SV Urban Gardener (grp) Pork	Pork		
T2 SV Urban Gardener (grp) Poultry	Poultry		
T2 SV Urban Gardener (grp) Eggs	Eggs		
Frac SV			
Frac T2 SV Urban Gardener (grp) Soil	Soil	(1) "T2 SV Urban Gardener (grp) Soil" divided by "Frac T2 SV Urban Gardener (grp) Soil", rounded to 2 decimal places (2)–(11) Same for exposed vegetable, protected vegetable, exposed fruit, protected fruit, root vegetable, beef, total dairy, pork, poultry, and eggs, respectively	
Frac T2 SV Urban Gardener (grp) Exposed Vegetable	Exp Veg		
Frac T2 SV Urban Gardener (grp) Protected Vegetable	Prot Veg		
Frac T2 SV Urban Gardener (grp) Exposed Fruit	Exp Fruit		
Frac T2 SV Urban Gardener (grp) Protected Fruit	Prot Fruit		
Frac T2 SV Urban Gardener (grp) Root Vegetable	Root Veg		
Frac T2 SV Urban Gardener (grp) Beef	Beef		
Frac T2 SV Urban Gardener (grp) Total Dairy	Dairy		
Frac T2 SV Urban Gardener (grp) Pork	Pork		
Frac T2 SV Urban Gardener (grp) Poultry	Poultry		
Frac T2 SV Urban Gardener (grp) Eggs	Eggs		

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; km = kilometer. This table only pertains to the "Total Cancer (Arsenic+POM+Dioxin)" chemical group.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

[c] The distance is either 0.5, 5, 10, 20, or 40 km between the facility and the octant.

View Lake and Farmer/Gardener Tables

Several tables appear upon clicking this button, as noted below.

HH_T2_RefinedFisher_Sort

This table is named "HH_T2_RefinedFisher_Sort" here; it is named "Results, Refined Fisher Details" in the Access-file export and "T2_HH_LakeAnalysis" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-8.

This table shows the screening values associated with each lake identified in the lake calculations you conducted under Step 2 of the tool (see Section 2.4)—that is, information on each qualifying lake within the user-specified radius around each facility. Results are presented both before and after the refined-fisher assessment—results before the refined-fisher assessment reflect an assumption that all fish consumption comes from the lake on that row of the table, whereas results after the refined-fisher

assessment consider more realistic fish-consumption patterns as they relate to assumed characteristics of sustainable fish withdrawals. The order in which lakes were fished in the refined-fisher scenario are shown, as are the fractions of total fish diet coming from each lake. The Tier 2 fisher screening values provided on the "HH_T2_Facility_Sort_Public" table discussed earlier, considering multi-facility deposition where appropriate, are the sum of the values in the final column of this table.

Table 2-8. Contents of the Tier 2 Human Health Refined Fisher Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	Facility identifier	
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Tier 1			
T1 SV (grp)	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Oct	Oct	Tier 2 directional octant[b]	
Lake Info			
Lake Name	Name	(1) Tier 2 lake name (2) Arbitrary unique identifier for the lake in the USGS database (3) Lake surface area (in acres) (4) Distance (in km) from facility to lake (5) and (6) Lake latitude and longitude (in decimal degrees) (7) Indicator if multiple facilities were impacting the lake (Y or N)	
Lake Object ID (USGS)	Object ID (USGS)		
Lake Area (acres)	Area (acres)		
Facility-Lake Dist (km)	Facility-Lake Dist (km)		
Lake Lat	Lat		
Lake Long	Long		
Aggregate Impacts?	Agg Impacts?		Shaded blue if "Y"
Unrefined Fisher SV			
T2 SV Fisher, Unrefined (grp)	Independent Facil	Before the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV Fisher, Unrefined (grp), Aggregate Impacts	Agg Facil		
Refined Fisher Assessment			
Fisher Order	Fisher Order (0 = fisher did not fish)	(1) Order in which this lake was fished by the Tier 2 modeled fisher (0 = not fished; 1 = fished first; 2 = fished second; and so on) (2) Fraction of the modeled fisher's fish intake that came from this lake	
Fisher Ingest Frac	Fisher Fraction Ingestion (based on lake area)		
SV Fisher			
T2 SV Fisher, Refined No Aggregate Impacts (grp)	Independent Facil	After the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV Fisher, Refined Aggregate Impacts (grp)	Agg Facil		

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; USGS = U.S. Geological Survey; km = kilometer.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

HH_T2_IDAggregateLakes

This table is named "HH_T2_IDAggregateLakes" here; it is named "Results, Aggregately Impacted Lake Details" in the Access-file export and "T2_HH_AggregateLakes" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-9.

This table shows information on lakes that the tool evaluated as receiving chemical deposition from more than one facility in the screen.

Table 2-9. Contents of the Tier 2 Human Health Aggregate Lakes Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat	Src Cat	User-provided name of source category	
Lake Object ID (USGS)	Lake Object ID (USGS)	Arbitrary unique identifier for lake in the USGS database	
Facility ID	Facil ID	Facility identifier	
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Num Facil Impacting This Lake for This PB-HAP Grp	Num Facil Impacting This Lake for This PB-HAP Grp	Number of facilities which were modeled in the screen as impacting this lake	
SV Fisher			
Unrefined Fisher SV			
T2 SV Fisher, Unrefined (grp)	Independent Facil	Before the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV Fisher, Unrefined (grp), Aggregate Impacts	Agg Facil		
Refined Fisher			
T2 SV Fisher, Refined No Aggregate Impacts (grp)	Independent Facil	After the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV Fisher, Refined Aggregate Impacts (grp)	Agg Facil		

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; USGS = U.S. Geological Survey.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

HH_T2_AllExcludedLakes

This table is named "*HH_T2_AllExcludedLakes*" here; it is named "Results, All Lakes Excluded from Any Screen" in the Access-file export and "T2_HH_AllExcludedLakes" in the Excel-file export discussed further below under Export Results. Its contents are described in detail in Table 2-10.

This table shows all lakes that were marked to be excluded from screens. The excluded lakes listed here are not limited to those nearby the facilities being screened.

Table 2-10. Contents of the Tier 2 Human Health Excluded Lakes Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Name	Name	(1)-(5) Lake name, arbitrary unique identifier in the USGS database, latitude and longitude (in decimal degrees), and area (acres)	
ObjectID	Lake Object ID (USGS)		
Lat	Lat		
Lon	Long		
Area_acres	Area (acres)		

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
HumanHealth_ExcludeReason	Reason for Exclusion from Human Health Screen	Reason the lake was excluded from the Tier 2 screen	

Note: USGS = U.S. Geological Survey.

HH_T2_FarmGardenInhal_Sort

This table is the same table discussed above under "View Facility-level Results".

Export Results

When you click this button, several results tables from the tool will be exported to a formatted Microsoft Excel file, and some additional tables will also be exported to a new Microsoft Access file. The tool will prompt you where to save the files, and the naming convention of the files is predetermined in part on the Scenario Description you provided earlier in Step 1 of the tool (see Section 2.2). When the export is complete, the Excel file will remain open and a message will appear on your computer screen.

These two exported files are considered the archive of the screen you conducted. The Excel file contains the summary, facility-level, lake, and farmer/gardener results tables discussed above, plus the metadata you entered earlier in Step 2 to describe your run (see Section 2.3). Some automatic conditional formatting is implemented in the Excel file to call attention to instances where screening values rounded to ≥ 2, as noted in the tables above. The Access file also contains the lake data (the national dataset inherent in the tool and the custom dataset that you may have provided—if you did not provide one, the table will be empty), as well as Tier 2 factors used to refine Tier 1 screening values into Tier 2 screening values, the meteorology station assignments used in the screen, and the inhalation risks you imported (if you chose to).

2.6. Step 5a: Conduct Tier 3 Plume-rise Screen and View/Export Results

Description

Under Step 5 of the main human health page (see Figure 2-1), the tool will apply plume-rise adjustment factors to the Tier 2 results, producing results of the Tier 3 plume-rise screen. This step requires import of a table that must be produced outside of this tool, using the hourly meteorological data and hourly plume-rise data produced by the separate "RTR_Aermet2TrimMeteorology_PlumeRise" Microsoft Access tool. The table need not cover all facilities in the source category, nor all PB-HAPs emitted; it should cover all facilities and emissions deemed appropriate to continue on from the Tier 2 screen to the Tier 3 plume-rise screen. It is important to have run the Tier 2 screen directly before running the Tier 3 plume-rise screen (so that the Tier 2 results are stored in this screening tool), even if the plume-rise adjustment factors were only developed for a subset of facilities in the source category. This step will apply user-supplied plume-rise adjustment factors to all exposure scenarios at the facilities and PB-HAPs you designate, and those adjustments may indirectly impact the screening results for the fisher scenario at other facilities (for the same PB-HAPs) due to the multi-facility deposition approach for lakes within 50 km of more than one facility in the source category. The output screening values will reflect application of the adjustment factors to the affected facilities, PB-HAPs, and lakes, but it also will show unchanged Tier 2 screening values for the unaffected records.

Actions

Click the "Tier 3 Plume-rise Adj. Factors" button to import the table of plume-rise adjustment factors. These factors should be for each of eight directional octants around the facility or facilities of interest,

for each PB-HAP. The import table must be a table in a separate Microsoft Access file, and no other file type is allowed.

We show in Table 2-11 the data fields and data types that the tool requires for this import table. The field names do not need to match what we show in Table 2-11 because this tool will help you link your field names to the field names that the tool expects to use (as discussed later in this subsection).

Table 2-11. Format of Imported Plume-rise Adjustment Factors

Field Name	Data Type	Description
Src Cat	Short Text	Custom text label for the source category
Facility ID	Short Text	Facility identifier
PB-HAP Grp	Short Text	Name of PB-HAP group (see Table 2-2)
Oct	Short Text	Directional octant around the facility ("N" for north of facility, "NE", "E", …, "NW")—all eight octants are required
PR Adj Factor	Number (Double)	Fraction of assessed hours when the effective stack height (output by the separate "RTR_Aermet2TrimMeteorology_PlumeRise") is below the mixing height

Note: PB-HAP = persistent and bioaccumulative hazardous air pollutant.

Upon clicking the button, the tool will open a Windows Explorer window and you must navigate to the Microsoft Access file containing the table of plume-rise adjustment factors. After selecting the file to import from, the tool will display a list of tables in that Microsoft Access file, and you must select the appropriate table to import.

After selecting the table to import and clicking "Import Table" on that page, the tool will open up a page allowing you to tell the tool how to map the fields you are importing to the fields that the tool expects to see in this table (similar to that shown in Figure 2-2; see Section 2.3 for additional instruction). Click "Import Table" when field mapping is complete.

Click the "Conduct Tier 3 Plume-rise Screen" to complete the Tier 3 plume-rise screen. A message box will appear on your computer screen when the calculations are complete.

You may then click on the blue buttons to view the screen results, and they will appear as tables within the tool. You must right-click on the table tabs at the top to close them individually.

View Facility-level Results

"HH_T3_Facility_Sort_Public" (named "T3PR_HH_Facility" in the Excel export discussed further below under Export Results) is the same as "HH_T2_Facility_Sort_Public" (see Section 2.5) except it contains additional fields to the right indicating the screening values after application of plume-rise adjustment factors (these will identical to Tier 2 screening values for any exposure scenarios not affected by the adjustments). Its contents are described in detail in Table 2-12.

Table 2-12. Contents of the Tier 3 Plume Rise Human Health Facility Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	(1) Facility identifier	
Lat	Facil Lat	(2) and (3) Its representative latitude and longitude	
Long	Facil Long	(in decimal degrees)	

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
WBAN	Facil Met WBAN	Identifier for the meteorology station matched to this facility	
Urban or Rural	Facil Urban or Rural	Facility urban or rural status according to the inhalation risk file (if used)	
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Tier 1			
T1 SV (grp)	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Largest Value			
Fisher			
T2 SV Fisher (grp)	SV	(1) Tier 2 SV for the fisher, considering any multi-facility impacts on the lakes	Font and shading are pink/red if ≥ 2[a]
Fisher Agg Impacts?	Agg Impacts?	(2) Indicator if multiple facilities were impacting the lake(s) that were part of (1) above (Y or N)	Shaded blue if "Y"
T2 SV Fisher Before Agg Impacts (If App; grp)	SV Before Agg Impacts (If Applicable)	(3) Same as (1) above but removing any multi-facility impacts on the lakes	Font and shading are pink/red if ≥ 2[a]
Farmer			
T2 SV Farmer (grp)	SV	(1) Largest Tier 2 SV for the farmer (2) Its directional octant[b] (3) Distance (in km) from facility to modeled farm or garden[c]	Font and shading are pink/red if ≥ 2[a]
Farmer Oct	Oct		
Facility-Farm Dist (km; bin)	Dist from Facil (km)		
Rural Gardener			
T2 SV Rural Gardener (grp)	SV	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
Rural Gard Oct	Oct		
Facility-Garden Dist Rural (km; bin)	Dist from Facil (km)		
Urban Gardener			
T2 SV Urban Gardener (grp)	SV	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]
Urban Gard Oct	Oct		
Facility-Garden Dist Urban (km; bin)	Dist from Facil (km)		
Tier 3 Plume Rise			
Plume Rise Adjusted?	Directly Adjusted for Plume Rise?	Indicator if this facility and PB-HAP group had plume-rise adjustment factors on the input file (Y or N)	Shaded blue if "Y"
Largest Value			
Fisher			
T3 SV Fisher (grp)	SV	(1) Tier 3 plume rise SV for the fisher, considering any multi-facility impacts on the lakes	Font and shading are pink/red if ≥ 2[a]
T3 SV Fisher Before Agg Impacts (If App; grp)	SV Before Agg Impacts (If Applicable)	(2) Same as (1) above but removing any multi-facility impacts on the lakes	
Farmer			
T3 SV Farmer (grp)	SV	Largest Tier 3 plume rise SV for the farmer	Font and shading are pink/red if ≥ 2[a]
Rural Gardener			
T3 SV Rural Gardener (grp)	SV	Same as above, but for the rural gardener	Font and shading are pink/red if ≥ 2[a]
Urban Gardener			
T3 SV Urban Gardener (grp)	SV	Same as above, but for the urban gardener	Font and shading are pink/red if ≥ 2[a]

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; km = kilometer. A record is shown for each "PB-HAP Grp" at each facility, even where the screening did not include emissions of that PB-HAP (in such cases, the information shown across the row will be either blank, 0, or "-"), and even when plume-rise adjustment factors were not supplied for that record.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

[c] The distance is either 0.5, 5, 10, 20, or 40 km between the facility and the octant.

View Lake Table

"HH_T3_RefinedFisher_Sort" (named "T3PR_HH_LakeAnalysis" in the Excel export discussed further below under Export Results) is the same as "HH_T2_RefinedFisher_Sort" (see Section 2.5) except it contains additional fields to the right indicating the plume-rise adjustment factor that was applied and the resulting screening values (these will identical to Tier 2 screening values for any lakes not affected by the adjustments). Its contents are described in detail in Table 2-13.

Table 2-13. Contents of the Tier 3 Plume Rise Human Health Refined Fisher Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	Facility identifier	
PB-HAP Grp	PB-HAP Grp	Name of PB-HAP group (see Table 2-2). Also: "Total Cancer (Arsenic+POM+Dioxin)".	
Tier 1			
T1 SV (grp)	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Oct	Oct	Tier 2 directional octant[b]	
Lake Info			
Lake Name	Name	(1) Tier 2 lake name (2) Arbitrary unique identifier for the lake in the USGS database (3) Distance (in km) from facility to lake (4) and (5) Lake latitude and longitude (in decimal degrees) (6) Indicator if multiple facilities were impacting the lake (Y or N)	
Lake Object ID (USGS)	Object ID (USGS)		
Lake Area (acres)	Area (acres)		
Facility-Lake Dist (km)	Facility-Lake Dist (km)		
Lake Lat	Lat		
Lake Long	Long		
Aggregate Impacts?	Agg Impacts?		Shaded blue if "Y"
Unrefined Fisher SV			
T2 SV Fisher, Unrefined (grp)	Independent Facil	Before the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV Fisher, Unrefined (grp), Aggregate Impacts	Agg Facil		
Refined Fisher Assessment			
Fisher Order	Fisher Order (0 = fisher did not fish)	(1) Order in which this lake was fished by the Tier 2 modeled fisher (0 = not fished; 1 = fished first; 2 = fished second; and so on) (2) Fraction of the modeled fisher's fish intake that came from this lake	
Fisher Ingest Frac	Fisher Fraction Ingestion (based on lake area)		
SV Fisher			
T2 SV Fisher, Refined No Aggregate Impacts (grp)	Independent Facil	After the refined fisher assessment:	Font and shading are pink/red if ≥ 2[a]

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
T2 SV Fisher, Refined Aggregate Impacts (grp)	Agg Facil	(1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	
Tier 3 Plume Rise			
Plume Rise Adj Factor	Plume-rise Adjustment Factor	Value of the plume-rise adjustment factor (= 1 if not provided; blank for "Total Cancer (Arsenic+POM+Dioxin)")	Shaded blue if < 1
Unrefined Fisher SV			
T3 SV Fisher, Unrefined (grp)	Independent Facil	Before the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T3 SV Fisher, Unrefined (grp), Aggregate Impacts	Agg Facil		
Refined Fisher SV			
T3 SV Fisher, Refined No Aggregate Impacts (grp)	Independent Facil	After the refined fisher assessment: (1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T3 SV Fisher, Refined Aggregate Impacts (grp)	Agg Facil		

Notes: PB-HAP = persistent and bioaccumulative hazardous air pollutant; POM = polycyclic organic matter; SV = screening value; USGS = U.S. Geological Survey; km = kilometer.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

Export Results

When you click this button, the two tables described above will be exported to a formatted Microsoft Excel file (plus the table of adjustment factors you imported into the tool, exported into sheet name "Plume-rise Adj Factor Inputs", with contents the same as shown in Table 2-11). The tool will prompt you where to save the file, and the naming convention of the file is predetermined in part on the Scenario Description you provided earlier in Step 1 of the tool (see Section 2.2). When the export is complete, the Excel file will remain open and a message will appear on your computer screen.

