Process Instructions for Using a New VBA Macro to Automate a Bank Reconciliation Process

COMPANY NAME REDACTED

Contents

SUMMARY

This PDD describes the process for updating a bank reconciliation spreadsheet (for the *COMPANY* Bank of America Concentration Account) using a VBA macro and two variable inputs

The macro file opens the variable inputs and manipulates their data in order to provide the updated bank reconciliation.

Note: WB is an abbreviation for Excel Workbook.

MACRO FILE

This file contains VBA code that will open the Variable Inputs and manipulate their data.

NAME	DESCRIPTION	FILE
WB0 - Conc Rec Macro File	This is an Excel file with a template on Sheet 1 and a VBA Macro in Visual Basic.	WB0 - Conc Rec Macro File - V5 (Dem

To use this file, please follow this instructions below and refer to the

- Download the macro file [WB0].
- Download the Variable Inputs [WB1 and WB2]. The files are attached in the Variable Inputs section below.
- Open WB0. Select the “Enable” button to enable the macro to run.
- Insert the file path to WB1 in Cell C2.
- Insert the file path to WB2 in Cell C3.
- Select the "Run Macro" button in WB0

If the instructions above were followed correctly, the macro file should look like this with unique file paths in Cells C2 and C3.

	A	B	C
1	**VARIABLE DESCRIPTION**	**VARIABLE NAME**	**FILE PATH**
2	Bank Statement	WB1	C:\Users\vvaldez\Desktop\W13-2024\2 - Show and Tell - Reconciliation Improvements\2 - Variable Inputs\X - Parrallel Test - CF\03.19.2024\WB1 - 03.19.2024 - BS - I.xlsx
3	Concentration Account Reconciliation	WB2	C:\Users\vvaldez\Desktop\W13-2024\2 - Show and Tell - Reconciliation Improvements\2 - Variable Inputs\X - Parrallel Test - CF\03.19.2024\WB2 - 03.18.2024 - Concentration Account Reconciliation V4 - I.xlsx
4			
5			
6			
7			
8	Run Macro		
9			

*Concentration Account Reconciliation is synonymous with Bank Reconciliation in this context.

VARIABLE INPUTS

The two variable inputs for this process include a current day bank statement in .xlsx format [WB1] and a prior day bank reconciliation in .xlsx format [WB2].

These files are variable, meaning the data within the files changes daily (i.e., if a user were to create a reconciliation for March 27, then they would need to use the March 27 Bank Statement as WB1 and the March 26 Bank Reconciliation WB2, as opposed to using files from February 16 and February 15, which obviously contains different data).

Note: If the structure of the variable inputs changes, the macro file [WB0] may fail to run and produce an error that will require debugging. For example, if the bank were to add or delete a column of data from the bank statement [WB1], that could cause macro to fail or produce an incorrect result. Also, if a user were to add, delete, and/or reorder columns in the bank reconciliation file [WB2], the macro file may fail to run or produce an incorrect result.

Note: Details about how the macro file affects the variable inputs can be found in the Flowchart Process Overview, Detailed Process Overview, and Detailed Process Instructions sections below.

