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WATERSHED
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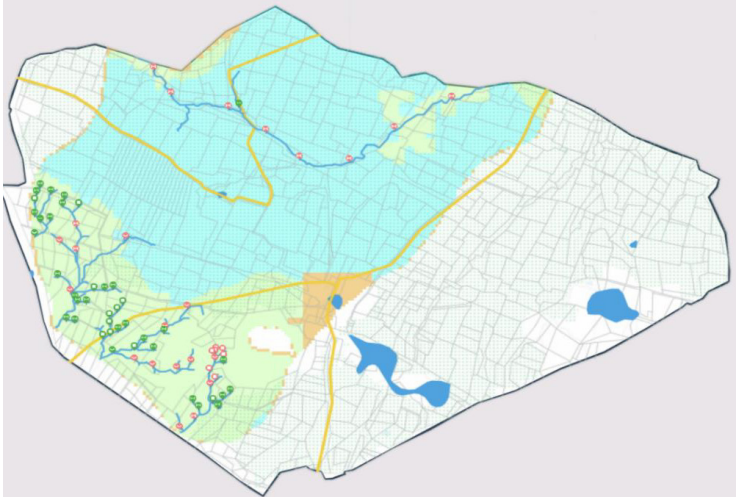
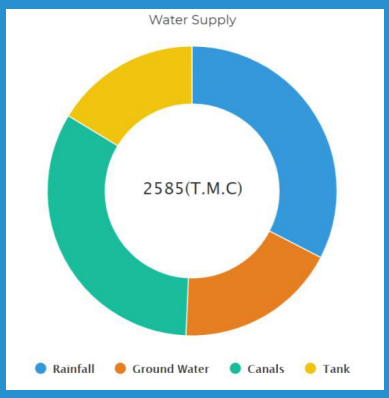
WATERSHED

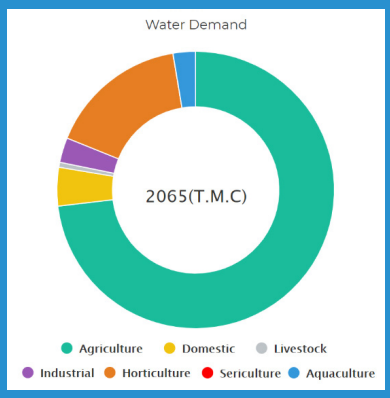


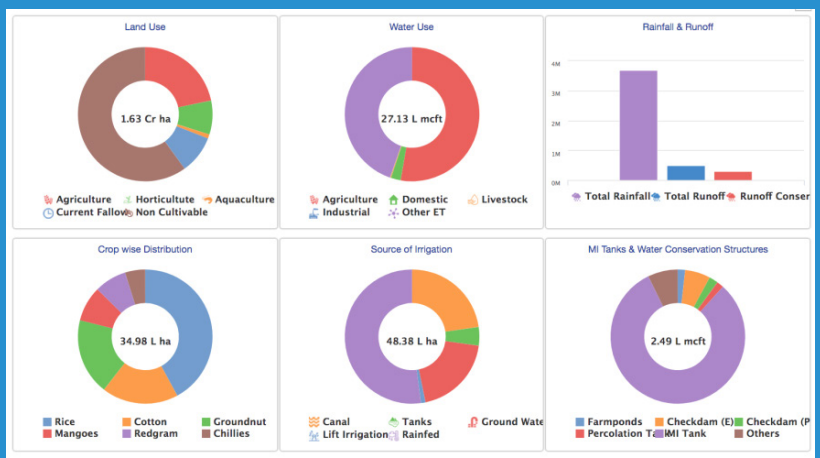
Watershed Management System is an integrated decision support solution that helps the public policy planners, administrators, watershed management officials, NGOs and citizens to plan their watershed activities more scientifically and maximize the impact. This solution helps in identifying the villages in deficit and estimating runoff available at the required reliability level, recommending additional water conservation activity that can be taken up taking into account the deficit and available runoff including the location and type of water and soil conservation activities to be taken up.