2.7. Step 5b: Conduct Tier 3 Time-series Screen and View/Export Results

The functionality of this step has not been fully developed. As such, the button to import information for this screen has been disabled, and the other active buttons regarding the human health Tier 3 screen all pertain only to the plume-rise screen. The time-series screen involves running TRIM with one or more screening scenarios selected to target your facilities and media of concern, using site-specific data on meteorology, emissions, and plume rise. The results from the TRIM runs can be used to adjust the Tier 2 screening values.

3. Ecological Screen

3.1. Main Page

Description

(Figure 3-1) You will conduct all functions of the ecological screen from this page, or from subsequent pages that will appear when you click buttons on this page. You must conduct the steps sequentially—that is, first Step 1 as noted on the page, then Step 2, and so on down the page.

Green buttons signify mandatory functions, while blue buttons are optional. Step 1 also is mandatory.

Some functions may take from one moment to tens of minutes to complete—each step will display a message on the computer screen when complete.

We describe each step in the subsections below. Note that Tier 3 ecological screens are not currently supported within this tool.

Figure 3-1. Main Page for Ecological Screen

3.2. Step 1: Scenario Description

Identical to that of the human health screen: see Section 2.2, though here referencing Figure 3-1.

3.3. Step 2: Import Results of Tier 1 Screen; Add Metadata

Output of Tier 1 Screen

Identical to that of the human health screen: see Section 2.2, though here referencing Figure 3-1.and Table 3-1.

Table 3-1. Format of Imported Tier 1 Screen Results for Ecological

Field Name	Data Type	Description
Src Cat	Short Text	Custom text label for the source category
Facility ID	Short Text	Facility identifier
Lat	Number (Double)	Representative facility latitude (in decimal degrees)
Long	Number (Double)	Representative facility longitude (in decimal degrees)
EcoHAP Grp	Short Text	Name of EcoHAP group (see Table 3-2)
Chem	Short Text	Name of EcoHAP chemical (see Table 3-2)
Emiss (TPY; chem)	Number (Double)	Facility-total emissions of the PB-HAP chemical (TPY)
Assessment Endpoint	Short Text	Name of the ecological media evaluated (see Table 3-3)
EcoEEF (chem)	Short Text	Tier 1 ecological exposure equivalency factor for EcoHAP chemical (1 for mercury, cadmium, and arsenic; relative to BaP for POMs; relative to TCDD for dioxins/furans)
Date EcoEEF Created	Short Text	Date when EcoEEF was created or modified (just informational)
Emiss*EcoEEF (TPY; chem)	Number (Double)	Exposure- and toxicity-weighted facility-total emissions of EcoHAP chemical (product of "Emiss" and "EcoEEF")
Benchmark Effects Level	Short Text	Type of ecological benchmark
Benchmark Value	Short Text	Value of the Benchmark Effects Level
Scrn Thresh (TPY; grp)	Number (Double)	Tier 1 ecological screening threshold emission rate EcoHAP group (TPY)
Date Scrn Thres Created	Short Text	Date when screening threshold emission rate was created or modified (just informational)
SV (chem)	Number (Double)	Tier 1 ecological screening value ("Emiss*EcoEEF (TPY; chem)" divided by "Scrn Thresh (TPY; grp)")

Notes: EcoHAP = ecological hazardous air pollutant; TPY = short tons per year (short ton = 2,000 pounds); BaP = benzo(a)pyrene; POM = polycyclic organic matter; TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin; SV = screening value.

The values of "Date EcoEEF Created" and "Date Scrn Thresh Created" are not critical to Tier 2 screen—your import table must have values for these fields, but the tool does not operate on the values. The benchmark effects level and value also are not used directly by the Tier 2 screen.

We show in Table 3-2the acceptable contents of the "PB-HAP Grp" and "Chem" fields—no other values will be understood by the tool.

Table 3-2. Acceptable Names of EcoHAP Groups and Chemicals

EcoHAP Grp	Chem
Arsenic	Arsenic Compounds
Cadmium	Cadmium Compounds
Methyl Mercury (Hg2)	Methyl Mercury (Emitted as Divalent)

EcoHAP Grp	Chem
Divalent Mercury	Divalent Mercury
Dioxin	1,2,3,4,6,7,8,9-Octochlorodibenzofuran
Dioxin	1,2,3,4,6,7,8,9-Octochlorodibenzo-p-dioxin
Dioxin	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dioxin	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Dioxin	1,2,3,4,7,8,9-Heptachlorodibenzofuran
Dioxin	1,2,3,4,7,8-Hexachlorodibenzofuran
Dioxin	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,6,7,8-Hexachlorodibenzofuran
Dioxin	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,7,8,9-Hexachlorodibenzofuran
Dioxin	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Dioxin	1,2,3,7,8-Pentachlorodibenzofuran
Dioxin	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Dioxin	2,3,4,6,7,8-Hexachlorodibenzofuran
Dioxin	2,3,4,7,8-Pentachlorodibenzofuran
Dioxin	2,3,7,8-Tetrachlorodibenzofuran
Dioxin	2,3,7,8-Tetrachlorodibenzo-p-dioxin
POM	1-Methylnaphthalene
POM	2-Acetylaminofluorene
POM	2-Methylnaphthalene
POM	3-Methylcholanthrene
POM	7,12-Dimethylbenz[a]Anthracene
POM	Acenaphthene
POM	Acenaphthylene
POM	Anthracene

EcoHAP Grp	Chem
POM	Benz[a]anthracene
POM	Benzo(a)fluoranthene
POM	Benzo(c)phenanthrene
POM	Benzo(e)pyrene
POM	Benzo(g,h,i)fluoranthene
POM	Benzo(ghi)perylene
POM	Benzo[a]pyrene
POM	Benzo[b]fluoranthene
POM	Benzo[j]fluoranthene
POM	Benzo[k]fluoranthene
POM	Benzofluoranthenes
POM	beta-Chloronaphthalene
POM	Carbazole
POM	Chrysene
POM	Dibenz[a,j]acridine
POM	Dibenzo[a,h]anthracene
POM	Dibenzo[a,i]pyrene
POM	Fluoranthene
POM	Fluorene
POM	Indeno[1,2,3-c,d]pyrene
POM	PAH, total
POM	Perylene
POM	Phenanthrene
POM	Polycyclic organic matter
POM	Pyrene
POM	Retene

Note: EcoHAP = ecological hazardous air pollutant.

We show in Table 3-3 the acceptable assessment endpoints—no other values will be understood by the tool.

Table 3-3. Acceptable Ecological Assessment Endpoints

Fish - Avian Piscivores
Fish - Mammalian Piscivores
Sediment Community
Surface Soil - Dist. 1 - 312 m
Surface Soil - Dist. 2 - 850 m
Surface Soil - Dist. 3 - 1,500 m
Surface Soil - Dist. 4 - 3,500 m
Surface Soil - Dist. 5 - 7,500 m
Water-column Community

Upon clicking the button, the tool will open a Windows Explorer window and you must navigate to the Microsoft Access file containing the Tier 1 results table. After selecting the file to import from, the tool will display a list of tables in that Microsoft Access file, and you must select the appropriate table to import.

After selecting the table to import and clicking "Import Table" on that page, the tool will open up a page allowing you to tell the tool how to map the fields you are importing to the fields that the tool expects to see in this table. (similar to that shown in Figure 2-2; see Section 2.3 for additional instruction). Click "Import Table" when field mapping is complete.

A final screen will open at this point, asking you to alter (if necessary) the number of facilities in the source category, and to enter an appropriate fenceline radius to use for the source category. For the number of facilities in the source category (which is written out to outputs), the tool will automatically calculate this based on the imported data described above, but in some cases you may decide to limit your input file to only those facilities emitting PB-HAPs (especially due to the much larger input file for the ecological screen versus the human health screen)—in this case the calculated facility count will be wrong, and you can fix it here. For source categories whose facilities have particularly large footprints, some of the evaluated soil distances (see Table 3-3) and some of the local lakes may be on facility property where ecological exposure may not occur; in these cases, you may specify a fenceline whereby all soil areas and lakes inside the fenceline are excluded from the Tier 2 screen outputs.

Optional Custom Data

See the same subsection in Section 2.3.

Metadata

See the same subsection in Section 2.3.

3.4. Step 3: Conduct Proximity Calculations

Lake Page

See the same subsection in Section 2.4. Note that there may be different criteria for excluding lakes from ecological screens versus human health screens.

Meteorology Proximity Calculations

See the same subsection in Section 2.4.

3.5. Step 4: Conduct Tier 2 Screen and View/Export Results

Description

Under Step 4 of the main ecological page (see Figure 3-1), the tool will conduct the Tier 2 screen and enable you to view and export the results. The screen, and subsequent generation of individual output tables and the export of those tables, may take from one moment to tens of minutes.

Actions

Click "Conduct Tier 2 Screen" to complete the Tier 2 screen of your facilities. A message box will appear on your computer screen when the calculations are complete.

You may then click on the blue buttons to view summaries of the screen results, and they will appear as tables within the tool. You must right-click on the table tabs at the top to close them individually. All of these results account for removal of soil compartments and lakes from the screen due to the user-specified fenceline radius.

View Summary of Results

This table is named "Results_Eco_T2_SummaryOutput" here. While here it contains results for all assessment endpoints, the version exported (discussed further below under Export Results) has the soil endpoints removed (soil results are exported several other ways as noted below). The exported versions are named "Results, T2 Lake Summary-level" in the Access-file export and "Eco_Summary_T2_Lakes" in the Excel-file export. Its contents are described in detail in Table 3-4.

The table summarizes the numbers of facilities that did not screen out, separately by EcoHAP group, assessment endpoint, and benchmark effects level. Tier 1 screen results are also displayed for reference. Facilities with the largest screening values also are shown (note: screening value is the ratio of facility emissions, weighted by ecological exposure equivalency factor, to the appropriate screening threshold emission rate). This table also indicates the number of facilities in the source category, which simply reflects the number of facilities provided in the input file. For this number to be calculated correctly, you should be sure your input file has all facilities represented in it, even if they do not emit any of the assessed PB-HAPs; otherwise, if you only screen a subset of source category facilities, you may manually edit this facility count, or remove the column altogether if you have no use for it.

Table 3-4. Contents of the Tier 2 Ecological Summary Results Table

Field Name (Access)	**Field Name (Excel)**	**Definition**	**Formatting in Excel**
Src Cat Info			
Src Cat	Src Cat	User-provided name of source category	
Fenceline (m)	Fenceline (m)	User-provided fenceline distance (in m)	
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Num Facil in Src Cat (Emitting Any HAP)	Num Facil in Src Cat	In the Tier 1 output file provided as input to this tool: (1) Total number of facilities (2) Number of facilities emitting this EcoHAP Grp	
Num Facil Emitting This Grp	Num Facil Emitting this Grp		
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Corresponding value	
Benchmark Value	Benchmark Value		
Tier 1			
T1 Num Facil SV > 2	Num Facil SV ≥ 2[a]	Number of facilities with a Tier 1 SV ≥ 2[a]	Font and shading are pink/red if ≥ 1
T1 Largest SV	Max SV	(1) Largest Tier 1 SV (2) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T1 Largest SV Facil	Max Facil ID		
Tier 2			
Num Facili SV ≥ 2[a]			
T2 Num Facil SV > 2	Agg Impacts Included	Number of facilities with a Tier 2SV ≥ 2[a]: (1) Considering any multi-facility impacts on the lakes (2) Not considering multi-facility impacts on the lakes Notes: For assessment endpoints not associated with lakes, "T2 Num Facil SV > 2" will simply be the number of facilities with SV ≥ 2 for the given benchmark effects level, and "T2 Num Facil SV > 2 Before Agg" will be 0.	Font and shading are pink/red if ≥ 1
T2 Num Facil SV > 2 Before Agg	Agg Impacts Not Included		
Max			
T2 Largest SV	SV	(1) Largest Tier 2 SV (2) Indicator if multiple facilities were impacting the lake(s) that were part of (1) above (Y or N)	Font and shading are pink/red if ≥ 2[a]
Agg Impacts?	Agg Impacts?		Shaded blue if "Y"

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
T2 SV Before Agg	SV Before Agg Impacts (If Applicable)	(3) Same as (1) above but removing any multi-facility impacts on the lakes (4) Corresponding facility identifier Notes: For assessment endpoints associated with lakes, "T2 Largest SV" will consider any multi-facility impacts on the lakes. For assessment endpoints not associated with lakes, "Agg Impacts?" and "T2 SV Before Agg" will be blank.	Font and shading are pink/red if ≥ 2[a]
T2 Largest SV Facil	Facil ID		

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value; m = meter. A record is shown for each "EcoHAP", "Assessment Endpoint", and "Benchmark Effects Level", even where the screening did not include emissions of that EcoHAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

View Facility-level Results

This table is named "Eco_T2_Facility_Sort" here. While here it contains results for all assessment endpoints, the version exported (discussed further below under Export Results) has the soil endpoints removed (soil results are exported several other ways as noted below). The exported versions are named "Results, T2 Lake Facility-level" in the Access-file export and "Eco_Facility_T2_Lakes" in the Excel-file export. Its contents are described in detail in Table 3-5.

This table shows the screening results for each EcoHAP and for each facility in your screen (and each assessment endpoint and benchmark effects level). Facility IDs, locations, and associated meteorology station IDs are shown, as are the Tier 1 and Tier 2 screening values. The Tier 2 lake information indicate if deposition of the EcoHAP from other nearby facilities in the screen are included in the Tier 2 screening values related to aquatic media.

Table 3-5. Contents of the Tier 2 Ecological Facility Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	(1) Facility identifier	
Facil Lat	Facil Lat	(2) and (3) Its representative latitude and longitude (in decimal degrees)	
Facil Long	Facil Long		
Met WBAN	Facil Met WBAN	Identifier for the meteorology station matched to this facility	
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint)	
Benchmark Value	Benchmark Value	(2) Corresponding value	
Tier 1			
T1 SV	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]
Tier 2			
Largest Value			
T2 SV	SV	(1) Tier 2 SV with any multi-facility impacts included (2) Directional octant[b] (3) Tier 2 lake name	Font and shading are pink/red if ≥ 2[a]
Oct	Oct of SV		
Lake Name	Lake Name		

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Object ID (USGS)	Lake Object ID (USGS)	(4) Arbitrary unique identifier for the lake in the USGS database	
Lake Size (Acres)	Lake Area (acres)	(5) Lake surface area (in acres)	
Facility-Lake Dist (km)	Facil-Lake Dist (km)	(6) Distance (in km) from facility to lake	
Lake Lat	Lake Lat	(7) and (8) Lake latitude and longitude (in decimal degrees)	
Lake Long	Lake Long		
Agg Impacts?	Agg Impacts?	(9) Indicator if multiple facilities were impacting the lake (Y or N)	Shaded blue if "Y"
T2 SV Before Agg	SV Before Agg Impacts (If Applicable)	(10) Tier 2 SV with any multi-facility impacts removed Notes: For assessment endpoints not associated with lakes, fields (3) through (10) here will be blank.	Font and shading are pink/red if ≥ 2[a]

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value; km = kilometer; USGS = U.S. Geological Survey. A record is shown for each "EcoHAP", "Assessment Endpoint", and "Benchmark Effects Level" at each facility, even where the screening did not include emissions of that EcoHAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

[b] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

View Soil Areas by Facility and Source Category

Two tables appear upon clicking this button, as noted below.

Eco_T2_FacilitySoil_Sort

This table is named "Eco_T2_FacilitySoil_Sort" here. While here it contains results for Tier 1 and Tier 2, the version exported (discussed further below under Export Results) has the Tier 1 results removed. The exported versions are named "Results, T2 Soil Facility-level" in the Access-file export and "Eco_Facility_T2_SoilAreas" in the Excel-file export. Its contents are described in detail in Table 3-6.

This table shows facility area-weighted screening values (where the screening value at each individual soil compartment is weighted based on the compartment's fraction of total modeled area), along with the total area (in acres) of soil compartments having screening values rounding to ≥ 2 (and that value divided by the total modeled area). In Tier 1, there are five soil areas in one direction (facility to the west, watershed to the east). In Tier 2, there are five soil areas in each of eight directions (facility in the center, directional octants of watersheds extending to the north, northeast, etc.).

Table 3-6. Contents of the Tier 2 Ecological Soil Facility Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Facil Info			
Src Cat	Src Cat	User-provided name of source category	
Facil ID	Facil ID	Facility identifier	
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint)	
Benchmark Value	Benchmark Value	(2) Corresponding value	
Tier 1			
Area-Wt T1 Soil SV	N/A (these fields are not in the Excel export)	Area-weighted average Tier 1 SV, including all the modeled soil parcels in the Tier 1 screen	N/A (these fields are not in the Excel export)
T1 Area SV >=2		Total surface area (in acres) of soil parcels having Tier 1 SV ≥ 2[a]	
T1 Area Percent		"T1 Area SV >=2" divided by the total modeled area	
Tier 2			

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Area-Wt T2 Soil SV	Overall Soil SV Area-wght avg SVs all soil parcels	(1) Same as "Area-Wt T1 Soil SV" but for Tier 2 (2) Same as "Area-Wt T2 Soil SV" but only for the directional octant with the largest area-weighted SV (3) Same as "T1 Area SV >=2" but for Tier 2 (4) Same as "T1 Area Percent" but for Tier 2	Font and shading are pink/red if ≥ 2[a]
Area-Wt T2 Soil SV Worst Oct	N/A (this field is not in the Excel export)		N/A (this field is not in the Excel export)
T2 Area SV >=2	Area SV ≥ 2 for Soil (acres) Based on individual soil parcels		Font and shading are pink/red if >0
T2 Area Percent	% All Soil Areas SV ≥ 2 Based on individual soil parcels		

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value. This table only shows records for scenarios where at least one evaluated soil parcel has SV ≥ 2[a].