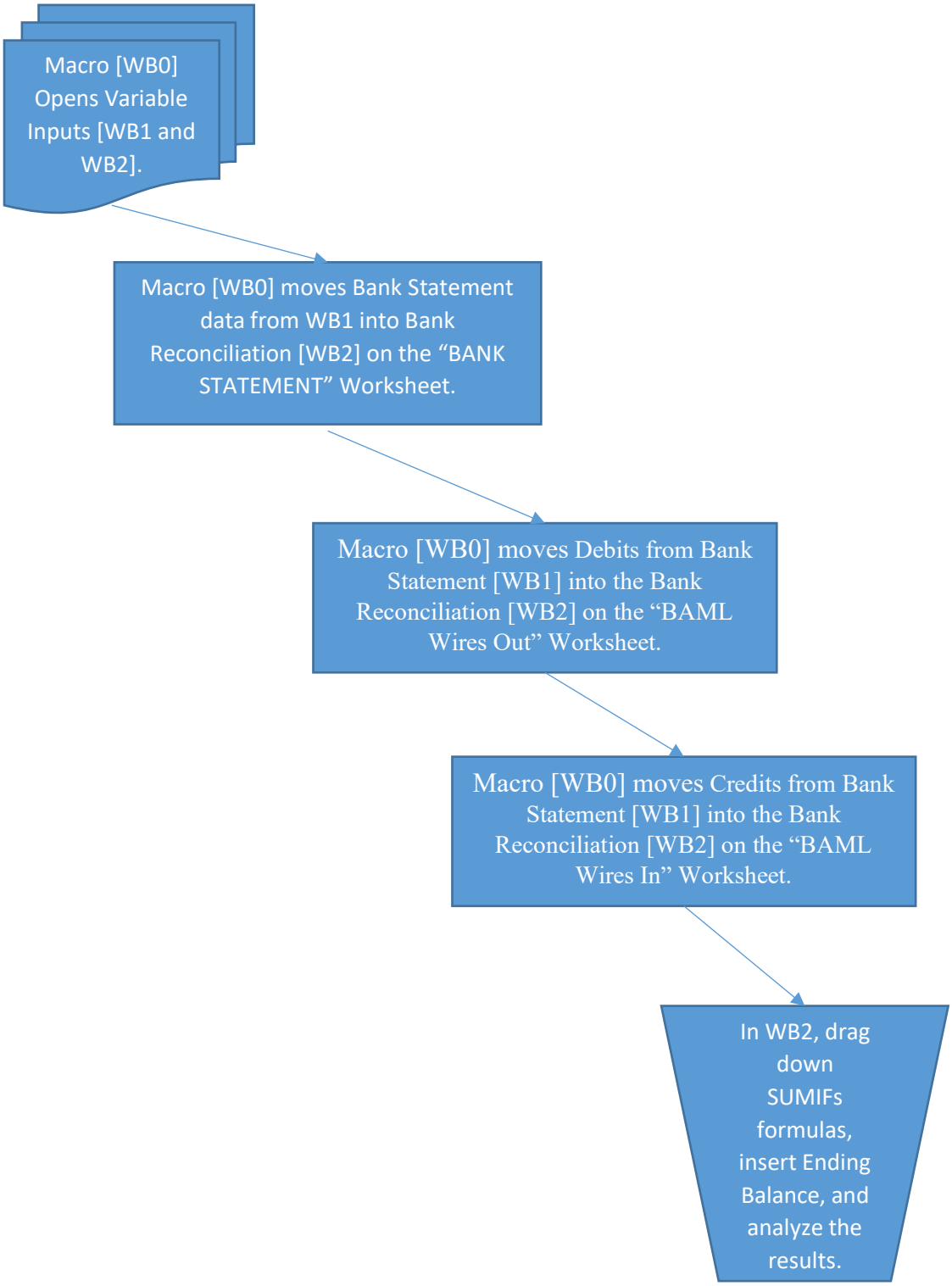
Note: CD = Current Day; PD = Prior Day, I = Input		
NAME	**DESCRIPTION**	**FILE**
WB1 – MM.CD.YYYY - BS- I	Current Day Bank Statement (Bank in Tabular Format)	 WB1 - 03.19.2024 - BS - I.xlsx
WB2 - MM.PD.YYYY Concentration Account Reconciliation - I	Prior Day Conc Repot 1Q24	 WB2 - 03.18.2024 - Concentration Accoun

VARIABLE OUTPUTS

Below are the variable output files for this process. These files are the variable inputs files above after they were manipulated by the macro.

