Siddipet, Telangana, India  
Version: Draft  
SFD Level: 3 - Comprehensive SFD  
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A Sanitation (or Shit) Flow Diagram presents a clear picture of how excreta flows are managed within the city. The diagram clearly depicts how excreta flows from user interface to the final disposal. It has the following stages:

**Containment**

- Siddipet city has no underground drainage system. All the 37765 households (HHs) are dependent on onsite sanitation system.
- According to Key Informant Interview (KII) with local mason, the higher income HHs and high rise apartments prefers to construct a well-designed septic tank, rectangular in shape having maximum size measuring 12ft in length, 7ft in width and 9ft in depth with two baffle walls in the system. The cost of this type of septic tanks is approximately 45000 INR including construction and material cost.
- According to KII, the middle income and lower income HHs prefer a septic tank which is cylindrical in shape with only 1 baffle wall and an outlet connected to open drain. The average size of these tanks is 3ft in diameter and 6ft in depth which costs around 12000 INR each unit. This system is prefabricated unit, rather constructing a septic tank onsite, installing prefabricated unit costs cheaper. The system is installed at the site by the mason.
- Under Swachh Bharat Mission (SBM), toilets are being provided to the households lacking individual toilets. Prefabricated pit rings are provided as containment of these toilets. The pit rings are installed as two tanks connected to each other and kept lined from bottom, which is often referred as twin pit structure. Although, these structures do not meet the twin pit containment structure recommended by SBM guidelines.
Pit rings are fabricated in 1 meter diameter and 1.5 ft height. The units are placed one above. Usually 4 to 6 unit of rings are used to complete a tank.

There is no practice of open defecation in the city. All HHs have individual toilets constructed by self or under SBM.

Due to no clear differentiation between the volume of the effluent and solid FS generated from the containment, it is assumed to be 50% each to reduce maximum error.

Supernatant (SN) is an effluent generated from septic tanks connected to open drain. SN not contained is attributed to be from 50% of the population.

Faecal sludge (FS) contained is attributed to be from 50% of the population (45% from septic tanks and 5% from fully lined tanks).

FS contained or not is dependent on the system polluting the groundwater. Depth of groundwater table <10m from the sanitation system is considered to pose a significant risk.

Emptying

Emptying service is only provided by private sector. There are only two private emptiers for emptying FS.

During the field visit, a KII was conducted with one private emptier revealing that a particular community of the society provides the emptying service.

The emptying fee is 2500 INR per trip. On an average an emptier makes 2 trips per day.

As per KII, two people are required to carry out the emptying service, a driver and a laborer.

No safety gears are used while providing emptying service.

FS contained emptied is attributed to be from 45% of the population. FS contained not emptied is attributed to be from 5% of the population (assuming 90% of the population emptying their systems).

Transportation

A truck mounted with vacuum tank is used for transporting emptied FS from households.

A 3 hp pump is used as suction for emptying FS from the containment. A pump is assembled with the tank and truck.

The capacity of the vacuum tanker is 4000 liters.

The supernatant (SN) from the outlet of a containment is conveyed through open drain/storm water drain.

SN is attributed to be from 50% of the population.
Treatment and Disposal

- There is no treatment facility available for the wastewater and faecal waste generated in the city.

- Discharging faecal sludge by private emptiers within 10 km of the city is prohibited by municipality. The private emptiers are abiding by municipality.

- Disposal of faecal sludge is an issue as there is no designated dumping site. FS is generally discharged in forest areas and also in agricultural fields, outside the municipal boundary.

- Seldom, agriculture land owners pay 50 INR to 100 INR to the emptiers for dumping of FS in their fields.

- In total, FS of 95% population is unsafely managed and 5% population is safely managed.
Suggestions

Short term goals
- Regulate the private emptiers, issue them license to operate and maintain a record
- Buy more vacuum trucks, if there is a shortfall
- Identify 2-3 suitable disposal sites (so that the distance traveled by the trucks is optimized). The land could be taken on lease; private parties can be encouraged to develop business around treated faecal sludge
- Develop DPRs for FSTPs (faecal sludge treatment plants) at these identified disposal sites

Medium term goals
- Enforcement of septic tank as containment system
- Until all households are connected to sewer system, intercept wastewater flowing through open drains and treat at STP
- Demarcate land for Faecal Sludge Treatment Plant (FSTP) or utilize the existing STP (work in progress) land for faecal sludge management until STP is ready
- Enforce scheduled desludging
- Encourage reuse of treated waste water

Siddipet, Telangana

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<thead>
<tr>
<th>Containment</th>
<th>Emptying</th>
<th>Transport</th>
<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td>SN contained: 45%</td>
<td>SN contained and delivered to treatment: 41%</td>
<td>41% SN treated</td>
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</tr>
<tr>
<td>SN not contained</td>
<td>SN not contained delivered to treatment: 5%</td>
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</tr>
<tr>
<td>FS contained: 45%</td>
<td>FS contained – emptied: 41%</td>
<td>36% FS treated</td>
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<tr>
<td>FS not contained</td>
<td>FS not contained – not emptied: 4%</td>
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<tr>
<td>Open defecation</td>
<td>FS not delivered to treatment: 5%</td>
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<tr>
<td>SN not delivered to treatment</td>
<td>4% FS not treated</td>
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<tr>
<td>4% FS not contained</td>
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</tbody>
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Key: WW: Wastewater, FS: Faecal sludge, SN: Supernatant

Unsafely managed

Safely managed

Local area
Neighbourhood
City

SFD Promotion Initiative

sustainable sanitation alliance

giz Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

On behalf of

Federal Ministry for Economic Cooperation and Development

WSP Water and Sanitation Program

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