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Results_Eco_T2_SrcCatSoil

This table is named "Results_Eco_T2_SrcCatSoil" here. It is not exported. Its contents are described in detail in Table 3-7.

This table shows the percentage of modeled area having soil-compartment screening values rounded to ≥ 2.

Table 3-7. Contents of the Tier 2 Ecological Soil Source Category Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat	N/A (this table is not exported)	User-provided name of source category	N/A (this table is not exported)
EcoHAP		Name of EcoHAP group (see Table 3-2)	
Benchmark Effects Level		(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Corresponding value	
Benchmark Value			
T1 Soil Area Percent		Total surface area (in acres) of soil parcels having Tier 1 SV ≥ 2[a] divided by the total modeled area	
T2 Soil Area percent		Same as "T1 Soil Area Percent" but for Tier 2	

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value.

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Export Results

When you click this button, results will be exported to a new Microsoft Access file and a formatted Microsoft Excel file. These results tables generally contain similar information as those viewable when you run the tool. However, as discussed above, in some cases they have been reformatted and split up into several additional tables. The tool will prompt you where to save the files, and the naming convention of the files is predetermined in part on the Scenario Description you provided earlier in Step 1 of the tool (see Section 3.2). When the export is complete, the Excel file will remain open and a message will appear on your computer screen.

These two exported files are considered the archive of the screen you conducted. The files include the metadata you entered earlier in Step 2 to describe your run (see Section 3.3). Some automatic

conditional formatting is implemented in the Excel file to call attention to instances where screening values rounded to ≥ 2. The Access file also contains the lake data (the national dataset inherent in the tool and the custom dataset that you may have provided—if you did not provide one, the table will be empty), as well as Tier 2 factors used to refine Tier 1 screening values into Tier 2 screening values, and the meteorology station assignments used in the screen.

These exported files contain several tables that are not automatically viewable when you run the tool, as noted below.

Results, T1 Summary-level

This table is named "Results, T1 Summary-level" in the Access-file export and "Eco_Summary_T1_All" in the Excel-file export. Its contents are described in detail in Table 3-8.

This table shows the number of screened facilities having SV ≥ 2 for a given EcoHAP, endpoint, and benchmark effects level, along with the largest such SV from among the screened facilities and the ID of that facility.

Table 3-8. Contents of the Tier 1 Ecological Summary Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat Info			
Src Cat	Src Cat	User-provided name of source category	
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Num Facil in Src Cat (Emitting Any HAP)	Num Facil in Src Cat	In the Tier 1 output file provided as input to this tool: (1) Total number of facilities (2) Number of facilities emitting this EcoHAP Grp	
Num Facil Emitting This Grp	Num Facil Emitting this Grp		
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Corresponding value	
Benchmark Value	Benchmark Value		
Tier 1			
T1 Num Facil SV > 2	Num Facil SV ≥ 2[a]	Number of facilities with a Tier 1 SV ≥ 2[a]	Font and shading are pink/red if ≥ 1
T1 Largest SV	Max SV	(1) Largest Tier 1 SV (2) Corresponding facility identifier	Font and shading are pink/red if ≥ 2[a]
T1 Largest SV Facil	Max Facil ID		

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value. A record is shown for each "EcoHAP", "Assessment Endpoint", and "Benchmark Effects Level", even where the screening did not include emissions of that EcoHAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Results, T1 Facility-level

This table is named "Results, T1 Facility-level" in the Access-file export and "Eco_Facility_T1_All" in the Excel-file export. Its contents are described in detail in Table 3-9.

This table shows the Tier 1 screening results imported for each facility, EcoHAP, endpoint, and benchmark affects level.

Table 3-9. Contents of the Tier 1 Ecological Facility Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat Info			
Src Cat	Src Cat	User-provided name of source category	
Facil ID	Facil ID	(1) Facility identifier (2) and (3) Its representative latitude and longitude (in decimal degrees)	
Facil Lat	Facil Lat		
Facil Long	Facil Long		
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Num Facil in Src Cat (Emitting Any HAP)	Num Facil in Src Cat	In the Tier 1 output file provided as input to this tool: (1) Total number of facilities (2) Number of facilities emitting this EcoHAP Grp	
Num Facil Emitting This Grp	Num Facil Emitting this Grp		
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Correspondign value	
Benchmark Value	Benchmark Value		
Tier 1			
T1 SV	SV	Tier 1 SV	Font and shading are pink/red if ≥ 2[a]

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value. A record is shown for each "EcoHAP", "Assessment Endpoint", and "Benchmark Effects Level", even where the screening did not include emissions of that EcoHAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Results, All T2 Soil Parcels Facility-level

This table is named "Results, All T2 Soil Parcels Facility-level" in the Access-file export and "Eco_Facility_T2_SoilParcels" in the Excel-file export. Its contents are described in detail in Table 3-10.

This table shows the Tier 2 screening results at each individual soil parcel evaluated (i.e., at five distances for eight directional octants for every facility).

Table 3-10. Contents of the Tier 2 Ecological Soil Full Results Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat Info			
Src Cat	Src Cat	User-provided name of source category	
Facility ID	Facil ID	Facility identifier	
EcoHAP	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Facility-Soil Dist (m)	Facil-Soil Dist (m)	Distance (in m) from facility to soil parcel	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Corresponding value	
Benchmark Value	Benchmark Value		
Tier 2			
Oct	Oct	Directional octant[a]	
T2 SV (grp; oct)	SV	Tier 2 SV	Font and shading are pink/red if ≥ 2[b]

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value; m = meter. A record is shown for each "EcoHAP", "Assessment Endpoint", and "Benchmark Effects Level", even where the screening did not include emissions of that EcoHAP (in such cases, the information shown across the row will be either blank, 0, or "-").

[a] The directional octant is either: "N", "NE", "E", "SE", "S", "SW", "W", or "NW", for north, northeast, …, northwest.

[b] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Results, Aggregately Impacted Lake Details

This table is named "Results, Aggregately Impacted Lake Details" in the Access-file export and "Eco_T2_AggLakes" in the Excel-file export. Its contents are described in detail in Table 3-11.

This table shows information on lakes that the tool evaluated as receiving chemical deposition from more than one facility in the screen.

Table 3-11. Contents of the Tier 2 Ecological Aggregate Lakes Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Src Cat	Src Cat	User-provided name of source category	
Lake Object ID (USGS)	Lake Object ID (USGS)	Arbitrary unique identifier for lake in the USGS database	
Facility ID	Facil ID	Facility identifier	
EcoHAP Grp	EcoHAP Grp	Name of EcoHAP group (see Table 3-2)	
Assessment Endpoint	Assessment Endpoint	Assessed organism or community (see Table 3-3)	
Benchmark Effects Level	Benchmark Effects Level	(1) Benchmark effects level (can be more than one per assessment endpoint) (2) Corresponding value	
Benchmark Value	Benchmark Value		
Num Facil Impacting This Lake for This EcoHAP Grp	Num Facil Impacting This Lake for This EcoHAP Grp	Number of facilities which were modeled in the screen as impacting this lake	
T2 SV			
T2 SV, No Aggregation (grp; oct)	Independent Facil	(1) Tier 2 SV with any multi-facility impacts removed (2) Tier 2 SV with any multi-facility impacts included	Font and shading are pink/red if ≥ 2[a]
T2 SV, Aggregation (grp; oct)	Agg Facil		

Notes: EcoHAP = ecological hazardous air pollutant; SV = screening value; USGS = U.S. Geological Survey.
[a] References to SVs being ≥ 2 are after rounding to the nearest whole number (i.e., SV ≥ 1.5).

Results, All Lakes Excluded from Any Screen

This table is named "Results, All Lakes Excluded from Any Screen" in the Access-file export and "Eco_T2_ExclLakes" in the Excel-file export. Its contents are described in detail in Table 3-12.

This table shows all lakes that were marked to be excluded from screens. The excluded lakes listed here are not limited to those nearby the facilities being screened.

Table 3-12. Contents of the Tier 2 Ecological Excluded Lakes Table

Field Name (Access)	Field Name (Excel)	Definition	Formatting in Excel
Name	Name	(1)-(5) Lake name, arbitrary unique identifier in the USGS database, latitude and longitude (in decimal degrees), and area (acres)	
ObjectID	Lake Object ID (USGS)		
Lat	Lat		
Lon	Long		
Area_acres	Area (acres)		
Eco_ExcludeReason	Reason for Exclusion from EcoHAP Screen	Reason the lake was excluded from the Tier 2 screen	

Note: USGS = U.S. Geological Survey.

3.6. Step 5a: Conduct Tier 3 Plume-rise Screen and View/Export Results

The functionality of this step has not been fully developed. As such, the buttons to implement it have been disabled. The plume-rise screen involves estimating how often the chemical plume(s) are deposited above the mixing layer (which can be estimated by the separate "RTR_Aermet2TrimMeteorology_PlumeRise" Microsoft Access tool) and the impacts on the screening results. The time-series screen involves running TRIM with one or more screening scenarios selected to target your facilities and media of concern, using site-specific data on meteorology, emissions, and plume rise. The results from the TRIM runs can be used to adjust the Tier 2 screening values.

Appendix A.

Table A-1. Acceptable WBAN Identifiers of Surface Meteorology Stations Currently in this Tool

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
26409	ANCHORAGE, AK	61.22	-149.86	42	26409	ANCHORAGE, AK	61.16	-149.98
26451	ANCHORAGE, AK	61.18	-149.99	37	26409	ANCHORAGE, AK	61.16	-149.98
25308	ANNETTE, AK	55.04	-131.57	33	25308	ANNETTE ISLAND, AK	55.03	-131.57
27502	BARROW, AK	71.29	-156.76	12	27502	BARROW, AK	71.3	-156.78
26615	BETHEL, AK	60.79	-161.83	31	26615	BETHEL, AK	60.78	-161.8
26533	BETTLES, AK	66.92	-151.51	196	26411	FAIRBANKS, AK	64.82	-147.87
25624	COLD BAY, AK	55.21	-162.72	24	25624	COLD BAY, AK	55.2	-162.72
26410	CORDOVA, AK	60.49	-145.45	13	26409	ANCHORAGE, AK	61.16	-149.98
27406	DEADHORSE, AK	70.19	-148.48	16	26411	FAIRBANKS, AK	64.82	-147.87
26415	DELTA JUNCTION/FT GR, AK	64	-145.72	391	26411	FAIRBANKS, AK	64.82	-147.87
26411	FAIRBANKS, AK	64.82	-147.86	132	26411	FAIRBANKS, AK	64.82	-147.87
26425	GULKANA, AK	62.16	-145.46	479	26411	FAIRBANKS, AK	64.82	-147.87
25323	HAINES, AK	59.25	-135.52	7	26316	WHITEHORSE, CA	60.72	-135.07
25507	HOMER, AK	59.65	-151.48	17	26409	ANCHORAGE, AK	61.16	-149.98
25506	ILIAMNA, AK	59.75	-154.92	52	25503	KING SALMON, AK	58.68	-156.65
25309	JUNEAU, AK	58.36	-134.58	7	26316	WHITEHORSE, CA	60.72	-135.07
26523	KENAI, AK	60.58	-151.24	28	26409	ANCHORAGE, AK	61.16	-149.98
25325	KETCHIKAN, AK	55.36	-131.71	26	25308	ANNETTE ISLAND, AK	55.03	-131.57
25503	KING SALMON, AK	58.68	-156.65	14	25503	KING SALMON, AK	58.68	-156.65
25501	KODIAK, AK	57.75	-152.49	21	25501	KODIAK, AK	57.75	-152.5
26616	KOTZEBUE, AK	66.89	-162.6	2	26616	KOTZEBUE, AK	66.87	-162.63
26510	MC GRATH, AK	62.95	-155.6	101	26510	MCGRATH, AK	62.97	-155.62
26435	NENANA, AK	64.55	-149.07	109	26411	FAIRBANKS, AK	64.82	-147.87
26617	NOME, AK	64.51	-165.44	6	26617	NOME, AK	64.5	-165.43
26412	NORTHWAY, AK	62.96	-141.95	522	25339	YAKUTAT, AK	59.52	-139.67
27515	NUIQSUT, AK	70.21	-151	16	27502	BARROW, AK	71.3	-156.78
25331	PALMER, AK	61.6	-149.09	70	26409	ANCHORAGE, AK	61.16	-149.98
26492	PORTAGE GLACIER, AK	60.79	-148.84	31	26409	ANCHORAGE, AK	61.16	-149.98
25516	SELDOVIA, AK	59.44	-151.7	9	25501	KODIAK, AK	57.75	-152.5
26438	SEWARD, AK	60.13	-149.42	4	26409	ANCHORAGE, AK	61.16	-149.98
25333	SITKA, AK	57.05	-135.36	5	26316	WHITEHORSE, CA	60.72	-135.07
25335	SKAGWAY, AK	59.46	-135.31	6	26316	WHITEHORSE, CA	60.72	-135.07
25628	ST GEORGE, AK	56.6	-169.57	27	25713	ST. PAUL ISLAND, AK	57.15	-170.22
25713	ST PAUL ISLAND, AK	57.16	-170.22	11	25713	ST. PAUL ISLAND, AK	57.15	-170.22
26528	TALKEETNA, AK	62.32	-150.09	107	26409	ANCHORAGE, AK	61.16	-149.98
26529	TANANA, AK	65.17	-152.11	67	26510	MCGRATH, AK	62.97	-155.62
27503	WAINWRIGHT, AK	70.64	-160	8	27502	BARROW, AK	71.3	-156.78
13871	ANNISTON, AL	33.59	-85.86	182	53823	BIRMINGHAM, AL	33.17	-86.77
13876	BIRMINGHAM, AL	33.56	-86.75	187	53823	BIRMINGHAM, AL	33.17	-86.77
53852	DECATUR, AL	34.65	-86.95	179	53823	BIRMINGHAM, AL	33.17	-86.77
13839	DOTHAN, AL	31.32	-85.45	113	93805	TALLAHASSEE, FL	30.45	-84.3
63872	EUFAULA, AL	31.95	-85.13	87	53819	ATLANTA, GA	33.37	-84.57
53820	EVERGREEN, AL	31.42	-87.04	77	53823	BIRMINGHAM, AL	33.17	-86.77
63874	GREENVILLE, AL	31.85	-86.61	132	53823	BIRMINGHAM, AL	33.17	-86.77
03856	HUNTSVILLE, AL	34.64	-86.79	190	53823	BIRMINGHAM, AL	33.17	-86.77
13838	MOBILE, AL	30.63	-88.07	5	53813	SLIDELL, LA	30.33	-89.82
13894	MOBILE, AL	30.69	-88.25	66	53813	SLIDELL, LA	30.33	-89.82
13895	MONTGOMERY, AL	32.3	-86.39	38	53823	BIRMINGHAM, AL	33.17	-86.77
13896	MUSCLE SHOALS, AL	34.75	-87.61	166	53823	BIRMINGHAM, AL	33.17	-86.77
03878	TROY, AL	31.86	-86.01	117	53823	BIRMINGHAM, AL	33.17	-86.77
93806	TUSCALOOSA, AL	33.21	-87.62	48	53823	BIRMINGHAM, AL	33.17	-86.77
53869	BLYTHEVILLE, AR	35.94	-89.83	77	03952	LITTLE ROCK, AR	34.83	-92.25
53925	De QUEEN, AR	34.05	-94.4	105	13957	SHREVEPORT, LA	32.45	-93.83
93992	EL DORADO, AR	33.22	-92.81	80	13957	SHREVEPORT, LA	32.45	-93.83
93993	FAYETTEVILLE, AR	36.01	-94.17	379	13995	SPRINGFIELD, MO	37.23	-93.38
53922	FAYETTEVILLE/SPRINGDALE, AR	36.28	-94.31	388	13995	SPRINGFIELD, MO	37.23	-93.38
13964	FORT SMITH, AR	35.33	-94.37	136	13995	SPRINGFIELD, MO	37.23	-93.38
13971	HARRISON, AR	36.26	-93.15	415	13995	SPRINGFIELD, MO	37.23	-93.38
03962	HOT SPRINGS, AR	34.48	-93.1	155	03952	LITTLE ROCK, AR	34.83	-92.25
03953	JONESBORO, AR	35.83	-90.65	79	03952	LITTLE ROCK, AR	34.83	-92.25
13963	LITTLE ROCK, AR	34.75	-92.23	77	03952	LITTLE ROCK, AR	34.83	-92.25
53919	MONTICELLO, AR	33.64	-91.75	85	03952	LITTLE ROCK, AR	34.83	-92.25