Note: CD = Current Day, ○ = Output		
NAME	**DESCRIPTION**	**FILE**
WB1 – MM.CD.YYYY - BS- ○	Current Day Bank Statement (Bank in Tabular Format) *After being manipulated by the VBA code	 WB1 - 03.19.2024 - BS - O.xlsx
WB2 - MM.CD.YYYY Concentration Account Reconciliation - ○	Current Day Conc Repot 1Q24 *This is the Prior Day Conc Report 1Q24 after it was manipulated by the macro	 WB2 - 03.19.2024 - Concentration Accoun

FLOWCHART PROCESS OVERVIEW



DETAILED PROCESS OVERVIEW

Per the flowchart above, the macro file [WB0] moves the data from the bank statement [WB1] into the bank reconciliation file [WB2]. Below is some detailed information about that process.

IMPORTANT NOTE 1

The macro manipulates the Bank Statement in WB1 by performing the following actions:

[1] Delete the first five rows of information on the Bank Statement because it is not necessary.

[2] Insert three columns with formulas into the Bank Statement that are designed to create/extract a short description for each line in the bank statement.

[3] Filter on Debit BAI Codes in the Bank Statement and copy those lines into a new worksheet titled "WIRES OUT." Then the format of that data is changed so that it can be copied and pasted into the "BAML Wires Out" Worksheet in WB2.

[4] Filter on Credit BAI Codes in the Bank Statement and copy those lines into a new worksheet titled "WIRES IN." Then the format of that data is changed so that it can be copied and pasted into the "BAML Wires In" Worksheet in WB2.

IMPORTANT NOTE 2

The macro manipulates the Reconciliation file [WB2] by performing the following actions:

[1] Insert the Bank Statement from WB1 into the BANK STATEMENT worksheet within WB2.

[2] Insert a table of data from the "WIRES OUT" worksheet in WB1 into the "BAML Wires Out" worksheet in WB2.

[3] Insert a table of data from the "WIRES IN" worksheet in WB1 into the "BAML Wires Out" worksheet in WB2.

STEP-BY-STEP INSTRUCTIONS

Below is a list of step-by-step instructions for creating the bank reconciliation. These instructions are executed by the macro file [WB0], but they could also be executed manually by a treasury analyst. Please pay close attention to the **Error Handling Notices**.

Step 1. Open Bank Statement [WB1] and change the Worksheet Name from “CashPro” to “BANK STATEMENT.”

Error Handling Notice: If the name of this Worksheet changes, the macro will fail to run and require debugging.

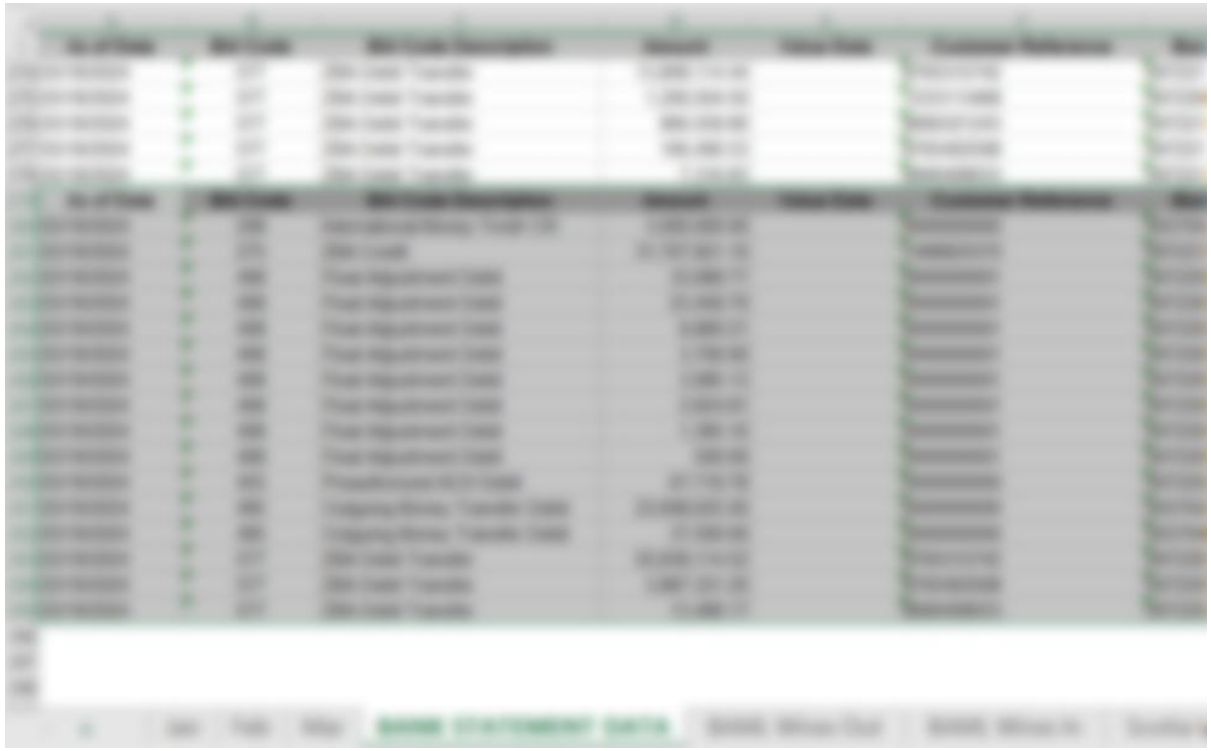
Step 2. Open Bank Reconciliation [WB2].

