# AquaSense Firestore Database Schema

## 1. Core Collections (Shared by All Roles)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Collection | Document ID | Field | Data Type | Description |
| users | {uid} | name | String | Full name of the user |
|  |  | email | String | User’s email address |
|  |  | phoneNumber | String | Verified 10-digit mobile number |
|  |  | wardId | String | Ward identifier linked to the user |
|  |  | role | String | Role of the user: citizen, supervisor, admin |
|  |  | createdAt | Timestamp | Account creation time |
|  |  | isPhoneVerified | Boolean | Indicates if phone is OTP verified |
| locations | {stateName} | districts | Map | District name as key → array of ward IDs as value |

## 2. Citizen-Specific Collections

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Collection | Document ID | Field | Data Type | Description |
| connection\_requests | {requestId} | citizenId | String | Reference to citizen (users/{uid}) |
|  |  | status | String | pending, approved, rejected |
|  |  | submissionDate | Timestamp | Request submission time |
|  |  | requiredDetails | Map | Additional info like address |
|  |  | geoTaggedTapImage | String | Cloud Storage URL for tap image |
|  |  | geoTaggedMeterImage | String | Cloud Storage URL for meter image |
| complaints | {complaintId} | citizenId | String | UID of citizen who raised complaint |
|  |  | supervisorId | String | UID of assigned supervisor |
|  |  | wardId | String | Ward where complaint was raised |
|  |  | type | String | Complaint type: leak, illegal\_tap, low\_pressure |
|  |  | description | String | Detailed problem description |
|  |  | geoTaggedPhoto | String | URL of citizen’s photo proof |
|  |  | status | String | pending, in\_progress, resolved |
|  |  | submittedAt | Timestamp | Time of submission |
|  |  | resolvedAt | Timestamp | Time of resolution |
|  |  | proofPhotoAfter | String | URL of supervisor’s resolution photo |
| meter\_readings | {readingId} | citizenId | String | UID of citizen |
|  |  | supervisorId | String | UID of supervisor |
|  |  | readingValue | Number | Value recorded from water meter |
|  |  | readingDate | Timestamp | Date & time of reading |
| bills | {billId} | citizenId | String | UID of citizen |
|  |  | readingId | String | Reference to meter\_readings |
|  |  | amount | Number | Bill amount |
|  |  | billingPeriod | String | e.g., August-2025 |
|  |  | dueDate | Timestamp | Payment due date |
|  |  | isPaid | Boolean | Payment status flag |

## 3. Admin & Supervisor Collections

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Collection | Document ID | Field | Data Type | Description |
| water\_schedules | {scheduleId} | wardId | String | Ward ID linked to schedule |
|  |  | details | String | Water supply timings/details |
|  |  | effectiveDate | Timestamp | Date schedule becomes active |
| notifications | {notificationId} | targetWardId | String | Specific ward or all |
|  |  | title | String | Title of the notification |
|  |  | message | String | Main notification content |
|  |  | sentAt | Timestamp | Time notification was sent |
|  |  | type | String | maintenance, outage, general |