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
53921	MOUNT IDA, AR	34.55	-93.58	214	03952	LITTLE ROCK, AR	34.83	-92.25
53918	MOUNTAIN HOME, AR	36.37	-92.47	281	13995	SPRINGFIELD, MO	37.23	-93.38
93988	PINE BLUFF, AR	34.18	-91.93	62	03952	LITTLE ROCK, AR	34.83	-92.25
53920	RUSSELLVILLE, AR	35.26	-93.09	117	03952	LITTLE ROCK, AR	34.83	-92.25
13977	TEXARKANA, AR	33.45	-94.01	116	13957	SHREVEPORT, LA	32.45	-93.83
93026	DOUGLAS BISBEE, AZ	31.47	-109.6	1251	23160	TUCSON, AZ	32.12	-110.92
03103	FLAGSTAFF, AZ	35.14	-111.67	2135	53103	FLAGSTAFF, AZ	35.23	-111.82
03195	GRAND CANYON, AZ	35.95	-112.15	1991	53103	FLAGSTAFF, AZ	35.23	-111.82
93167	KINGMAN, AZ	35.26	-113.94	1042	03120	LAS VEGAS, NV	36.05	-115.18
03196	NOGALES, AZ	31.42	-110.85	1191	23160	TUCSON, AZ	32.12	-110.92
03162	PAGE, AZ	36.93	-111.45	1308	53103	FLAGSTAFF, AZ	35.23	-111.82
03184	PHOENIX, AZ	33.69	-112.08	453	53103	FLAGSTAFF, AZ	35.23	-111.82
23183	PHOENIX, AZ	33.44	-111.99	337	23160	TUCSON, AZ	32.12	-110.92
23184	PRESCOTT, AZ	34.65	-112.42	1525	53103	FLAGSTAFF, AZ	35.23	-111.82
93084	SAFFORD, AZ	32.85	-109.64	966	23160	TUCSON, AZ	32.12	-110.92
03192	SCOTTSDALE, AZ	33.62	-111.91	449	53103	FLAGSTAFF, AZ	35.23	-111.82
03124	SIERRA VISTA, AZ	31.59	-110.34	1415	23160	TUSCON,AZ	32.12	-110.92
93027	ST. JOHNS, AZ	34.52	-109.38	1744	53103	FLAGSTAFF, AZ	35.23	-111.82
23160	TUCSON, AZ	32.13	-110.96	777	23160	TUCSON, AZ	32.12	-110.92
03029	WINDOW ROCK, AZ	35.66	-109.06	2052	23050	ALBUQUERQUE, NM	35.05	-106.62
23194	WINSLOW, AZ	35.02	-110.72	1489	53103	FLAGSTAFF, AZ	35.23	-111.82
94299	ALTURAS, CA	41.48	-120.57	1336	03198	RENO, NV	39.57	-119.79
24283	ARCATA/EUREKA, CA	40.98	-124.11	61	24225	MEDFORD, OR	42.37	-122.87
23191	AVALON, CA	33.41	-118.42	487	03190	SAN DIEGO, CA	32.85	-117.12
23155	BAKERSFIELD, CA	35.43	-119.06	149	03190	SAN DIEGO, CA	32.85	-117.12
23157	BISHOP, CA	37.37	-118.36	1250	03198	RENO, NV	39.57	-119.79
23158	BLYTHE, CA	33.62	-114.72	120	03190	SAN DIEGO, CA	32.85	-117.12
23152	BURBANK, CA	34.2	-118.36	222	03190	SAN DIEGO, CA	32.85	-117.12
23136	CAMARILLO, CA	34.22	-119.08	84	03190	SAN DIEGO, CA	32.85	-117.12
03177	CARLSBAD, CA	33.13	-117.28	94	03190	SAN DIEGO, CA	32.85	-117.12
03179	CHINO, CA	33.98	-117.64	193	03190	SAN DIEGO, CA	32.85	-117.12
23254	CONCORD, CA	37.99	-122.05	5	23230	OAKLAND, CA	37.75	-122.22
24286	CRESCENT CITY, CA	41.78	-124.24	17	24225	MEDFORD, OR	42.37	-122.87
23161	DAGGETT, CA	34.85	-116.79	584	03120	LAS VEGAS, NV	36.05	-115.18
23199	EL CENTRO, CA	32.82	-115.68	-14	03190	SAN DIEGO, CA	32.85	-117.12
23225	EMIGRANT GAP, CA	39.29	-120.71	1612	03198	RENO, NV	39.57	-119.79
93193	FRESNO, CA	36.78	-119.72	101	23230	OAKLAND, CA	37.75	-122.22
03166	FULLERTON, CA	33.87	-117.98	26	03190	SAN DIEGO, CA	32.85	-117.12
53119	HANFORD, CA	36.32	-119.63	74	23230	OAKLAND, CA	37.75	-122.22
03167	HAWTHORNE, CA	33.92	-118.33	18	03190	SAN DIEGO, CA	32.85	-117.12
93228	HAYWARD, CA	37.66	-122.12	10	23230	OAKLAND, CA	37.75	-122.22
03144	IMPERIAL, CA	32.83	-115.58	-18	03190	SAN DIEGO, CA	32.85	-117.12
93115	IMPERIAL BEACH, CA	32.57	-117.12	7	03190	SAN DIEGO, CA	32.85	-117.12
03159	LANCASTER, CA	34.74	-118.22	713	03190	SAN DIEGO, CA	32.85	-117.12
23285	LIVERMORE, CA	37.69	-121.82	120	23230	OAKLAND, CA	37.75	-122.22
23129	LONG BEACH, CA	33.83	-118.16	9	03190	SAN DIEGO, CA	32.85	-117.12
93134	LOS ANGELES, CA	34.02	-118.29	55	03190	SAN DIEGO, CA	32.85	-117.12
23174	LOS ANGELES, CA	33.94	-118.41	34	03190	SAN DIEGO, CA	32.85	-117.12
93242	MADERA, CA	36.99	-120.11	77	23230	OAKLAND, CA	37.75	-122.22
93205	MARYSVILLE, CA	39.1	-121.57	19	23230	OAKLAND, CA	37.75	-122.22
23257	MERCED, CA	37.28	-120.51	46	23230	OAKLAND, CA	37.75	-122.22
23258	MODESTO, CA	37.63	-120.95	22	23230	OAKLAND, CA	37.75	-122.22
24259	MONTAGUE, CA	41.78	-122.47	803	24225	MEDFORD, OR	42.37	-122.87
23259	MONTEREY, CA	36.59	-121.85	50	23230	OAKLAND, CA	37.75	-122.22
24215	MOUNT SHASTA, CA	41.33	-122.33	1077	24225	MEDFORD, OR	42.37	-122.87
23244	MOUNTAIN VIEW, CA	37.41	-122.05	12	23230	OAKLAND, CA	37.75	-122.22
93227	NAPA, CA	38.21	-122.28	4	23230	OAKLAND, CA	37.75	-122.22
23179	NEEDLES, CA	34.77	-114.62	271	03120	LAS VEGAS, NV	36.05	-115.18
23230	OAKLAND, CA	37.75	-122.22	1	23230	OAKLAND, CA	37.75	-122.22
53121	OCEANSIDE, CA	33.22	-117.35	7	03190	SAN DIEGO, CA	32.85	-117.12
03102	ONTARIO, CA	34.06	-117.6	281	03190	SAN DIEGO, CA	32.85	-117.12
93210	OROVILLE, CA	39.49	-121.62	55	03198	RENO, NV	39.57	-119.79
93110	OXNARD, CA	34.2	-119.21	11	03190	SAN DIEGO, CA	32.85	-117.12
03104	PALM SPRINGS, CA	33.63	-116.16	-37	03190	SAN DIEGO, CA	32.85	-117.12
93138	PALM SPRINGS, CA	33.83	-116.51	124	03190	SAN DIEGO, CA	32.85	-117.12
23182	PALMDALE, CA	34.63	-118.08	764	03190	SAN DIEGO, CA	32.85	-117.12
93209	PASO ROBLES, CA	35.67	-120.63	247	23230	OAKLAND, CA	37.75	-122.22
24216	RED BLUFF, CA	40.15	-122.25	108	24225	MEDFORD, OR	42.37	-122.87

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
24257	REDDING, CA	40.52	-122.31	148	24225	MEDFORD, OR	42.37	-122.87
03171	RIVERSIDE, CA	33.95	-117.44	229	03190	SAN DIEGO, CA	32.85	-117.12
53120	ROMONA, CA	33.04	-116.92	423	03190	SAN DIEGO, CA	32.85	-117.12
23232	SACRAMENTO, CA	38.51	-121.49	5	23230	OAKLAND, CA	37.75	-122.22
23233	SALINAS, CA	36.66	-121.61	23	23230	OAKLAND, CA	37.75	-122.22
03131	SAN DIEGO, CA	32.82	-117.14	128	03190	SAN DIEGO, CA	32.85	-117.12
03178	SAN DIEGO, CA	32.57	-116.98	157	03190	SAN DIEGO, CA	32.85	-117.12
23188	SAN DIEGO, CA	32.73	-117.17	4	03190	SAN DIEGO, CA	32.85	-117.12
23234	SAN FRANCISCO, CA	37.62	-122.4	2	23230	OAKLAND, CA	37.75	-122.22
23293	SAN JOSE, CA	37.36	-121.93	16	23230	OAKLAND, CA	37.75	-122.22
93206	SAN LUIS OBISPO, CA	35.24	-120.64	61	23230	OAKLAND, CA	37.75	-122.22
23187	SANDBERG, CA	34.74	-118.72	1375	03190	SAN DIEGO, CA	32.85	-117.12
93184	SANTA ANA, CA	33.68	-117.87	12	03190	SAN DIEGO, CA	32.85	-117.12
23190	SANTA BARBARA, CA	34.43	-119.84	3	03190	SAN DIEGO, CA	32.85	-117.12
23273	SANTA MARIA, CA	34.9	-120.45	74	23230	OAKLAND, CA	37.75	-122.22
93197	SANTA MONICA, CA	34.02	-118.45	43	03190	SAN DIEGO, CA	32.85	-117.12
23213	SANTA ROSA, CA	38.51	-122.81	36	23230	OAKLAND, CA	37.75	-122.22
93230	SOUTH LAKE TAHOE, CA	38.89	-120	1908	03198	RENO, NV	39.57	-119.79
23237	STOCKTON, CA	37.89	-121.24	8	23230	OAKLAND, CA	37.75	-122.22
23275	UKIAH, CA	39.13	-123.2	184	23230	OAKLAND, CA	37.75	-122.22
93241	VACAVILLE, CA	38.38	-121.96	33	23230	OAKLAND, CA	37.75	-122.22
23130	VAN NUYS, CA	34.21	-118.49	239	03190	SAN DIEGO, CA	32.85	-117.12
23277	WATSONVILLE, CA	36.94	-121.79	49	23230	OAKLAND, CA	37.75	-122.22
24015	AKRON, CO	40.17	-103.22	1421	23062	DENVER, CO	39.76	-104.87
23061	ALAMOSA, CO	37.44	-105.87	2296	23050	ALBUQUERQUE, NM	35.05	-106.62
93073	ASPEN, CO	39.22	-106.87	2341	23066	GRAND JUNCTION, CO	39.12	-108.52
03026	BURLINGTON, CO	39.24	-102.28	1278	24023	NORTH PLATTE, NE	41.13	-100.68
93037	COLORADO SPRINGS, CO	38.81	-104.71	1884	23062	DENVER, CO	39.76	-104.87
93069	CORTEZ, CO	37.3	-108.63	1796	23066	GRAND JUNCTION, CO	39.12	-108.52
24046	CRAIG, CO	40.5	-107.52	1886	23066	GRAND JUNCTION, CO	39.12	-108.52
03017	DENVER, CO	39.83	-104.66	1657	23062	DENVER, CO	39.76	-104.87
93067	DENVER, CO	39.57	-104.85	1788	23062	DENVER, CO	39.76	-104.87
93005	DURANGO, CO	37.14	-107.76	2017	23066	GRAND JUNCTION, CO	39.12	-108.52
23066	GRAND JUNCTION, CO	39.13	-108.54	1469	23066	GRAND JUNCTION, CO	39.12	-108.52
23067	LA JUNTA, CO	38.05	-103.53	1280	23062	DENVER, CO	39.76	-104.87
03013	LAMAR, CO	38.07	-102.69	1123	13985	DODGE CITY, KS	37.77	-99.97
93009	LEADVILLE, CO	39.23	-106.32	3027	23062	DENVER, CO	39.76	-104.87
93010	LIMON, CO	39.19	-103.72	1631	23062	DENVER, CO	39.76	-104.87
94050	MEEKER, CO	40.05	-107.89	1939	23066	GRAND JUNCTION, CO	39.12	-108.52
93013	MONTROSE, CO	38.51	-107.9	1740	23066	GRAND JUNCTION, CO	39.12	-108.52
93058	PUEBLO, CO	38.29	-104.5	1424	23062	DENVER, CO	39.76	-104.87
23070	TRINIDAD, CO	37.26	-104.34	1749	23062	DENVER, CO	39.76	-104.87
94702	BRIDGEPORT, CT	41.18	-73.15	2	94703	UPTON, NY	40.87	-72.87
54734	DANBURY, CT	41.37	-73.48	139	94703	UPTON, NY	40.87	-72.87
14707	GROTON NEW LONDON, CT	41.33	-72.05	2	94703	UPTON, NY	40.87	-72.87
14752	HARTFORD, CT	41.74	-72.65	4	94703	UPTON, NY	40.87	-72.87
54788	MERIDEN, CT	41.51	-72.83	32	94703	UPTON, NY	40.87	-72.87
14758	NEW HAVEN, CT	41.26	-72.89	2	94703	UPTON, NY	40.87	-72.87
54767	WILLIMANTIC, CT	41.74	-72.18	74	94703	UPTON, NY	40.87	-72.87
14740	WINDSOR LOCKS, CT	41.94	-72.68	52	94703	UPTON, NY	40.87	-72.87
13743	WASHINGTON, DC	38.87	-77.03	3	93734	STERLING, VA	38.98	-77.48
93738	WASHINGTON, DC	38.93	-77.45	88	93734	STERLING, VA	38.98	-77.48
13764	GEORGETOWN, DE	38.69	-75.36	16	93739	WALLOPS ISLAND, VA	37.93	-75.48
13781	WILMINGTON, DE	39.67	-75.6	23	93734	STERLING, VA	38.98	-77.48
12832	APALACHICOLA, FL	29.73	-85.03	6	93805	TALLAHASSEE, FL	30.45	-84.3
12818	BROOKSVILLE, FL	28.47	-82.45	20	12842	TAMPA, FL	27.7	-82.38
13884	CRESTVIEW, FL	30.78	-86.52	49	93805	TALLAHASSEE, FL	30.45	-84.3
12834	DAYTONA BEACH, FL	29.18	-81.06	9	13889	JACKSONVILLE, FL	30.5	-81.7
53853	DESTIN, FL	30.4	-86.47	6	93805	TALLAHASSEE, FL	30.45	-84.3
12849	FORT LAUDERDALE, FL	26.07	-80.15	3	92803	MIAMI, FL	25.75	-80.38
12885	FORT LAUDERDALE, FL	26.2	-80.17	3	92803	MIAMI, FL	25.75	-80.38
12835	FORT MYERS, FL	26.59	-81.86	4	12842	TAMPA, FL	27.7	-82.38

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
12894	FORT MYERS, FL	26.54	-81.76	8	12842	TAMPA, FL	27.7	-82.38
12895	FORT PIERCE, FL	27.5	-80.38	7	12842	TAMPA, FL	27.7	-82.38
12816	GAINESVILLE, FL	29.69	-82.27	41	13889	JACKSONVILLE, FL	30.5	-81.7
92809	HOLLYWOOD, FL	26	-80.24	3	92803	MIAMI, FL	25.75	-80.38
13889	JACKSONVILLE, FL	30.49	-81.69	8	13889	JACKSONVILLE, FL	30.5	-81.7
53860	JACKSONVILLE, FL	30.34	-81.51	14	13889	JACKSONVILLE, FL	30.5	-81.7
12836	KEY WEST, FL	24.55	-81.75	2	12836	KEY WEST, FL	24.58	-81.7
12819	LEESBURG, FL	28.82	-81.81	23	12842	TAMPA, FL	27.7	-82.38
12896	MARATHON, FL	24.73	-81.05	2	12836	KEY WEST, FL	24.58	-81.7
03818	MARIANNA, FL	30.84	-85.18	33	93805	TALLAHASSEE, FL	30.45	-84.3
12838	MELBOURNE, FL	28.1	-80.65	8	12842	TAMPA, FL	27.7	-82.38
12839	MIAMI, FL	25.82	-80.3	2	92803	MIAMI, FL	25.75	-80.38
12882	MIAMI, FL	25.91	-80.28	2	92803	MIAMI, FL	25.75	-80.38
12888	MIAMI, FL	25.65	-80.43	2	92803	MIAMI, FL	25.75	-80.38
53847	MILTON, FL	30.7	-87.02	54	93805	TALLAHASSEE, FL	30.45	-84.3
12897	NAPLES, FL	26.15	-81.78	2	92803	MIAMI, FL	25.75	-80.38
12815	ORLANDO, FL	28.43	-81.33	27	12842	TAMPA, FL	27.7	-82.38
12841	ORLANDO, FL	28.55	-81.33	33	12842	TAMPA, FL	27.7	-82.38
12854	ORLANDO, FL	28.78	-81.24	16	12842	TAMPA, FL	27.7	-82.38
73805	PANAMA CITY, FL	30.35	-85.79	17	93805	TALLAHASSEE, FL	30.45	-84.3
13899	PENSACOLA, FL	30.47	-87.19	34	53813	SLIDELL, LA	30.33	-89.82
92805	POMPANO BEACH, FL	26.25	-80.11	5	92803	MIAMI, FL	25.75	-80.38
12812	PUNTA GORDA, FL	26.92	-81.99	7	12842	TAMPA, FL	27.7	-82.38
12871	SARASOTA/BRADENTON, FL	27.4	-82.56	6	12842	TAMPA, FL	27.7	-82.38
92806	ST PETERSBURG, FL	27.76	-82.63	2	12842	TAMPA, FL	27.7	-82.38
12873	ST PETERSBURG/CLEARWATER, FL	27.91	-82.69	1	12842	TAMPA, FL	27.7	-82.38
93805	TALLAHASSEE, FL	30.39	-84.35	17	93805	TALLAHASSEE, FL	30.45	-84.3
12842	TAMPA, FL	27.96	-82.54	2	12842	TAMPA, FL	27.7	-82.38
12843	VERO BEACH, FL	27.66	-80.42	6	12842	TAMPA, FL	27.7	-82.38
12844	WEST PALM BEACH, FL	26.68	-80.1	5	92803	MIAMI, FL	25.75	-80.38
12876	WINTER HAVEN, FL	28.06	-81.75	44	12842	TAMPA, FL	27.7	-82.38
13869	ALBANY, GA	31.54	-84.19	58	93805	TALLAHASSEE, FL	30.45	-84.3
13870	ALMA, GA	31.54	-82.51	59	13889	JACKSONVILLE, FL	30.5	-81.7
13873	ATHENS, GA	33.95	-83.33	244	53819	ATLANTA, GA	33.37	-84.57
03888	ATLANTA, GA	33.78	-84.52	244	53819	ATLANTA, GA	33.37	-84.57
13874	ATLANTA, GA	33.64	-84.43	304	53819	ATLANTA, GA	33.37	-84.57
53819	ATLANTA, GA	33.36	-84.57	243	53819	ATLANTA, GA	33.37	-84.57
53863	ATLANTA, GA	33.88	-84.3	298	53819	ATLANTA, GA	33.37	-84.57
03820	AUGUSTA, GA	33.37	-81.96	40	13880	CHARLESTON, SC	32.9	-80.03
13837	AUGUSTA, GA	33.47	-82.04	126	13880	CHARLESTON, SC	32.9	-80.03
13878	BRUNSWICK, GA	31.25	-81.39	6	13889	JACKSONVILLE, FL	30.5	-81.7
53873	CARTERSVILLE, GA	34.12	-84.85	230	53819	ATLANTA, GA	33.37	-84.57
93842	COLUMBUS, GA	32.52	-84.94	119	53819	ATLANTA, GA	33.37	-84.57
53838	GAINESVILLE, GA	34.27	-83.83	386	53819	ATLANTA, GA	33.37	-84.57
03813	MACON, GA	32.69	-83.65	104	53819	ATLANTA, GA	33.37	-84.57
93801	ROME, GA	34.35	-85.16	211	53819	ATLANTA, GA	33.37	-84.57
03822	SAVANNAH, GA	32.12	-81.2	8	13880	CHARLESTON, SC	32.9	-80.03
93845	VALDOSTA, GA	30.78	-83.28	60	93805	TALLAHASSEE, FL	30.45	-84.3
21504	HILO, HI	19.72	-155.05	9	21504	HILO/LYMAN, HI	19.72	-155.07
22521	HONOLULU, HI	21.33	-157.94	2	22536	LIHUE, HI	21.98	-159.35
22516	KAHULUI, HI	20.9	-156.43	16	21504	HILO/LYMAN, HI	19.72	-155.07
21510	KAILUA/KONA, HI	19.74	-156.05	12	21504	HILO/LYMAN, HI	19.72	-155.07
22551	KAPOLEI, HI	21.32	-158.07	7	22536	LIHUE, HI	21.98	-159.35
22534	KAUNAKAKAI, HI	21.16	-157.1	134	22536	LIHUE, HI	21.98	-159.35
22536	LIHUE, HI	21.98	-159.34	30	22536	LIHUE, HI	21.98	-159.35
94989	AMES, IA	41.99	-93.62	291	94980	OMAHA/VALLEY, NE	41.32	-96.37
14931	BURLINGTON, IA	40.78	-91.13	207	94982	DAVENPORT, IA	41.62	-90.58
14990	CEDAR RAPIDS, IA	41.88	-91.72	265	94982	DAVENPORT, IA	41.62	-90.58
94982	DAVENPORT, IA	41.61	-90.59	226	94982	DAVENPORT, IA	41.62	-90.58
14933	DES MOINES, IA	41.54	-93.67	277	94980	OMAHA/VALLEY, NE	41.32	-96.37
94908	DUBUQUE, IA	42.4	-90.7	322	94982	DAVENPORT, IA	41.62	-90.58
94971	ESTHERVILLE, IA	43.41	-94.75	401	94983	MINNEAPOLIS, MN	44.85	-93.57
14937	IOWA CITY, IA	41.63	-91.54	198	94982	DAVENPORT, IA	41.62	-90.58
94991	LAMONI, IA	40.63	-93.9	84	13996	TOPEKA, KS	39.07	-95.62
94988	MARSHALLTOWN, IA	42.11	-92.92	296	94982	DAVENPORT, IA	41.62	-90.58
14940	MASON CITY, IA	43.16	-93.33	362	94983	MINNEAPOLIS, MN	44.85	-93.57