Error Handling Notice: There is a new Worksheet titled “BANK STATEMENT DATA.” If the name of that Worksheet changes, the macro will fail to run and require debugging.

Error Handling Notice: The user of this macro may be prompted to update the links associated with the file. Updating the links may or may not cause the macro to fail. The links should not have to be updated, so I recommend not updating the links.

Step 3. Delete Rows 1-5 in the Bank Statement [WB1].

Step 4. Append Bank Statement in WB1 to Bank Statement in WB2 (i.e., copy the Bank Statement in WB1 (including the header row) and paste it into the “BANK STATEMENT DATA” Worksheet in WB2 in the first empty Cell in Column A).



Error Handling Notice: The macro will fail to run if “BANK STATEMENT DATA” Worksheet does not have at least one day of bank statement data before the macro runs.

The next steps are designed to update the “BAML Wires Out” and “BAML Wires In” Worksheets in WB1.

Step 5. Insert three columns with formulas into the Bank Statement in WB1 on columns I, J, and K. These formulas are designed to create/extract a short, unique description from the column H.

Step 6. Drag the formulas down to the last populated row in the bank statement.

Step 7. Remove the formulas from columns I-K (but keep the values) by copy all data in columns I-K and then pasting that data in columns I-K as values.

Below is a list of the formulas used.

FORMULAS USED IN STEP 5

Column I:

```
=IF(OR(B2="165",B2="195",B2="208"),
IFERROR(MID(H2,SEARCH("ORIG:",H2,1),SEARCH("ORG BK:",H2,1)-SEARCH("ORIG:",H2,1)),LEFT(H2,SEARCH("DES:",H2,1)-4)),
IF(OR(B2="455",B2="491",B2="495",B2="508",B2="577",B2="699"),
IFERROR(MID(H2,SEARCH("BNF:",H2,1),SEARCH("BNF BK:",H2,1)-SEARCH("BNF:",H2,1)),RIGHT(H2,LEN(H2)-SEARCH("TO",H2,1)-2)),
"BAI Code Not Used"))
```

Column J:

```
=IF(OR(B2="165",B2="195",B2="208"),
IFERROR(LEFT(I2,SEARCH(" ID:",I2,1)-1),I2),
IF(OR(B2="455",B2="491",B2="495",B2="508",B2="577",B2="699"),
IFERROR(LEFT(I2,SEARCH(" ID:",I2,1)),I2),
"BAI Code Not Used"))
```

Column K:

```
=IF(OR(B2="165",B2="195",B2="208"),
IF(COUNTIF(J2,"*ORIG:*"),RIGHT(J2,LEN(J2)-5),J2),
IF(OR(B2="455",B2="491",B2="495",B2="508",B2="577",B2="699"),
IF(COUNTIF(J2,"*BNF:*"),RIGHT(J2,LEN(J2)-4),J2),
"BAI Code Not Used"))
```

Please refer to the Formula Explanations section for information about the formulas above.