Watershed Management System helps the stakeholders in making key decisions such as:

- Which villages should be prioritized for water conservation works
- What water management strategies (supply/demand side) should be implemented
- How much additional runoff is available at the required reliability level
- What is the minimum additional capacity required to mitigate the identified water deficit or conserve available run-off in the deficit region
- How many water and soil conservation structures should be built in the village based on the village deficit and available run-off.
- Location and type of water and soil conservation that can be taken up in the village based on geology, geo-morphology, lineaments, soil type, LULC, slope and other GIS layers
- Enable field functionaries to validate the location and type of structures or modify as required using a mobile application • Prioritise the soil and water conservation activities on a ridge to valley basis and funds available
- Track the progress of the activities







VILLAGE WATER BUDGET

Village water budget helps in micro-level planning of water management. Based on the village water budget, surplus/deficit villages are identified.

Water supply is estimated based on:

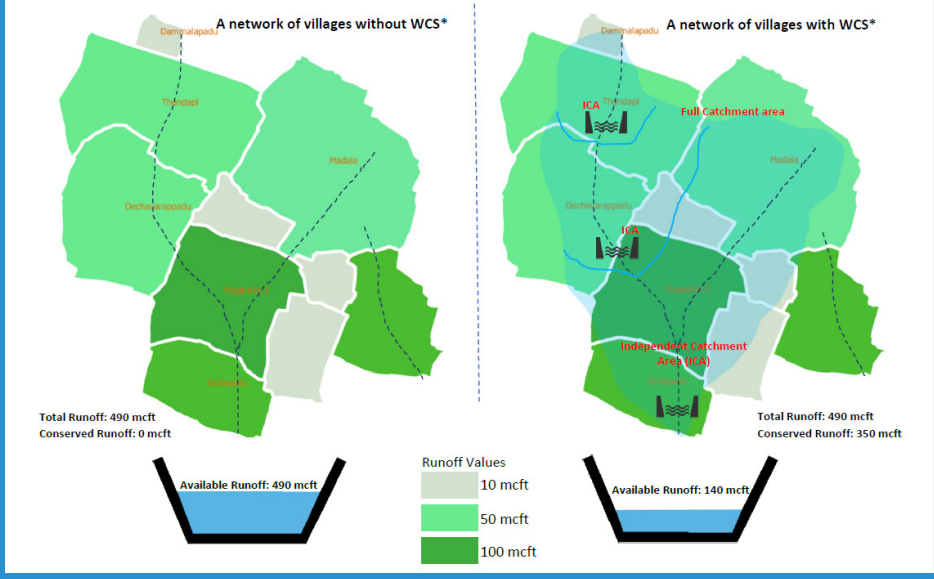
- **Water available from rainfall to cropped area during the crop life cycle**
- **Water available from ground water based on Ground Water Estimation Methodology**
- **Water available from canal irrigation**
- **Amount of run-off conserved and excess run-off based on a network model that considers all the water conservation structures and minor irrigation tanks in that area**

On the demand side system considers crop water demands, drinking water requirements from human beings as well as livestock, industrial water requirements and natural flows. Village water budget identifies villages that are in surplus and deficit based on available water supply and demand.

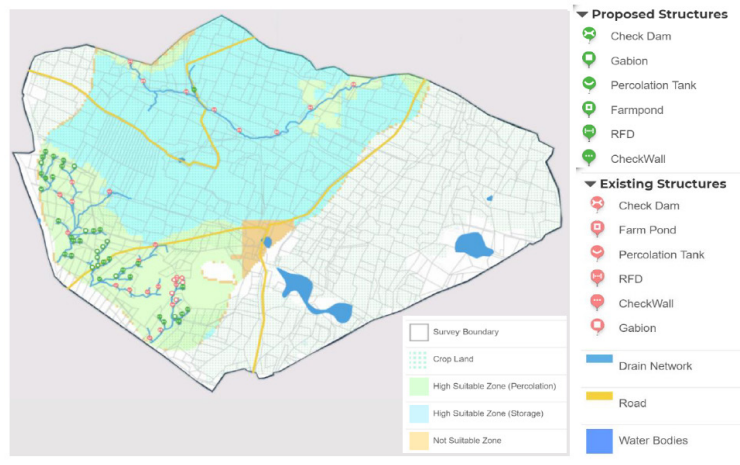
NETWORK WATER CONSERVATION MODEL

Rainfall to run-off model is important in estimating the amount of the runoff generated from rainfall on a daily basis which will be used by the network water conservation model to estimate the amount of the runoff that is conserved and runoff that is available for taking up additional water conservation activities.