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
14950	OTTUMWA, IA	41.11	-92.45	255	94982	DAVENPORT, IA	41.62	-90.58
14943	SIOUX CITY, IA	42.39	-96.38	332	94980	OMAHA/VALLEY, NE	41.32	-96.37
14972	SPENCER, IA	43.16	-95.2	408	94980	OMAHA/VALLEY, NE	41.32	-96.37
94910	WATERLOO, IA	42.55	-92.4	264	94982	DAVENPORT, IA	41.62	-90.58
24131	BOISE, ID	43.57	-116.22	858	24131	BOISE, ID	43.57	-116.22
24133	BURLEY, ID	42.54	-113.77	1261	24127	SALT LAKE CITY, UT	40.77	-111.97
04114	CHALLIS, ID	41.52	-114.22	1536	24131	BOISE, ID	43.57	-116.22
24145	IDAHO FALLS, ID	43.52	-112.07	1442	24127	SALT LAKE CITY, UT	40.77	-111.97
04110	JEROME, ID	42.73	-114.46	1224	24131	BOISE, ID	43.57	-116.22
24149	LEWISTON, ID	46.37	-117.01	434	04106	SPOKANE, WA	47.68	-117.63
94182	McCALL, ID	44.89	-116.1	1526	24131	BOISE, ID	43.57	-116.22
24154	MULLAN PASS, ID	47.46	-115.65	1833	04106	SPOKANE, WA	47.68	-117.63
24156	POCATELLO, ID	42.92	-112.57	1353	24127	SALT LAKE CITY, UT	40.77	-111.97
94194	REXBURG, ID	43.83	-111.88	1481	24127	SALT LAKE CITY, UT	40.77	-111.97
94178	TWIN FALLS, ID	42.48	-114.49	1267	24131	BOISE, ID	43.57	-116.22
03960	CAHOKIA, IL	38.57	-90.16	126	04833	LINCOLN, IL	40.15	-89.33
93810	CARBONDALE, IL	37.78	-89.25	124	04833	LINCOLN, IL	40.15	-89.33
94870	CHAMPAIGN/URBANA, IL	40.04	-88.28	226	04833	LINCOLN, IL	40.15	-89.33
14819	CHICAGO, IL	41.79	-87.75	187	04833	LINCOLN, IL	40.15	-89.33
94846	CHICAGO, IL	41.99	-87.91	202	04833	LINCOLN, IL	40.15	-89.33
04808	CHICAGO/AURORA, IL	41.77	-88.48	214	04833	LINCOLN, IL	40.15	-89.33
04838	CHICAGO/PROSPECT HEIGHTS, IL	42.12	-87.9	194	14898	GREEN BAY, WI	44.48	-88.13
14880	CHICAGO/WAUKEGAN, IL	42.42	-87.87	217	14898	GREEN BAY, WI	44.48	-88.13
94892	CHICAGO/WEST CHICAGO, IL	41.91	-88.25	228	04833	LINCOLN, IL	40.15	-89.33
03887	DECATUR, IL	39.98	-88.87	205	04833	LINCOLN, IL	40.15	-89.33
13809	LAWRENCEVILLE, IL	38.76	-87.61	131	04833	LINCOLN, IL	40.15	-89.33
53802	MATTOON/CHARLESTON, IL	39.48	-88.28	216	04833	LINCOLN, IL	40.15	-89.33
14923	MOLINE, IL	41.47	-90.52	180	94982	DAVENPORT, IA	41.62	-90.58
14842	PEORIA, IL	40.67	-89.68	199	04833	LINCOLN, IL	40.15	-89.33
93989	QUINCY, IL	39.94	-91.19	231	94982	DAVENPORT, IA	41.62	-90.58
94822	ROCKFORD, IL	42.2	-89.09	223	94982	DAVENPORT, IA	41.62	-90.58
93822	SPRINGFIELD, IL	39.85	-89.68	180	04833	LINCOLN, IL	40.15	-89.33
03893	BLOOMINGTON, IN	39.14	-86.62	257	13841	CINCINNATI, OH	39.42	-83.75
93817	EVANSVILLE, IN	38.04	-87.54	122	13897	NASHVILLE, TN	36.25	-86.57
14827	FORT WAYNE, IN	41.01	-85.21	252	13841	CINCINNATI, OH	39.42	-83.75
14829	GOSHEN, IN	41.53	-85.79	251	04830	WHITE LAKE, MI	42.7	-83.47
53842	INDIANAPOLIS, IN	39.83	-86.3	249	13841	CINCINNATI, OH	39.42	-83.75
93819	INDIANAPOLIS, IN	39.71	-86.27	241	13841	CINCINNATI, OH	39.42	-83.75
14835	LAFAYETTE, IN	40.41	-86.94	182	04833	LINCOLN, IL	40.15	-89.33
94895	MUNCIE, IN	40.23	-85.39	285	13841	CINCINNATI, OH	39.42	-83.75
53866	SHELBYVILLE, IN	39.58	-85.8	245	13841	CINCINNATI, OH	39.42	-83.75
14848	SOUTH BEND, IN	41.71	-86.33	237	04830	WHITE LAKE, MI	42.7	-83.47
03868	TERRE HAUTE, IN	39.45	-87.31	174	04833	LINCOLN, IL	40.15	-89.33
04846	VALPARAISO, IN	41.45	-87.01	235	04833	LINCOLN, IL	40.15	-89.33
13981	CHANUTE, KS	37.67	-95.48	300	13996	TOPEKA, KS	39.07	-95.62
13984	CONCORDIA, KS	39.55	-97.65	448	13996	TOPEKA, KS	39.07	-95.62
13985	DODGE CITY, KS	37.77	-99.97	787	13985	DODGE CITY, KS	37.77	-99.97
13989	EMPORIA, KS	38.33	-96.19	367	13996	TOPEKA, KS	39.07	-95.62
23064	GARDEN CITY, KS	37.93	-100.72	877	13985	DODGE CITY, KS	37.77	-99.97
23065	GOODLAND, KS	39.37	-101.69	1112	24023	NORTH PLATTE, NE	41.13	-100.68
93990	HILL CITY, KS	39.38	-99.83	669	13985	DODGE CITY, KS	37.77	-99.97
13986	HUTCHINSON, KS	38.07	-97.86	464	974646	LAMONT, OK	36.62	-97.48
03997	LAWRENCE, KS	39.01	-95.21	252	13996	TOPEKA, KS	39.07	-95.62
03936	MANHATTAN, KS	39.14	-96.68	321	13996	TOPEKA, KS	39.07	-95.62
03967	OLATHE, KS	38.85	-94.74	329	13996	TOPEKA, KS	39.07	-95.62
93909	OLATHE, KS	38.83	-94.89	325	13996	TOPEKA, KS	39.07	-95.62
03998	PARSONS, KS	37.33	-95.5	265	13996	TOPEKA, KS	39.07	-95.62
93997	RUSSELL, KS	38.87	-98.83	568	13985	DODGE CITY, KS	37.77	-99.97
13920	TOPEKA, KS	38.95	-95.66	315	13996	TOPEKA, KS	39.07	-95.62
13996	TOPEKA, KS	39.07	-95.63	269	13996	TOPEKA, KS	39.07	-95.62
03928	WICHITA, KS	37.65	-97.43	402	974646	LAMONT, OK	36.62	-97.48
03974	WICHITA, KS	37.75	-97.22	430	974646	LAMONT, OK	36.62	-97.48
13932	WINFIELD, KS	37.17	-97.04	351	974646	LAMONT, OK	36.62	-97.48
93808	BOWLING GREEN, KY	36.98	-86.44	160	13897	NASHVILLE, TN	36.25	-86.57
93814	COVINGTON/CINCINNATI, KY	39.04	-84.67	262	13841	CINCINNATI, OH	39.42	-83.75

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
53841	FRANKFORT, KY	38.18	-84.9	236	13841	CINCINNATI, OH	39.42	-83.75
03889	JACKSON, KY	37.59	-83.31	405	13841	CINCINNATI, OH	39.42	-83.75
93820	LEXINGTON, KY	38.04	-84.61	294	13841	CINCINNATI, OH	39.42	-83.75
03849	LONDON, KY	37.09	-84.08	360	13841	CINCINNATI, OH	39.42	-83.75
13810	LOUISVILLE, KY	38.23	-85.66	158	13897	NASHVILLE, TN	36.25	-86.57
93821	LOUISVILLE, KY	38.18	-85.73	146	13897	NASHVILLE, TN	36.25	-86.57
03816	PADUCAH, KY	37.06	-88.77	123	13897	NASHVILLE, TN	36.25	-86.57
93915	ALEXANDRIA, LA	31.33	-92.56	24	03937	LAKE CHARLES, LA	30.12	-93.22
13970	BATON ROUGE, LA	30.54	-91.15	20	53813	SLIDELL, LA	30.33	-89.82
12884	BOOTHVILLE, LA	29.35	-89.41	0	53813	SLIDELL, LA	30.33	-89.82
13976	LAFAYETTE, LA	30.21	-91.99	12	03937	LAKE CHARLES, LA	30.12	-93.22
03937	LAKE CHARLES, LA	30.12	-93.23	3	03937	LAKE CHARLES, LA	30.12	-93.22
13942	MONROE, LA	32.51	-92.04	23	13957	SHREVEPORT, LA	32.45	-93.83
53915	NEW IBERIA, LA	30.05	-91.89	5	03937	LAKE CHARLES, LA	30.12	-93.22
12916	NEW ORLEANS, LA	29.99	-90.25	0	53813	SLIDELL, LA	30.33	-89.82
53917	NEW ORLEANS, LA	30.04	-90.03	2	53813	SLIDELL, LA	30.33	-89.82
13957	SHREVEPORT, LA	32.45	-93.82	70	13957	SHREVEPORT, LA	32.45	-93.83
53905	SHREVEPORT, LA	32.54	-93.74	53	13957	SHREVEPORT, LA	32.45	-93.83
53865	SLIDELL, LA	30.35	-89.82	8	53813	SLIDELL, LA	30.33	-89.82
03996	TALLULAH/VICKSBURG, LA	32.35	-91.03	31	03940	JACKSON, MS	32.32	-90.08
14702	BEDFORD, MA	42.47	-71.29	41	14684	CHATHAM, MA	41.67	-69.97
54733	BEVERLY, MA	42.58	-70.92	26	14684	CHATHAM, MA	41.67	-69.97
14739	BOSTON, MA	42.36	-71.01	6	14684	CHATHAM, MA	41.67	-69.97
94624	CHATHAM, MA	41.69	-69.99	19	14684	CHATHAM, MA	41.67	-69.97
04780	FITCHBURG, MA	42.55	-71.76	102	54775	ALBANY, NY	42.69	-73.83
94720	HYANNIS, MA	41.67	-70.28	12	14684	CHATHAM, MA	41.67	-69.97
94723	LAWRENCE, MA	42.72	-71.12	41	54762	GRAY, ME	43.9	-70.25
14756	NANTUCKET, MA	41.25	-70.06	12	14684	CHATHAM, MA	41.67	-69.97
94726	NEW BEDFORD, MA	41.68	-70.96	21	14684	CHATHAM, MA	41.67	-69.97
54768	NORTH ADAMS, MA	42.7	-73.17	198	54775	ALBANY, NY	42.69	-73.83
54704	NORWOOD, MA	42.19	-71.17	14	14684	CHATHAM, MA	41.67	-69.97
54756	ORANGE, MA	42.57	-72.29	167	54775	ALBANY, NY	42.69	-73.83
14763	PITTSFIELD, MA	42.43	-73.29	349	54775	ALBANY, NY	42.69	-73.83
54769	PLYMOUTH, MA	41.91	-70.73	44	14684	CHATHAM, MA	41.67	-69.97
54777	TAUNTON, MA	41.88	-71.02	8	14684	CHATHAM, MA	41.67	-69.97
94724	VINEYARD HAVEN, MA	41.39	-70.62	18	14684	CHATHAM, MA	41.67	-69.97
14775	WESTFIELD/SPRINGFIELD, MA	42.16	-72.72	81	54775	ALBANY, NY	42.69	-73.83
94746	WORCESTER, MA	42.27	-71.88	306	54775	ALBANY, NY	42.69	-73.83
93721	BALTIMORE, MD	39.17	-76.68	44	93734	STERLING, VA	38.98	-77.48
93706	HAGERSTOWN, MD	39.71	-77.73	211	93734	STERLING, VA	38.98	-77.48
93786	OCEAN CITY, MD	38.31	-75.12	2	93739	WALLOPS ISLAND, VA	37.93	-75.48
93720	SALISBURY, MD	38.34	-75.51	15	93739	WALLOPS ISLAND, VA	37.93	-75.48
14605	AUGUSTA, ME	44.32	-69.8	107	54762	GRAY, ME	43.9	-70.25
14606	BANGOR, ME	44.81	-68.82	45	54762	GRAY, ME	43.9	-70.25
14607	CARIBOU, ME	46.87	-68.03	189	14607	CARIBOU, ME	46.87	-68.02
04836	FRENCHVILLE, ME	47.29	-68.31	299	14607	CARIBOU, ME	46.87	-68.02
54772	FRYEBURG, ME	43.99	-70.95	137	54762	GRAY, ME	43.9	-70.25
14609	HOULTAN, ME	46.12	-67.79	145	14607	CARIBOU, ME	46.87	-68.02
14610	MILLINOCKET, ME	45.65	-68.69	123	14607	CARIBOU, ME	46.87	-68.02
14764	PORTLAND, ME	43.64	-70.3	15	54762	GRAY, ME	43.9	-70.25
14847	SAULT STE MARIE, ME	46.48	-84.36	220	04837	GAYLORD, MI	44.9	-84.72
94623	WISCASSET, ME	43.96	-69.71	16	54762	GRAY, ME	43.9	-70.25
04847	ADRIAN, MI	41.87	-84.08	243	04830	WHITE LAKE, MI	42.7	-83.47
94849	ALPENA, MI	45.07	-83.56	208	04837	GAYLORD, MI	44.9	-84.72
94889	ANN ARBOR, MI	42.22	-83.74	253	04830	WHITE LAKE, MI	42.7	-83.47
14815	BATTLE CREEK, MI	42.31	-85.25	283	04830	WHITE LAKE, MI	42.7	-83.47
94871	BENTON HARBOR, MI	42.13	-86.42	191	14898	GREEN BAY, WI	44.48	-88.13
14822	DETROIT, MI	42.41	-83.01	190	04830	WHITE LAKE, MI	42.7	-83.47
14853	DETROIT, MI	42.24	-85.53	216	04830	WHITE LAKE, MI	42.7	-83.47
94847	DETROIT, MI	42.22	-83.35	192	04830	WHITE LAKE, MI	42.7	-83.47
14826	FLINT, MI	42.97	-83.75	235	04830	WHITE LAKE, MI	42.7	-83.47
04854	GAYLORD, MI	45.01	-84.7	406	04837	GAYLORD, MI	44.9	-84.72
94860	GRAND RAPTIDS, MI	42.88	-85.52	241	04830	WHITE LAKE, MI	42.7	-83.47
14858	HANCOCK, MI	47.17	-88.51	323	14898	GREEN BAY, WI	44.48	-88.13
04839	HOLLAND, MI	42.75	-86.1	207	04837	GAYLORD, MI	44.9	-84.72
94814	HOUGHTON LAKE, MI	44.37	-84.69	351	04837	GAYLORD, MI	44.9	-84.72