Step 8. Filter the Bank Statement on Debit BAI Codes 491, 495, 508, 661, and 669. There are only two rows of data for the 3/19/2024 bank statement used in this example.

Error Handling Notice: If there is a Debit BAI Code used in a future bank statement that is not listed above, then the macro simply won't take that BAI Code into account. The solution is to [1] update the macro or [2] manually add the Debit BAI Code data into the Bank Reconciliation (WB2) "BAML Wires Out" Worksheet at the appropriate time and in the appropriate place. In other words, if the bank started using a new debit code called 999, then the macro will need to be updated to also filter on debit code 999, or a treasury analyst will need to manually add debit code 999 data into the Bank Reconciliation (WB2) "BAML Wires Out" Worksheet.

Error Handling Notice: If there is no Debit data in the Bank Statement, the macro will fail to run. This can be resolved, but I did not have enough time to resolve it. The solution in this rare case is to manually execute the steps in this PDD in order to populate the "BAML Wires Out" Worksheet.

Step 9. Move the filtered bank data into new Worksheet titled “WIRES OUT” within WB1.

Note: The column width and row height was adjusted for illustration purposes. The macro does not adjust the dimensions of the cells.

Step 10. Remove unnecessary columns from the “WIRES OUT” Worksheet in WB1 and add a column with a formula in it that is designed to extract month and year from the date field in column B. Below is an example. The screenshot is of the same image above (in Step 9) after columns B, C, E, F, G, H, I, and J were delete. Column A is a the column designed to extract the month and year from the date field in Column B.

Below is the formula used in Column A.

Note: The macro removes the header row above before moving the data into WB2 because the it’s not necessary.

FORMULAS USED IN STEP 10

Column A:

=TEXT(B2,"mmmm")&" "&TEXT(B2,"yyyy")

This is simply to formula used to extract the Month and YYYY from a date. I won't explain it in the Formula Explanations sections.

Step 11. Delete the header row from the “WIRES OUT” Worksheet in WB1, rejigger the column order, and convert the values in the amount column to negative numbers.

The next step is for the macro to move the data above to the “BAML Wires Out” Worksheet in WB2.

Step 12. Copy the “WIRES OUT” data in WB1 and paste it into the “BAML Wires Out” Worksheet in WB2 in the first empty cell in column A.

Error Handling Notice: The macro is designed to paste data in the first empty row of this worksheet. If a user were to add an empty row in the middle of the data table, the macro would paste the data in that empty row, which would not make sense and would result in a flawed data table. The solution to this potential issue is to ensure that the only empty rows are below the table of data.

Error Handling Notice: The formulas in Step 5 are designed to create the description in Column C. The Wires Out portion of the formula extracts the “BNF:” from the Bank Statement column H and uses that as a description. If “BNF:” is not available in column H of the Bank Statement, then the formula extracts the value after “TRSF TO.”. In some cases, the formula will not find “BNF:” nor “TRSF TO” which will produce a #VALUE error. In that case, a treasury analyst will need to update the description manually.

Step 13. Filter the Bank Statement in WB1 on Credit BAI Codes 165, 191, 195, and 208. There is only one row of data for the 3/19/2024 bank statement used in this example.

