1. **Objective:** The objective of the mapping process is to establish a clear relationship between the consumer data columns extracted from ABC Utility Company's databases and the corresponding fields within the SMART360 platform. This documentation aims to provide insight into how the mapping is performed and ensure consistency and accuracy in data integration.
2. **Mapping Methodology:**
   * **Column-to-Field Mapping:** Each column from the extracted consumer data is mapped to its corresponding field within the SMART360 Consumer Table.
   * **Handling Complex Data:** In cases where a single column needs to be split or transformed into multiple fields in SMART360, appropriate handling mechanisms are applied. For example, the 'Name' column is split into 'First Name' and 'Last Name', and the 'Address' column is divided into 'Address Line 1' and 'Address Line 2'.
   * **Mapping Table or Dictionary:** A mapping table or dictionary is utilized to define the relationships between the columns and fields. This mapping structure provides a clear reference for the data transformation process.
3. **Mapping Details:**
   * **Consumer ID:** Mapped directly to the 'Consumer ID' field in SMART360.
   * **Name:** Split into 'First Name' and 'Last Name' fields in SMART360.
   * **Address:** Divided into 'Address Line 1' and 'Address Line 2' to align with SMART360's address format.
   * **Contact Number:** Mapped directly to the 'Phone Number' field in SMART360.
   * **Email Address:** Mapped directly to the 'Email Address' field in SMART360.
   * **Account Number, Meter Number, Tariff Plan, Consumption History, Payment Status:** No direct corresponding fields in SMART360; these columns are not mapped during the integration process.
4. **Mapping Execution:**
   * The mapping process is executed within a Python script specifically designed for data integration.
   * The script iterates through each column from the extracted consumer data and applies the defined mapping logic.
   * Transformation functions are implemented to split, format, or otherwise manipulate the data as required to align with the SMART360 data structure.
5. **Mapping Validation:**
   * Before proceeding with data loading, the mapped data is validated to ensure accuracy and completeness.
   * Test cases are executed to verify that the mapping logic correctly transforms the extracted consumer data into the expected format for SMART360.
   * Any discrepancies or issues identified during validation are addressed and resolved before proceeding with data loading.
6. **Conclusion:**
   * The mapping process ensures that consumer data extracted from ABC Utility Company's databases is seamlessly integrated into the SMART360 platform.
   * By establishing clear mappings between columns and fields, the process enhances data accuracy, consistency, and integrity within the utility management system.

This documentation provides a comprehensive overview of the mapping process, outlining the methodology, details, execution, validation, and overall importance in achieving successful data integration between systems.