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
94893	IRON MOUNTAIN/KINGSFORD, MI	45.82	-88.11	343	14898	GREEN BAY, WI	44.48	-88.13
14833	JACKSON, MI	42.26	-84.46	302	04830	WHITE LAKE, MI	42.7	-83.47
94815	KALAMAZOO, MI	42.23	-85.55	262	04830	WHITE LAKE, MI	42.7	-83.47
14836	LANSING, MI	42.78	-84.58	262	04830	WHITE LAKE, MI	42.7	-83.47
14840	MUSKEGON, MI	43.17	-86.24	191	04837	GAYLORD, MI	44.9	-84.72
14841	PELLSTON, MI	45.57	-84.8	215	04837	GAYLORD, MI	44.9	-84.72
94817	PONTIAC, MI	42.67	-83.42	296	04830	WHITE LAKE, MI	42.7	-83.47
14845	SAGINAW, MI	43.53	-84.08	201	04830	WHITE LAKE, MI	42.7	-83.47
14850	TRAVERSE CITY, MI	44.74	-85.58	186	04837	GAYLORD, MI	44.9	-84.72
14910	ALEXANDRIA, MN	45.88	-95.39	433	94983	MINNEAPOLIS, MN	44.85	-93.57
94961	BAUDETTE, MN	48.72	-94.6	330	14918	INTERNATIONAL FALLS,	48.57	-93.38
94938	BRAINERD, MN	46.4	-94.13	372	94983	MINNEAPOLIS, MN	44.85	-93.57
14913	DULUTH, MN	46.84	-92.19	433	14918	INTERNATIONAL FALLS,	48.57	-93.38
94931	HIBBING, MN	47.39	-92.84	408	14918	INTERNATIONAL FALLS,	48.57	-93.38
14918	INTERNATIONAL FALLS, MN	48.57	-93.4	361	14918	INTERNATIONAL FALLS,	48.57	-93.38
14922	MINNEAPOLIS, MN	44.88	-93.23	248	94983	MINNEAPOLIS, MN	44.85	-93.57
94960	MINNEAPOLIS, MN	45.06	-93.35	264	94983	MINNEAPOLIS, MN	44.85	-93.57
94963	MINNEAPOLIS, MN	44.83	-93.47	276	94983	MINNEAPOLIS, MN	44.85	-93.57
94967	PARK RAPIDS, MN	46.9	-95.07	438	14918	INTERNATIONAL FALLS,	48.57	-93.38
14992	REDWOOD FALLS, MN	44.55	-95.08	312	94983	MINNEAPOLIS, MN	44.85	-93.57
14925	ROCHESTER, MN	43.9	-92.49	397	94983	MINNEAPOLIS, MN	44.85	-93.57
14926	ST CLOUD, MN	45.54	-94.05	310	94983	MINNEAPOLIS, MN	44.85	-93.57
14927	ST PAUL, MN	44.93	-93.05	214	94983	MINNEAPOLIS, MN	44.85	-93.57
03935	CAPE GIRARDEAU, MO	37.23	-89.57	102	04833	LINCOLN, IL	40.15	-89.33
03945	COLUMBIA, MO	38.82	-92.22	272	13995	SPRINGFIELD, MO	37.23	-93.38
03963	JEFFERSON CITY, MO	38.59	-92.16	168	13995	SPRINGFIELD, MO	37.23	-93.38
13987	JOPLIN, MO	37.15	-94.5	296	13995	SPRINGFIELD, MO	37.23	-93.38
03947	KANSAS CITY, MO	39.3	-94.72	297	13996	TOPEKA, KS	39.07	-95.62
13988	KANSAS CITY, MO	39.12	-94.59	226	13996	TOPEKA, KS	39.07	-95.62
14938	KIRKSVILLE, MO	40.1	-92.54	293	94982	DAVENPORT, IA	41.62	-90.58
53879	LEE'S SUMMIT, MO	38.96	-94.37	304	13996	TOPEKA, KS	39.07	-95.62
03975	POPLAR BLUFF, MO	36.77	-90.32	100	03952	LITTLE ROCK, AR	34.83	-92.25
13997	ROLLA/VICHY, MO	38.13	-91.77	336	13995	SPRINGFIELD, MO	37.23	-93.38
03994	SEDALIA, MO	38.7	-93.18	273	13995	SPRINGFIELD, MO	37.23	-93.38
13995	SPRINGFIELD, MO	37.24	-93.39	385	13995	SPRINGFIELD, MO	37.23	-93.38
53904	ST CHARLES, MO	38.93	-90.43	134	04833	LINCOLN, IL	40.15	-89.33
13993	ST JOSEPH, MO	39.77	-94.92	249	13996	TOPEKA, KS	39.07	-95.62
03966	ST LOUIS, MO	38.66	-90.66	140	04833	LINCOLN, IL	40.15	-89.33
13994	ST LOUIS, MO	38.75	-90.37	199	04833	LINCOLN, IL	40.15	-89.33
53901	WEST PLAINS, MO	36.88	-91.9	375	13995	SPRINGFIELD, MO	37.23	-93.38
13939	GREENVILLE, MS	33.48	-90.99	38	03940	JACKSON, MS	32.32	-90.08
13978	GREENWOOD, MS	33.5	-90.08	45	03940	JACKSON, MS	32.32	-90.08
93874	GULFPORT, MS	30.41	-89.07	7	53813	SLIDELL, LA	30.33	-89.82
13833	HATTIESBURG, MS	31.27	-89.25	45	53813	SLIDELL, LA	30.33	-89.82
03940	JACKSON, MS	32.32	-90.08	91	03940	JACKSON, MS	32.32	-90.08
13927	JACKSON, MS	32.33	-90.22	103	03940	JACKSON, MS	32.32	-90.08
93919	MCCOMB, MS	31.18	-90.47	126	53813	SLIDELL, LA	30.33	-89.82
13865	MERIDIAN, MS	32.33	-88.75	88	03940	JACKSON, MS	32.32	-90.08
53858	PASCAGOULA, MS	30.46	-88.53	4	53813	SLIDELL, LA	30.33	-89.82
93862	TUPELO, MS	34.26	-88.77	104	53823	BIRMINGHAM, AL	33.17	-86.77
94055	BAKER, MT	46.36	-104.25	903	94043	RAPID CITY, SD	44.07	-103.21
24033	BILLINGS, MT	45.81	-108.54	1091	24061	RIVERTON, WY	43.07	-108.49
24132	BOZEMAN, MT	45.79	-111.15	1349	04102	GREAT FALLS, MT	47.46	-111.38
24135	BUTTE, MT	45.95	-112.51	1678	04102	GREAT FALLS, MT	47.46	-111.38
24137	CUT BANK, MT	48.61	-112.38	1170	04102	GREAT FALLS, MT	47.46	-111.38
24138	DILLON, MT	45.26	-112.55	1585	04102	GREAT FALLS, MT	47.46	-111.38
94008	GLASGOW, MT	48.21	-106.62	696	94008	GLASGOW, MT	48.21	-106.63
24143	GREAT FALLS, MT	47.47	-111.38	1117	04102	GREAT FALLS, MT	47.46	-111.38
94012	HAVRE, MT	48.56	-109.78	788	04102	GREAT FALLS, MT	47.46	-111.38
24144	HELENA, MT	46.61	-111.96	1167	04102	GREAT FALLS, MT	47.46	-111.38
24146	KALISPELL, MT	48.3	-114.26	901	04102	GREAT FALLS, MT	47.46	-111.38
24036	LEWISTOWN, MT	47.05	-109.47	1254	04102	GREAT FALLS, MT	47.46	-111.38

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
24150	LIVINGSTON, MT	45.7	-110.45	1415	04102	GREAT FALLS, MT	47.46	-111.38
24037	MILES, MT	46.43	-105.89	800	94008	GLASGOW, MT	48.21	-106.63
24153	MISSOULA, MT	46.92	-114.09	973	04102	GREAT FALLS, MT	47.46	-111.38
94017	WOLF POINT, MT	48.09	-105.57	604	94008	GLASGOW, MT	48.21	-106.63
03812	ASHEVILLE, NC	35.43	-82.54	645	13723	GREENSBORO, NC	36.08	-79.95
93765	BEAUFORT, NC	34.73	-76.66	2	93768	NEWPORT, NC	34.78	-76.88
93783	BURLINGTON, NC	36.05	-79.48	183	13723	GREENSBORO, NC	36.08	-79.95
93729	CAPE HATTERAS, NC	35.23	-75.62	3	93768	NEWPORT, NC	34.78	-76.88
93785	CHAPEL HILL, NC	35.93	-79.06	153	13723	GREENSBORO, NC	36.08	-79.95
13881	CHARLOTTE, NC	35.21	-80.94	213	13723	GREENSBORO, NC	36.08	-79.95
13754	CHERRY POINT, NC	34.88	-76.87	30	93768	NEWPORT, NC	34.78	-76.88
13786	ELIZABETH CITY, NC	36.26	-76.18	2	93768	NEWPORT, NC	34.78	-76.88
93740	FAYETTEVILLE, NC	34.99	-78.88	55	13723	GREENSBORO, NC	36.08	-79.95
53870	GASTONIA, NC	35.2	-81.16	241	13723	GREENSBORO, NC	36.08	-79.95
13723	GREENSBORO, NC	36.1	-79.94	277	13723	GREENSBORO, NC	36.08	-79.95
03810	HICKORY, NC	35.74	-81.39	357	13723	GREENSBORO, NC	36.08	-79.95
13776	LUMBERTON, NC	34.61	-79.06	37	13723	GREENSBORO, NC	36.08	-79.95
93782	MAXTON, NC	34.79	-79.37	65	13723	GREENSBORO, NC	36.08	-79.95
53872	MONROE, NC	35.02	-80.62	204	13723	GREENSBORO, NC	36.08	-79.95
93719	NEW BERN, NC	35.07	-77.05	3	93768	NEWPORT, NC	34.78	-76.88
13722	RALEIGH/DURHAM, NC	35.87	-78.79	121	13723	GREENSBORO, NC	36.08	-79.95
93759	ROCKY MOUNT, NC	35.86	-77.89	46	93768	NEWPORT, NC	34.78	-76.88
13748	WILMINGTON, NC	34.27	-77.91	7	93768	NEWPORT, NC	34.78	-76.88
93807	WINSTON SALEM, NC	36.13	-80.22	292	13723	GREENSBORO, NC	36.08	-79.95
24011	BISMARCK, ND	46.77	-100.75	503	24011	BISMARCK, ND	46.77	-100.75
24012	DICKINSON, ND	46.8	-102.8	786	24011	BISMARCK, ND	46.77	-100.75
14914	FARGO, ND	46.93	-96.81	273	14929	ABERDEEN, SD	45.45	-98.41
14916	GRAND FORKS, ND	47.95	-97.18	256	14929	ABERDEEN, SD	45.45	-98.41
94038	HETTINGER, ND	46.01	-102.65	822	94043	RAPID CITY, SD	44.07	-103.21
14919	JAMESTOWN, ND	46.93	-98.68	455	14929	ABERDEEN, SD	45.45	-98.41
24013	MINOT, ND	48.26	-101.28	505	24011	BISMARCK, ND	46.77	-100.75
94014	WILLISTON, ND	48.19	-103.64	580	94008	GLASGOW, MT	48.21	-106.63
24044	ALLIANCE, NE	42.06	-102.8	1196	94043	RAPID CITY, SD	44.07	-103.21
94946	BROKEN BOW, NE	41.44	-99.64	770	24023	NORTH PLATTE, NE	41.13	-100.68
24017	CHADRON, NE	42.84	-103.1	1001	94043	RAPID CITY, SD	44.07	-103.21
94957	FALLS CITY, NE	40.08	-95.59	299	13996	TOPEKA, KS	39.07	-95.62
14935	GRAND ISLAND, NE	40.96	-98.31	564	94980	OMAHA/VALLEY, NE	41.32	-96.37
94949	HASTINGS, NE	40.6	-98.43	590	94980	OMAHA/VALLEY, NE	41.32	-96.37
24091	IMPERIAL, NE	40.51	-101.62	996	24023	NORTH PLATTE, NE	41.13	-100.68
14939	LINCOLN, NE	40.83	-96.76	357	94980	OMAHA/VALLEY, NE	41.32	-96.37
94040	MC COOK, NE	40.21	-100.59	780	24023	NORTH PLATTE, NE	41.13	-100.68
14941	NORFOLK, NE	41.98	-97.44	476	94980	OMAHA/VALLEY, NE	41.32	-96.37
24023	NORTH PLATTE, NE	41.12	-100.67	842	24023	NORTH PLATTE, NE	41.13	-100.68
14942	OMAHA, NE	41.31	-95.9	299	94980	OMAHA/VALLEY, NE	41.32	-96.37
94958	ORD, NE	41.62	-98.95	628	24023	NORTH PLATTE, NE	41.13	-100.68
24028	SCOTTSBLUFF, NE	41.87	-103.6	1203	94043	RAPID CITY, SD	44.07	-103.21
24030	SIDNEY, NE	41.1	-102.98	1306	24023	NORTH PLATTE, NE	41.13	-100.68
94978	TEKAMAH, NE	41.76	-96.18	312	94980	OMAHA/VALLEY, NE	41.32	-96.37
24032	VALENTINE, NE	42.86	-100.55	789	24023	NORTH PLATTE, NE	41.13	-100.68
94700	BERLIN, NH	44.58	-71.18	343	54762	GRAY, ME	43.9	-70.25
14745	CONCORD, NH	43.2	-71.5	104	54762	GRAY, ME	43.9	-70.25
54770	JAFFREY, NH	42.81	-72	309	54775	ALBANY, NY	42.69	-73.83
94765	LEBANON, NH	43.63	-72.3	84	54775	ALBANY, NY	42.69	-73.83
14710	MANCHESTER, NH	42.93	-71.44	69	54762	GRAY, ME	43.9	-70.25
54791	ROCHESTER, NH	43.28	-70.92	101	54762	GRAY, ME	43.9	-70.25
54728	WHITEFIELD, NH	44.37	-71.55	320	54762	GRAY, ME	43.9	-70.25
93730	ATLANTIC CITY, NJ	39.46	-74.46	20	93739	WALLOPS ISLAND, VA	37.93	-75.48
54743	CALDWELL, NJ	40.88	-74.28	53	94703	UPTON, NY	40.87	-72.87
13735	MILLVILLE, NJ	39.37	-75.08	18	93739	WALLOPS ISLAND, VA	37.93	-75.48
93780	MOUNT HOLLY, NJ	39.94	-74.84	15	94703	UPTON, NY	40.87	-72.87
14734	NEWARK, NJ	40.72	-74.17	2	94703	UPTON, NY	40.87	-72.87
54785	SOMERVILLE, NJ	40.62	-74.67	84	94703	UPTON, NY	40.87	-72.87
54793	SUSSEX, NJ	41.2	-74.62	123	94703	UPTON, NY	40.87	-72.87
94741	TETERBORO, NJ	40.85	-74.06	2	94703	UPTON, NY	40.87	-72.87
14792	TRENTON, NJ	40.28	-74.81	58	94703	UPTON, NY	40.87	-72.87
23050	ALBUQUERQUE, NM	35.04	-106.62	1618	23050	ALBUQUERQUE, NM	35.05	-106.62
93033	CARLSBAD, NM	32.34	-104.26	992	23023	MIDLAND, TX	31.95	-102.18
23051	CLAYTON, NM	36.45	-103.15	1512	23047	AMARILLO, TX	35.23	-101.7