Error Handling Notice: If there is a Credit BAI Code used in a future bank statement that is not listed above, then the macro simply won't take that BAI Code into account. The solution is to [1] update the macro or [2] manually add the Credit BAI Code data into the Bank Reconciliation (WB2) "BAML Wires Out" Worksheet at the appropriate time and in the appropriate place. In other words, if the bank started using a new credit code called 888, then the macro will need to be updated to also filter on debit code 888, or a treasury analyst will need to manually add credit code 888 data into the Bank Reconciliation (WB2) "BAML Wires Out" Worksheet.

Error Handling Notice: If there is no Credit data in the Bank Statement, the macro will fail to run. This can be resolved, but I did not have enough time to resolve it. The solution in this rare case is to manually execute the steps in this PDD in order to populate the "BAML Wires In" Worksheet.

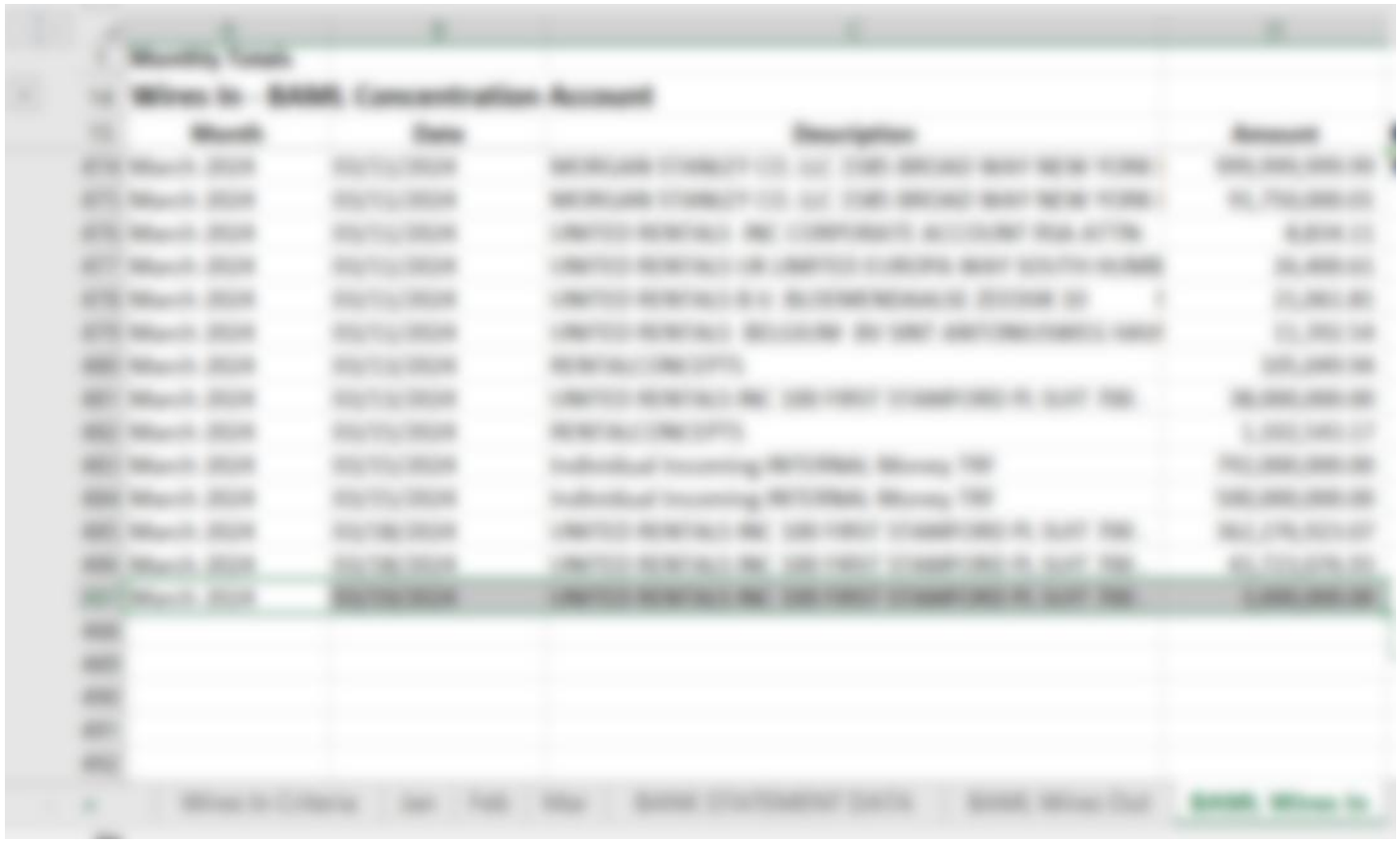
Step 14. Move the filtered bank data into new Worksheet titled “WIRES IN” within WB1.