Following a ridge to valley approach a network model is built with all existing water storage structures such as check walls, check dams, percolation tanks and minor irrigation tanks. Full as well as independent catchment areas are computed for each structure.



Based on the network model as well as daily runoff, system computes the amount of runoff that will be received by a particular structure from its own self catchment as well as excess runoff from upstream structures. Following a daily bucket model, system estimates amount of runoff that can be conserved by existing structures as well as water conservation activities that needs to be taken up to conserve the required amount of available runoff. System runs the network model based on available data for 30 years to estimate the reliability and make recommendations based on the reliability goals of the customer.



PREDICTION OF SUITABLE ZONES AND LOCATION FOR BUILDING WATER AND SOIL CONSERVATION STRUCTURES

AI model predicts potential locations for the water and soil structures to be built. The exact zones where different types of soil and water conservation structures need to be located are identified based on weighted overlay method using different GIS layers such as Slope, Geology, Geo-Morphology, Soil Texture and Land Use Land Cover (LULC). Exact location of the structure is identified by combining the suitable zones, drain network, independent as well as full catchment areas of various points along the drain network, runoff available at a particular point based on its independent catchment as well as excess runoff of upstream structures.

Once all the potential locations for structures are identified, the system prioritizes the water conservation structures by considering additional water capacity required at a certain dependability. Out of the potential structures, the prioritization of the water conservation structures happens based on factors such as individual catchment area and available excess run-off. A structure having highest catchment area is given preference and gets recommended. This logic is iterated and each structure is picked based on its catchment area, till the recommended additional water capacity at a chosen dependability is met. The recommended water conservations structures are then sent to mobile app for further validation.

The GIS based decision support system streamlines the process of planning, prioritizing and sanctioning construction of water and soil conservation structures based on fund availability, cost estimation of the proposed structures along with mobile app to enable validation from field officers.

ELIMINATING TIME CONSUMING MANUAL PROCESSES

ENGAGING ALL THE STAKEHOLDERS TO A COMMON PLAT FORM FOR EASY ACCESS AND QUICK ACTIONS

INTERACTIVE GEO-PORTAL WITH DIFFERENT LAYERS FOR ANALYSIS

DRONE BASED SOCIAL AUDIT

This helps in auditing the location, structure type and dimensions of sanctioned/ existing water and soil conservation structures and report the deviations. Deep learning models like image recognition were developed to perform social audit through drone images. This helped in efficiently auditing the structures. The initial exercise found wrongly geo-tagged structures, mismatch of structures as per records, structure height and width measurement. This was compared against the dimensions at the time of sanction and any deviation thereof.

NATIONAL WATER MISSION AWARD 2019

APWRIMS, Won three awards. Andhra Pradesh Water Resources Information and Management System (APWRIMS) is an implementation of our solution, a single window access point for all water resources related information of Andhra Pradesh state,.

MENTION IN NITI AYOG

Vassar Labs is mentioned in the Niti Aayog report. Niti Aayog - **Composite Water Management**

GOOLE LAUNCHPAD

Vassar Labs is one among the ten startups chosen across the country for the Google Launchpad Accelerator Program.

AI CHALLANGE 2019

Vassar Labs has Won Artificial Intelligence Innovation Challenge 2019 under agriculture category. A national event organized by Niti Aayog, Maharashtra Govt.

HYSEA 2018

Finalist in "Early – Stage Enterprise Start-up" and "Social Impact" Categories - 2018" HYSEA Awards

ANDHRA PRADESH WATER RESOURCE MANAGEMENT INFORMATION SYSTEM (APWRIMS)

APWRIMS is an implementation of our solution, a single window access point for all water resources related information of Andhra Pradesh state. This has won many accolades since last 3 years.

You may visit it by accessing below url:
http://prrd.vassarlabs.com/landing

Vassar LABS

We focus on delivering last mile visibility and decision support solutions into Primary sectors like Water, Agriculture, Smart City and Education, leveraging a collection of emerging technologies.

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