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
03027	CLINES CORNERS, NM	35	-105.66	2160	23050	ALBUQUERQUE, NM	35.05	-106.62
23078	DEMING, NM	32.26	-107.72	1312	03020	SANTA TERESA, NM	31.87	-106.7
23090	FARMINGTON, NM	36.74	-108.23	1675	23050	ALBUQUERQUE, NM	35.05	-106.62
23081	GALLUP, NM	35.51	-108.79	1970	23050	ALBUQUERQUE, NM	35.05	-106.62
23054	LAS VEGAS, NM	35.65	-105.14	2093	23050	ALBUQUERQUE, NM	35.05	-106.62
23052	RATON, NM	36.74	-104.5	1935	23050	ALBUQUERQUE, NM	35.05	-106.62
23009	ROSWELL, NM	33.31	-104.54	1105	03020	SANTA TERESA, NM	31.87	-106.7
23049	SANTA FE, NM	35.62	-106.09	1915	23050	ALBUQUERQUE, NM	35.05	-106.62
93045	TRUTH OR CONSEQUENCES, NM	33.24	-107.27	1469	03020	SANTA TERESA, NM	31.87	-106.7
23048	TUCUMCARI, NM	35.18	-103.6	1230	23047	AMARILLO, TX	35.23	-101.7
24121	ELKO, NV	40.83	-115.79	1539	04105	ELKO, NV	40.86	-115.74
23154	ELY, NV	39.3	-114.85	1904	04105	ELKO, NV	40.86	-115.74
53123	LAS VAGAS, NV	36.21	-115.2	666	03120	LAS VEGAS, NV	36.05	-115.18
23169	LAS VEGAS, NV	36.08	-115.16	648	03120	LAS VEGAS, NV	36.05	-115.18
24172	LOVELOCK, NV	40.07	-118.57	1189	03198	RENO, NV	39.57	-119.79
03160	MERCURY, NV	36.62	-116.03	985	03120	LAS VEGAS, NV	36.05	-115.18
23185	RENO, NV	39.48	-119.77	1344	03198	RENO, NV	39.57	-119.79
23153	TONOPAH, NV	38.06	-117.09	1644	03120	LAS VEGAS, NV	36.05	-115.18
24128	WINNEMUCCA, NV	40.9	-117.81	1309	04105	ELKO, NV	40.86	-115.74
14735	ALBANY, NY	42.75	-73.8	85	54775	ALBANY, NY	42.69	-73.83
04725	BINGHAMTON, NY	42.21	-75.98	486	54775	ALBANY, NY	42.69	-73.83
14733	BUFFALO, NY	42.94	-78.74	216	14733	BUFFALO, NY	42.93	-78.73
94704	DANSVILLE, NY	42.57	-77.71	197	14733	BUFFALO, NY	42.93	-78.73
14747	DUNKIRK, NY	42.49	-79.27	203	14733	BUFFALO, NY	42.93	-78.73
14748	ELMIRA/CORNING, NY	42.16	-76.89	285	14733	BUFFALO, NY	42.93	-78.73
54787	FARMINGDALE, NY	40.73	-73.42	23	94703	UPTON, NY	40.87	-72.87
54773	FULTON, NY	43.35	-76.38	143	14733	BUFFALO, NY	42.93	-78.73
14750	GLEN FALLS, NY	43.34	-73.61	98	54775	ALBANY, NY	42.69	-73.83
04781	ISLIP, NY	40.79	-73.1	26	94703	UPTON, NY	40.87	-72.87
94725	MASSENA, NY	44.94	-74.85	62	04734	MANIWAKI, CA	46.38	-75.97
04789	MONTGOMERY, NY	41.51	-74.27	108	94703	UPTON, NY	40.87	-72.87
94728	NEW YORK, NY	40.78	-73.97	48	94703	UPTON, NY	40.87	-72.87
14732	NEW YORK, NY	40.78	-73.88	3	94703	UPTON, NY	40.87	-72.87
94789	NEW YORK, NY	40.66	-73.8	3	94703	UPTON, NY	40.87	-72.87
54778	PENN YAN, NY	42.64	-77.06	268	14733	BUFFALO, NY	42.93	-78.73
64776	PLATTSBURGH, NY	44.65	-73.47	71	54775	ALBANY, NY	42.69	-73.83
14757	POUGHKEEPSIE, NY	41.63	-73.88	48	94703	UPTON, NY	40.87	-72.87
14768	ROCHESTER, NY	43.12	-77.68	164	14733	BUFFALO, NY	42.93	-78.73
64775	ROME, NY	43.23	-75.41	147	54775	ALBANY, NY	42.69	-73.83
94740	SARANAC LAKE, NY	44.39	-74.21	505	54775	ALBANY, NY	42.69	-73.83
54790	SHIRLEY, NY	40.82	-72.87	18	94703	UPTON, NY	40.87	-72.87
14771	SYRACUSE, NY	43.11	-76.1	125	54775	ALBANY, NY	42.69	-73.83
94790	WATERTOWN, NY	43.99	-76.02	94	04734	MANIWAKI, CA	46.38	-75.97
54757	WELLSVILLE, NY	42.11	-77.99	636	14733	BUFFALO, NY	42.93	-78.73
14719	WESTHAMPTON BEACH, NY	40.84	-72.63	13	94703	UPTON, NY	40.87	-72.87
94745	WHITE PLAINS, NY	41.07	-73.71	116	94703	UPTON, NY	40.87	-72.87
14813	AKRON, OH	41.04	-81.46	318	94823	PITTSBURGH, PA	40.53	-80.23
14895	AKRON, OH	40.92	-81.44	368	94823	PITTSBURGH, PA	40.53	-80.23
04857	ASHTABULA, OH	41.78	-80.7	280	94823	PITTSBURGH, PA	40.53	-80.23
93812	CINCINNATI, OH	39.1	-84.42	145	13841	CINCINNATI, OH	39.42	-83.75
04853	CLEVELAND, OH	41.52	-81.68	177	94823	PITTSBURGH, PA	40.53	-80.23
14820	CLEVELAND, OH	41.41	-81.85	237	94823	PITTSBURGH, PA	40.53	-80.23
04804	COLUMBUS, OH	40.08	-83.08	276	13841	CINCINNATI, OH	39.42	-83.75
14821	COLUMBUS, OH	39.99	-82.88	247	13841	CINCINNATI, OH	39.42	-83.75
53859	DAYTON, OH	39.59	-84.23	290	13841	CINCINNATI, OH	39.42	-83.75
93815	DAYTON, OH	39.91	-84.22	303	13841	CINCINNATI, OH	39.42	-83.75
04851	DEFIANCE, OH	41.34	-84.43	214	04830	WHITE LAKE, MI	42.7	-83.47
14825	FINDLAY, OH	41.01	-83.67	247	13841	CINCINNATI, OH	39.42	-83.75
53855	HAMILTON, OH	39.36	-84.52	185	13841	CINCINNATI, OH	39.42	-83.75
53844	LANCASTER, OH	39.76	-82.66	258	13841	CINCINNATI, OH	39.42	-83.75
04850	LIMA, OH	40.71	-84.03	297	13841	CINCINNATI, OH	39.42	-83.75
04849	LORAIN/ELYRIA, OH	41.18	-82.18	241	04830	WHITE LAKE, MI	42.7	-83.47
14891	MANSFIELD, OH	40.82	-82.52	394	13841	CINCINNATI, OH	39.42	-83.75
04855	MARION, OH	40.62	-83.06	300	13841	CINCINNATI, OH	39.42	-83.75
04852	NEW PHILADELPHIA, OH	40.47	-81.42	271	94823	PITTSBURGH, PA	40.53	-80.23
04858	NEWARK, OH	40.02	-82.46	268	13841	CINCINNATI, OH	39.42	-83.75
04848	TOLEDO, OH	41.56	-83.48	189	04830	WHITE LAKE, MI	42.7	-83.47

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
94830	TOLEDO, OH	41.59	-83.8	205	04830	WHITE LAKE, MI	42.7	-83.47
13841	WILMINGTON, OH	39.42	-83.82	322	13841	CINCINNATI, OH	39.42	-83.75
04842	WOOSTER, OH	40.87	-81.89	338	94823	PITTSBURGH, PA	40.53	-80.23
14852	YOUNGSTOWN/WARREN, OH	41.25	-80.67	357	94823	PITTSBURGH, PA	40.53	-80.23
93824	ZANESVILLE, OH	39.94	-81.89	269	94823	PITTSBURGH, PA	40.53	-80.23
03959	BARTLESVILLE, OK	36.77	-96.03	218	974646	LAMONT, OK	36.62	-97.48
03932	CLINTON, OK	35.34	-99.2	586	03948	NORMAN, OK	35.23	-97.47
03981	FREDERICK, OK	34.35	-98.98	380	03948	NORMAN, OK	35.23	-97.47
13975	GAGE, OK	36.3	-99.77	668	13985	DODGE CITY, KS	37.77	-99.97
53913	GUTHRIE, OK	35.85	-97.42	328	03948	NORMAN, OK	35.23	-97.47
03030	GUYMON, OK	36.68	-101.51	949	23047	AMARILLO, TX	35.23	-101.7
93986	HOBART, OK	35.01	-99.05	475	03948	NORMAN, OK	35.23	-97.47
03950	LAWTON, OK	34.57	-98.42	328	03948	NORMAN, OK	35.23	-97.47
93950	MC ALESTER, OK	34.9	-95.78	233	03948	NORMAN, OK	35.23	-97.47
93953	MUSKOGEE, OK	35.66	-95.36	185	03948	NORMAN, OK	35.23	-97.47
03954	OKLAHOMA CITY, OK	35.53	-97.65	390	03948	NORMAN, OK	35.23	-97.47
13967	OKLAHOMA CITY, OK	35.39	-97.6	388	03948	NORMAN, OK	35.23	-97.47
13969	PONCA CITY, OK	36.73	-97.1	307	974646	LAMONT, OK	36.62	-97.48
03965	STILLWATER, OK	36.16	-97.09	294	974646	LAMONT, OK	36.62	-97.48
13968	TULSA, OK	36.2	-95.89	195	974646	LAMONT, OK	36.62	-97.48
53908	TULSA, OK	36.04	-95.98	190	974646	LAMONT, OK	36.62	-97.48
94224	ASTORIA, OR	46.16	-123.88	3	24232	SALEM, OR	44.92	-123.02
94281	AURORA, OR	45.25	-122.77	59	24232	SALEM, OR	44.92	-123.02
24130	BAKER CITY, OR	44.84	-117.81	1024	24131	BOISE, ID	43.57	-116.22
94185	BURNS, OR	43.59	-118.95	1262	24131	BOISE, ID	43.57	-116.22
24221	EUGENE, OR	44.13	-123.21	108	24232	SALEM, OR	44.92	-123.02
04113	HERMISTON, OR	45.83	-119.26	193	04106	SPOKANE, WA	47.68	-117.63
94236	KLAMATH FALLS, OR	42.15	-121.72	1244	24225	MEDFORD, OR	42.37	-122.87
94273	MC MINNVILLE, OR	45.19	-123.13	47	24232	SALEM, OR	44.92	-123.02
24152	MEACHAM, OR	45.51	-118.42	1135	04106	SPOKANE, WA	47.68	-117.63
24225	MEDFORD, OR	42.39	-122.87	398	24225	MEDFORD, OR	42.37	-122.87
24162	ONTARIO, OR	44.02	-117.01	666	24131	BOISE, ID	43.57	-116.22
24155	PENDLETON, OR	45.7	-118.83	451	04106	SPOKANE, WA	47.68	-117.63
24229	PORTLAND, OR	45.59	-122.6	6	24232	SALEM, OR	44.92	-123.02
24242	PORTLAND, OR	45.55	-122.4	7	24232	SALEM, OR	44.92	-123.02
94261	PORTLAND, OR	45.54	-122.95	59	24232	SALEM, OR	44.92	-123.02
24230	REDMOND, OR	44.25	-121.15	928	24232	SALEM, OR	44.92	-123.02
24231	ROSEBURG, OR	43.24	-123.35	151	24225	MEDFORD, OR	42.37	-122.87
24232	SALEM, OR	44.91	-123	62	24232	SALEM, OR	44.92	-123.02
04201	SCAPPOOSE, OR	45.77	-122.86	13	24232	SALEM, OR	44.92	-123.02
24235	SEXTON SUMMIT, OR	42.62	-123.38	1168	24225	MEDFORD, OR	42.37	-122.87
24219	THE DALLES, OR	45.62	-121.17	72	24232	SALEM, OR	44.92	-123.02
14737	ALLENTOWN, PA	40.65	-75.45	117	94703	UPTON, NY	40.87	-72.87
14736	ALTOONA, PA	40.3	-78.32	447	93734	STERLING, VA	38.98	-77.48
04751	BRADFORD, PA	41.8	-78.64	643	14733	BUFFALO, NY	42.93	-78.73
54792	CLEARFIELD, PA	41.05	-78.41	461	94823	PITTSBURGH, PA	40.53	-80.23
54786	DOYLESTOWN, PA	40.33	-75.12	116	94703	UPTON, NY	40.87	-72.87
04787	DU BOIS, PA	41.18	-78.9	551	94823	PITTSBURGH, PA	40.53	-80.23
14860	ERIE, PA	42.08	-80.18	222	94823	PITTSBURGH, PA	40.53	-80.23
14711	HARRISBURG, PA	40.19	-76.76	91	93734	STERLING, VA	38.98	-77.48
14751	HARRISBURG, PA	40.22	-76.85	102	93734	STERLING, VA	38.98	-77.48
04726	JOHNSTOWN, PA	40.3	-78.83	694	94823	PITTSBURGH, PA	40.53	-80.23
54737	LANCASTER, PA	40.12	-76.29	122	93734	STERLING, VA	38.98	-77.48
04843	MEADVILLE, PA	41.63	-80.22	429	94823	PITTSBURGH, PA	40.53	-80.23
54789	MOUNT POCONO, PA	41.14	-75.38	577	94703	UPTON, NY	40.87	-72.87
13739	PHILADELPHIA, PA	39.87	-75.23	2	93734	STERLING, VA	38.98	-77.48
94732	PHILADELPHIA, PA	40.08	-75.01	31	94703	UPTON, NY	40.87	-72.87
14762	PITTSBURGH, PA	40.35	-79.92	378	94823	PITTSBURGH, PA	40.53	-80.23
94823	PITTSBURGH, PA	40.5	-80.23	341	94823	PITTSBURGH, PA	40.53	-80.23
54782	POTTSTOWN, PA	40.24	-75.56	89	93734	STERLING, VA	38.98	-77.48
14712	READING, PA	40.37	-75.96	101	93734	STERLING, VA	38.98	-77.48
14770	SELINSGROVE, PA	40.82	-76.86	137	93734	STERLING, VA	38.98	-77.48
14777	WILKES-BARRE/SCRANTON, PA	41.34	-75.73	290	54775	ALBANY, NY	42.69	-73.83
14778	WILLIAMSPORT, PA	41.24	-76.92	160	14733	BUFFALO, NY	42.93	-78.73
93778	YORK, PA	39.92	-76.87	144	93734	STERLING, VA	38.98	-77.48
11641	SAN JUAN, PR	18.43	-66	2	11641	SAN JUAN, PR	18.43	-66

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
14787	NEWPORT, RI	41.53	-71.28	44	14684	CHATHAM, MA	41.67	-69.97
14765	PROVIDENCE, RI	41.72	-71.43	16	14684	CHATHAM, MA	41.67	-69.97
14794	WESTERLY, RI	41.35	-71.8	20	94703	UPTON, NY	40.87	-72.87
93846	ANDERSON, SC	34.5	-82.71	234	53819	ATLANTA, GA	33.37	-84.57
13880	CHARLESTON, SC	32.9	-80.04	12	13880	CHARLESTON, SC	32.9	-80.03
53850	CLEMSON, SC	34.67	-82.89	271	53819	ATLANTA, GA	33.37	-84.57
13883	COLUMBIA, SC	33.94	-81.12	69	13880	CHARLESTON, SC	32.9	-80.03
53867	COLUMBIA, SC	33.97	-81	55	13880	CHARLESTON, SC	32.9	-80.03
13744	FLORENCE, SC	34.19	-79.73	43	13880	CHARLESTON, SC	32.9	-80.03
13886	GREENVILLE, SC	34.85	-82.35	307	53819	ATLANTA, GA	33.37	-84.57
53874	GREENWOOD, SC	34.25	-82.16	192	13880	CHARLESTON, SC	32.9	-80.03
03870	GREER, SC	34.9	-82.22	285	13723	GREENSBORO, NC	36.08	-79.95
93718	NORTH MYRTLE BEACH, SC	33.82	-78.72	8	13880	CHARLESTON, SC	32.9	-80.03
53854	ORANGEBURG, SC	33.46	-80.86	60	13880	CHARLESTON, SC	32.9	-80.03
53871	ROCK HILL, SC	34.99	-81.06	196	13723	GREENSBORO, NC	36.08	-79.95
14929	ABERDEEN, SD	45.45	-98.42	395	14929	ABERDEEN, SD	45.45	-98.41
94032	CUSTER, SD	43.73	-103.63	1699	94043	RAPID CITY, SD	44.07	-103.21
14936	HURON, SD	44.39	-98.23	391	14929	ABERDEEN, SD	45.45	-98.41
94950	MITCHELL, SD	43.78	-98.04	375	14929	ABERDEEN, SD	45.45	-98.41
94052	MOBRIDGE, SD	45.55	-100.41	515	24011	BISMARCK, ND	46.77	-100.75
24024	PHILIP, SD	44.05	-101.6	673	94043	RAPID CITY, SD	44.07	-103.21
24025	PIERRE, SD	44.38	-100.29	524	14929	ABERDEEN, SD	45.45	-98.41
94039	PINE RIDGE, SD	43.02	-102.52	1003	94043	RAPID CITY, SD	44.07	-103.21
24090	RAPID CITY, SD	44.05	-103.05	963	94043	RAPID CITY, SD	44.07	-103.21
14944	SIOUX FALLS, SD	43.58	-96.75	433	94980	OMAHA/VALLEY, NE	41.32	-96.37
14946	WATERTOWN, SD	44.93	-97.15	532	14929	ABERDEEN, SD	45.45	-98.41
94990	WINNER, SD	43.39	-99.84	617	24023	NORTH PLATTE, NE	41.13	-100.68
13877	BRISTOL/JOHNSON CITY, TN	36.48	-82.4	457	53829	BLACKSBURG, VA	37.21	-80.41
13882	CHATTANOOGA, TN	35.03	-85.2	205	53819	ATLANTA, GA	33.37	-84.57
03894	CLARKSVILLE, TN	36.62	-87.42	171	13897	NASHVILLE, TN	36.25	-86.57
03847	CROSSVILLE, TN	35.95	-85.09	566	13897	NASHVILLE, TN	36.25	-86.57
03811	JACKSON, TN	35.59	-88.92	132	13897	NASHVILLE, TN	36.25	-86.57
13891	KNOXVILLE, TN	35.82	-83.99	293	53819	ATLANTA, GA	33.37	-84.57
13893	MEMPHIS, TN	35.06	-89.99	93	03952	LITTLE ROCK, AR	34.83	-92.25
13897	NASHVILLE, TN	36.12	-86.69	183	13897	NASHVILLE, TN	36.25	-86.57
53868	OAK RIDGE, TN	36.02	-84.24	277	13897	NASHVILLE, TN	36.25	-86.57
13962	ABILENE, TX	32.41	-99.68	544	03990	FORT WORTH, TX	32.8	-97.3
12932	ALICE, TX	27.74	-98.03	52	12924	CORPUS CHRISTI, TX	27.78	-97.51
23047	AMARILLO, TX	35.22	-101.71	1095	23047	AMARILLO, TX	35.23	-101.7
12976	ANGLETON/LAKE JACKSON, TX	29.11	-95.46	7	12924	CORPUS CHRISTI, TX	27.78	-97.51
53907	ARLINGTON, TX	32.66	-97.09	187	03990	FORT WORTH, TX	32.8	-97.3
13904	AUSTIN/BERGSTROM, TX	30.18	-97.68	148	12924	CORPUS CHRISTI, TX	27.78	-97.51
13958	AUSTIN/CITY, TX	30.32	-97.77	200	03990	FORT WORTH, TX	32.8	-97.3
12917	BEAUMONT/PORT ARTHUR, TX	29.95	-94.02	4	03937	LAKE CHARLES, LA	30.12	-93.22
03024	BORGER, TX	35.7	-101.39	927	23047	AMARILLO, TX	35.23	-101.7
12919	BROWNSVILLE, TX	25.91	-97.43	6	12919	BROWNSVILLE, TX	25.92	-97.42
03999	BURNET, TX	30.74	-98.24	389	03990	FORT WORTH, TX	32.8	-97.3
23007	CHILDRESS, TX	34.43	-100.29	593	23047	AMARILLO, TX	35.23	-101.7
03904	COLLEGE STATION, TX	30.59	-96.36	93	03990	FORT WORTH, TX	32.8	-97.3
53902	CONROE, TX	30.35	-95.41	72	03937	LAKE CHARLES, LA	30.12	-93.22
12924	CORPUS CHRISTI, TX	27.77	-97.51	12	12924	CORPUS CHRISTI, TX	27.78	-97.51
53912	CORSICANA, TX	32.03	-96.4	135	03990	FORT WORTH, TX	32.8	-97.3
12947	COTULLA, TX	28.46	-99.22	140	12924	CORPUS CHRISTI, TX	27.78	-97.51
93042	DALHART, TX	36.02	-102.55	1216	23047	AMARILLO, TX	35.23	-101.7
03971	DALLAS, TX	32.68	-96.87	198	03990	FORT WORTH, TX	32.8	-97.3
13960	DALLAS, TX	32.85	-96.85	145	03990	FORT WORTH, TX	32.8	-97.3
03927	DALLAS-FT WORTH, TX	32.9	-97.04	167	03990	FORT WORTH, TX	32.8	-97.3
22010	DEL RIO, TX	29.37	-100.92	307	22010	DEL RIO, TX	29.37	-100.92
03991	DENTON, TX	33.21	-97.2	198	03990	FORT WORTH, TX	32.8	-97.3
23044	EL PASO, TX	31.81	-106.38	1200	03020	SANTA TERESA, NM	31.87	-106.7
23091	FORT STOCKTON, TX	30.92	-102.91	917	23023	MIDLAND, TX	31.95	-102.18
13961	FORT WORTH, TX	32.82	-97.36	187	03990	FORT WORTH, TX	32.8	-97.3
53909	FORT WORTH, TX	32.97	-97.32	201	03990	FORT WORTH, TX	32.8	-97.3
12923	GALVESTON, TX	29.27	-94.86	2	03937	LAKE CHARLES, LA	30.12	-93.22
23055	GUADALUPE PASS, TX	31.83	-104.81	1661	03020	SANTA TERESA, NM	31.87	-106.7
12904	HARLINGEN, TX	26.23	-97.65	10	12919	BROWNSVILLE, TX	25.92	-97.42