Note: The column width and row height was adjusted for illustration purposes. The macro does not adjust the dimensions of the cells.

Step 15. Repeat steps 10-11 on the “WIRES IN” Worksheet in WB1, but do not convert the values in the amount column to negatives numbers. The end result should look like this.

The next step is for the macro to move the data above to the “BAML Wires In” Worksheet in WB2.

Step 16. Copy the “WIRES IN” data in WB1 and paste it into the “BAML Wires In” Worksheet in WB2 in the first empty cell in column A



Error Handling Notice: The macro is designed to paste data in the first empty row of this worksheet. If a user were to add an empty row in the middle of the data table, the macro would paste the data in that empty row, which would not make sense and would result in a flawed data table. The solution to this potential issue is to ensure that the only empty rows are below the table of data.

Error Handling Notice: The formulas in Step 5 are designed to create the description in Column C. The Wires In portion of the formula extracts the “ORIG:” from the Bank Statement column H and uses that as a description. If “ORIG:” is not available in column H of the Bank Statement, then the formula extracts the value before “DES:.” In some cases, the formula will not find “ORIG:” nor “DES:” which will produce a #VALUE error. In that case, a treasury analyst will need to update the description manually.

Step 17. Navigate to the appropriate month Worksheet in WB2 and drag down the formulas in Columns B-Q to the appropriate row (from row 21 to 22 in this case). Column R will need to be populated manually. It's possible to populate it automatically, but a treasury analyst will need to get a unique bank report from CashPro, add the report the WB2, and write a SUMIF(S) formula for it.

See the Formula Explanations section to understand the formulas.

FORMULA EXPLANATIONS

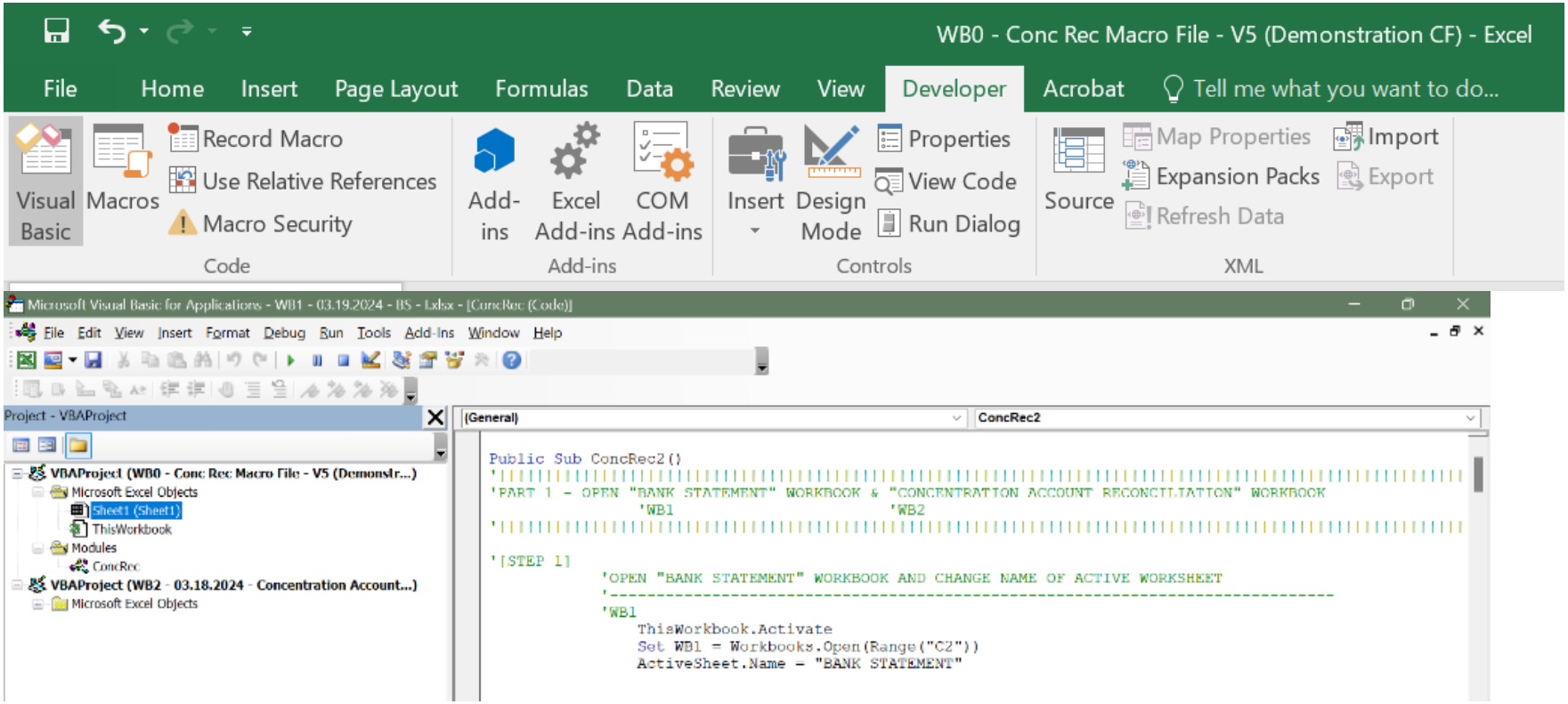
WIP

Below is a section that describes how the Excel Formulas work.

NAME	DESCRIPTION	FILE
Summation Formulas	This file shows the criteria used in the SUMIF(S) Formulas on the "month" Worksheet in the WB2 (Variable Input 2).	SUMIF Formula Criteria.xlsx
Description Formulas	This file shows a how the Description formulas in Step 5 were developed. It breaks down the formulas into small pieces, but does not explain aspect of the formulas as I did not have time to do so. Start by reading the visible comments in the Worksheet titled "3 (D or C Condition Proof)."	New Description Formulas - AW - 03.2

VBA CODE

This code can also be view in the Visual Basic editor in Microsoft Excel. The Module is called ConcRec.



VBA CODE V1.pdf

REQUIREMENTS, OPPORTUNITES, RISKS, UNKNOWNS

REQUIREMENTS

- Daily Bank Reports in Tabular Format

OPPORTUNITIES

- Scheduling the Concentration Account Reconciliation Process.
- Eliminating the “BAML Wires In” Worksheet and the “BAML Wires Out” Worksheet and mapping the GL Accounts directly to the Bank Statement
- Get a bank report from CashPro that can be used to automatically calculate Column R in the Bank Reconciliation.

RISKS

- The SUMIFS and SUMIF Excel Formulas used in this proof of concept may produce Reference Errors if the Bank Report Data is deleted. We can circumvent that risk entirely by using INDIRECT Formulas or by simply avoiding actions that would produce the Reference Errors in the first place (fixing reference errors is a simple task).

UNKNOWNS

- The Excel Formulas used in this proof of concept may need to be tweaked to include other BAI Codes in the futures.
- The VBA Code used in this proof of concept may need to be tweaked to include other BAI Codes in the futures.