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
12962	HONDO, TX	29.36	-99.17	280	22010	DEL RIO, TX	29.37	-100.92
12918	HOUSTON, TX	29.65	-95.28	13	03937	LAKE CHARLES, LA	30.12	-93.22
12960	HOUSTON, TX	29.99	-95.36	29	03937	LAKE CHARLES, LA	30.12	-93.22
12975	HOUSTON, TX	29.52	-95.24	12	03937	LAKE CHARLES, LA	30.12	-93.22
12977	HOUSTON, TX	29.62	-95.66	23	03937	LAKE CHARLES, LA	30.12	-93.22
53910	HOUSTON, TX	30.06	-95.55	47	03937	LAKE CHARLES, LA	30.12	-93.22
53903	HUNTSVILLE, TX	30.75	-95.59	104	03937	LAKE CHARLES, LA	30.12	-93.22
13973	JUNCTION, TX	30.51	-99.77	522	22010	DEL RIO, TX	29.37	-100.92
03901	LONGVIEW, TX	32.38	-94.71	106	13957	SHREVEPORT, LA	32.45	-93.83
23042	LUBBOCK, TX	33.67	-101.82	989	23047	AMARILLO, TX	35.23	-101.7
93987	LUFKIN, TX	31.23	-94.75	86	13957	SHREVEPORT, LA	32.45	-93.83
12959	MC ALLEN, TX	26.18	-98.24	30	12919	BROWNSVILLE, TX	25.92	-97.42
53914	MC KINNEY, TX	33.18	-96.59	169	03990	FORT WORTH, TX	32.8	-97.3
23023	MIDLAND, TX	31.93	-102.21	872	23023	MIDLAND, TX	31.95	-102.18
93985	MINERAL WELLS, TX	32.78	-98.06	287	03990	FORT WORTH, TX	32.8	-97.3
12971	NEW BRAUNFELS, TX	29.71	-98.05	197	12924	CORPUS CHRISTI, TX	27.78	-97.51
03031	ODESSA, TX	31.92	-102.39	906	23023	MIDLAND, TX	31.95	-102.18
12935	PALACIOS, TX	28.73	-96.25	5	12924	CORPUS CHRISTI, TX	27.78	-97.51
12957	PORT ISABEL, TX	26.17	-97.35	4	12919	BROWNSVILLE, TX	25.92	-97.42
12972	ROCKPORT, TX	28.08	-97.05	8	12924	CORPUS CHRISTI, TX	27.78	-97.51
23034	SAN ANGELO, TX	31.35	-100.49	582	23023	MIDLAND, TX	31.95	-102.18
12921	SAN ANTONIO, TX	29.53	-98.46	236	12924	CORPUS CHRISTI, TX	27.78	-97.51
12970	SAN ANTONIO, TX	29.34	-98.47	174	12924	CORPUS CHRISTI, TX	27.78	-97.51
53911	TERRELL, TX	32.71	-96.27	143	03990	FORT WORTH, TX	32.8	-97.3
13972	TYLER, TX	32.35	-95.4	161	13957	SHREVEPORT, LA	32.45	-93.83
12912	VICTORIA, TX	28.86	-96.93	34	12924	CORPUS CHRISTI, TX	27.78	-97.51
13959	WACO, TX	31.61	-97.23	152	03990	FORT WORTH, TX	32.8	-97.3
13966	WICHITA FALLS, TX	33.98	-98.49	308	03948	NORMAN, OK	35.23	-97.47
23040	WINK, TX	31.78	-103.2	858	23023	MIDLAND, TX	31.95	-102.18
23159	BRYCE CANYON, UT	37.71	-112.15	2312	53103	FLAGSTAFF, AZ	35.23	-111.82
93129	CEDAR CITY, UT	37.7	-113.1	1703	03120	LAS VEGAS, NV	36.05	-115.18
94128	LOGAN, UT	41.79	-111.85	1355	24127	SALT LAKE CITY, UT	40.77	-111.97
23176	MILFORD, UT	38.44	-113.03	1532	24127	SALT LAKE CITY, UT	40.77	-111.97
93075	MOAB, UT	38.76	-109.75	1390	23066	GRAND JUNCTION, CO	39.12	-108.52
93141	PRICE, UT	39.55	-110.75	1777	24127	SALT LAKE CITY, UT	40.77	-111.97
24127	SALT LAKE CITY, UT	40.79	-111.97	1286	24127	SALT LAKE CITY, UT	40.77	-111.97
94030	VERNAL, UT	40.44	-109.51	1603	23066	GRAND JUNCTION, CO	39.12	-108.52
93736	CHARLOTTESVILLE, VA	38.14	-78.45	187	93734	STERLING, VA	38.98	-77.48
13728	DANVILLE, VA	36.57	-79.34	169	13723	GREENSBORO, NC	36.08	-79.95
13733	LYNCHBURG, VA	37.34	-79.21	273	53829	BLACKSBURG, VA	37.21	-80.41
93741	NEWPORT NEWS, VA	37.13	-76.49	12	93739	WALLOPS ISLAND, VA	37.93	-75.48
13737	NORFOLK, VA	36.9	-76.19	4	93739	WALLOPS ISLAND, VA	37.93	-75.48
13740	RICHMOND, VA	37.51	-77.32	50	93734	STERLING, VA	38.98	-77.48
93775	RICHMOND/ASHLAND, VA	37.71	-77.43	62	93734	STERLING, VA	38.98	-77.48
13741	ROANOKE, VA	37.32	-79.97	346	53829	BLACKSBURG, VA	37.21	-80.41
93773	WAKEFIELD, VA	36.98	-77.01	32	93739	WALLOPS ISLAND, VA	37.93	-75.48
93739	WALLOPS ISLAND, VA	37.94	-75.5	11	93739	WALLOPS ISLAND, VA	37.93	-75.48
94705	BARRE/MONTPELIER, VT	44.2	-72.58	336	54775	ALBANY, NY	42.69	-73.83
54781	BENNINGTON, VT	42.89	-73.25	244	54775	ALBANY, NY	42.69	-73.83
14742	BURLINGTON, VT	44.47	-73.15	101	54775	ALBANY, NY	42.69	-73.83
54771	MORRISVILLE, VT	44.53	-72.61	225	54775	ALBANY, NY	42.69	-73.83
54740	SPRINGFIELD, VT	43.34	-72.52	175	54775	ALBANY, NY	42.69	-73.83
24217	BELLINGHAM, WA	48.79	-122.54	47	94240	QUILLAYUTE, WA	47.95	-124.55
94119	DEER PARK, WA	47.97	-117.42	670	04106	SPOKANE, WA	47.68	-117.63
24220	ELLENSBURG, WA	47.03	-120.53	531	04106	SPOKANE, WA	47.68	-117.63
24141	EPHRATA, WA	47.3	-119.51	381	04106	SPOKANE, WA	47.68	-117.63
24222	EVERETT, WA	47.91	-122.28	166	94240	QUILLAYUTE, WA	47.95	-124.55
94276	FRIDAY HARBOR, WA	48.52	-123.02	33	94240	QUILLAYUTE, WA	47.95	-124.55
94225	HOQUIAM, WA	46.97	-123.94	4	94240	QUILLAYUTE, WA	47.95	-124.55
24110	MOSES LAKE, WA	47.21	-119.32	355	04106	SPOKANE, WA	47.68	-117.63
24227	OLYMPIA, WA	46.97	-122.9	57	94240	QUILLAYUTE, WA	47.95	-124.55
94197	OMAK, WA	48.46	-119.52	394	94151	KELOWNA APT, CA	49.97	-119.38
94266	PORT ANGELES, WA	48.12	-123.5	79	94240	QUILLAYUTE, WA	47.95	-124.55
94129	PULLMAN/MOSCOW, WA	46.74	-117.11	769	04106	SPOKANE, WA	47.68	-117.63
94240	QUILLAYUTE, WA	47.93	-124.56	56	94240	QUILLAYUTE, WA	47.95	-124.55
94248	RENTON, WA	47.49	-122.21	6	94240	QUILLAYUTE, WA	47.95	-124.55

Surface Station					Upper-air Station			
WBAN	Location	Latitude (deg)	Longitude (deg)	Elevation (m ASL)	WBAN	Location	Latitude (deg)	Longitude (deg)
24234	SEATTLE, WA	47.53	-122.3	5	94240	QUILLAYUTE, WA	47.95	-124.55
24233	SEATTLE, WA	47.46	-122.31	113	94240	QUILLAYUTE, WA	47.95	-124.55
94227	SHELTON, WA	47.24	-123.15	83	94240	QUILLAYUTE, WA	47.95	-124.55
24157	SPOKANE, WA	47.62	-117.53	717	04106	SPOKANE, WA	47.68	-117.63
94176	SPOKANE, WA	47.68	-117.32	591	04106	SPOKANE, WA	47.68	-117.63
94274	TACOMA, WA	47.27	-122.58	88	94240	QUILLAYUTE, WA	47.95	-124.55
94298	VANCOUVER, WA	45.62	-122.66	8	24232	SALEM, OR	44.92	-123.02
24160	WALLA WALLA, WA	46.09	-118.29	356	04106	SPOKANE, WA	47.68	-117.63
94239	WENATCHEE, WA	47.4	-120.21	375	04106	SPOKANE, WA	47.68	-117.63
24243	YAKIMA, WA	46.56	-120.53	320	24232	SALEM, OR	44.92	-123.02
94929	ASHLAND, WI	46.55	-90.92	251	94983	MINNEAPOLIS, MN	44.85	-93.57
94994	BOSCOBEL, WI	43.16	-90.68	205	94982	DAVENPORT, IA	41.62	-90.58
14991	EAU CLAIRE, WI	44.87	-91.49	270	94983	MINNEAPOLIS, MN	44.85	-93.57
04840	FOND DU LAC, WI	43.77	-88.49	240	14898	GREEN BAY, WI	44.48	-88.13
14898	GREEN BAY, WI	44.51	-88.12	210	14898	GREEN BAY, WI	44.48	-88.13
94973	HAYWARD, WI	46.03	-91.44	367	94983	MINNEAPOLIS, MN	44.85	-93.57
04845	KENOSHA, WI	42.6	-87.94	223	14898	GREEN BAY, WI	44.48	-88.13
14920	LA CROSSE, WI	43.88	-91.26	199	94982	DAVENPORT, IA	41.62	-90.58
14921	LONE ROCK, WI	43.21	-90.18	218	94982	DAVENPORT, IA	41.62	-90.58
14837	MADISON, WI	43.14	-89.35	262	14898	GREEN BAY, WI	44.48	-88.13
94985	MARSHFIELD, WI	44.64	-90.19	383	14898	GREEN BAY, WI	44.48	-88.13
14839	MILWAUKEE, WI	42.95	-87.9	206	14898	GREEN BAY, WI	44.48	-88.13
94855	OSHKOSH, WI	43.98	-88.56	246	14898	GREEN BAY, WI	44.48	-88.13
94818	RACINE, WI	42.76	-87.81	203	14898	GREEN BAY, WI	44.48	-88.13
04803	RHINELANDER, WI	45.63	-89.47	493	14898	GREEN BAY, WI	44.48	-88.13
04841	SHEBOYGAN, WI	43.77	-87.85	226	14898	GREEN BAY, WI	44.48	-88.13
14897	WAUSAU, WI	44.93	-89.63	366	14898	GREEN BAY, WI	44.48	-88.13
04826	WISCONSIN RAPIDS, WI	44.36	-89.84	309	14898	GREEN BAY, WI	44.48	-88.13
03872	BECKLEY, WV	37.8	-81.12	757	53829	BLACKSBURG, VA	37.21	-80.41
03859	BLUEFIELD, WV	37.3	-81.21	873	53829	BLACKSBURG, VA	37.21	-80.41
13866	CHARLESTON, WV	38.38	-81.59	277	53829	BLACKSBURG, VA	37.21	-80.41
03802	CLARKSBURG, WV	39.3	-80.23	360	94823	PITTSBURGH, PA	40.53	-80.23
13729	ELKINS, WV	38.89	-79.85	603	94823	PITTSBURGH, PA	40.53	-80.23
03860	HUNTINGTON, WV	38.38	-82.56	251	13841	CINCINNATI, OH	39.42	-83.75
13734	MARTINSBURG, WV	39.4	-77.98	164	93734	STERLING, VA	38.98	-77.48
13736	MORGANTOWN, WV	39.64	-79.92	372	94823	PITTSBURGH, PA	40.53	-80.23
03804	PARKERSBURG, WV	39.2	-81.27	253	94823	PITTSBURGH, PA	40.53	-80.23
14894	WHEELING, WV	40.18	-80.65	366	94823	PITTSBURGH, PA	40.53	-80.23
24164	BIG PINEY, WY	42.58	-110.11	2116	24061	RIVERTON, WY	43.07	-108.49
94054	BUFFALO, WY	44.38	-106.72	1502	24061	RIVERTON, WY	43.07	-108.49
24089	CASPER, WY	42.9	-106.47	1621	24061	RIVERTON, WY	43.07	-108.49
24018	CHEYENNE, WY	41.16	-104.81	1864	23062	DENVER, CO	39.76	-104.87
94057	DOUGLAS, WY	42.8	-105.38	1504	94043	RAPID CITY, SD	44.07	-103.21
04111	EVANSTON, WY	41.27	-111.03	2176	24127	SALT LAKE CITY, UT	40.77	-111.97
94023	GILLETTE, WY	44.34	-105.54	1327	94043	RAPID CITY, SD	44.07	-103.21
24048	GREYBULL, WY	44.52	-108.08	1191	24061	RIVERTON, WY	43.07	-108.49
24021	LANDER, WY	42.82	-108.73	1704	24061	RIVERTON, WY	43.07	-108.49
24022	LARAMIE, WY	41.31	-105.67	2217	23062	DENVER, CO	39.76	-104.87
24057	RAWLINS, WY	41.81	-107.2	2065	24061	RIVERTON, WY	43.07	-108.49
24061	RIVERTON, WY	43.06	-108.46	1660	24061	RIVERTON, WY	43.07	-108.49
24027	ROCK SPRINGS, WY	41.59	-109.07	2055	24061	RIVERTON, WY	43.07	-108.49
24029	SHERIDAN, WY	44.77	-106.98	1209	24061	RIVERTON, WY	43.07	-108.49
94053	TORRINGTON, WY	42.06	-104.15	1279	94043	RAPID CITY, SD	44.07	-103.21
24062	WORLAND, WY	43.97	-107.95	1269	24061	RIVERTON, WY	43.07	-108.49