एस-11042/108/2015-एसबीएम-2(ग्रामीण)

भारत सरकार

पेयजल एवं स्वच्छता मंत्रालय

(स्वच्छ भारत मिशन (2) - ग्रामीण)

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12वाँ तल, पर्यावरण भवन,
सीजीओ काँप्लैक्स, लोदी रोड,
नई दिल्ली-110003
दिनांक: 15 जनवरी, 2015

सेवा में,

सभी प्रधान सचिव/सचिव,
सभी राज्य/संघ राज्य क्षेत्र

विषय: एसएलडब्ल्यूएम परियोजना में मनरेगा को जोड़कर गंदे पानी के शोधन हेतु ''थ्री पोन्ड सिस्टम'' (जल स्तरीकरण-पोन्ड-डब्ल्यूएसपी प्रौद्योगिकी) का कार्यान्वयन करने के संबंध में।

महोदय/महोदया,

जैसा कि आपको विदित है अपशिष्ट जल के अनुपयुक्त निपटान के कारण तालाबों का जल स्तर बढ़ना और बहना और पानी से लबालब सड़कें हमारे गाँवों में एक आम नजारा है। हमारे ग्रामीण क्षेत्रों में अपशिष्ट जल का प्रबंधन एक बड़ी चुनौती है। अत: मौजूदा गंदे तालाबों का संसाधन के रूप में प्रयोग करते हुए सभी राज्यों में बीमारियों से लड़ने और जल की कमी से उबरने के लिए अपशिष्ट जल के उचित निपटान की तत्काल आवश्यकता है।

2. हरियाणा के करनाल जिले में गंदे पानी के शोधन हेतु ''थ्री पोन्ड सिस्टम'' का सफलतापूर्वक कार्यान्वयन किया गया है। मुझे यह कहने का निदेश हुआ है कि राज्य, ग्रामीण क्षेत्रों में ठोस तरल अपशिष्ट प्रबंधन के लिए एसबीएम (जी) केंद्रीय निधि के अतिरिक्त राज्य सरकारों/अन्य स्रोतों के माध्यम से योगदान द्वारा ग्राम पंचायतों की एसएलडब्ल्यूएम परियोजनाओं में मनरेगा निधियों को जोड़कर अपने राज्यों में गंदे पानी के शोधन हेतु ''थ्री पोन्ड सिस्टम'' का कार्यान्वयन करने पर विचार करें।

3. ''थ्री पोन्ड सिस्टम'' पर एक नोट संलग्न है।

भवदीय

(सुजॉय मजुमदार)
निदेशक (एसबीएम)
दूरभाष सं. 24364427

प्रति:

राज्य समन्वयनकर्त्ता, एसबीएम - सभी राज्य/संघ राज्य क्षेत्र

प्रति:

1. संयुक्त सचिव, मनरेगा, ग्रामीण विकास मंत्रालय, कृषि भवन, नई दिल्ली।
2. ग्रामीण विकास, पंचायती राज और पेयजल एवं स्वच्छता के माननीय मंत्री जी के निजी सचिव।
3. सचिव, एमडीडब्ल्यूएस के प्रधान निजी सचिव, चौथा तल, पर्यावरण भवन, सीजीओ कॉप्लैक्स, लोदी रोड, नई दिल्ली।
4. संयुक्त सचिव (स्वच्छता) के प्रधान निजी सचिव, एमडीडब्ल्यूएस, चौथा तल, पर्यावरण भवन, सीजीओ कॉप्लैक्स, लोदी रोड, नई दिल्ली।
5. निदेशक (एनआईसी) - वेबसाइट पर डालने के लिए।

Tour Report of Shri. G.Balasubramanian, Deputy Adviser (SBM-G), MDWS, GoI on field visit to Karnal District, Haryana state - Project of Treatment of Grey Water (Three pond system) on 14th November 2014.

As per the directions of the superiors the field visit to Karnal District, Haryana state made by the undersigned to see the disposal of waste water (Three pond system) in rural areas on 14th November, 2014 along with Shri Saleem Haider, Assistant Adviser of this Ministry. The following villages in District Karnal were visited:

1. Chand Samand in Indri block
2. Rasul Pur Kalan in Karnal blcok
3. Jadouli in Karnal block
4. Sahpur in Nissing block
5. Sirsi in Nissing Block

1. Chand Samand in Indri block:

Chand Samand village is having a total population of 4000 and 450 households. The grey water collected from the entire village conveyed through open drains to the three pond system for the treatment and disposal. The first pond (Anaerobic pond) is having a capacity of 1,00,000 cft (125ft x100 ft x8 ft), Second pond (Facultative pond) of capacity of 50000 cft (250ft x 40 ft x 5 ft) and the third pond (Maturation pond) of capacity of 400000 cft (400 ft x 250 ft x 4 ft). This three pond system in this village can be able to treat the total capacity of 15.39 million liters of grey water. The above project has been implemented at the total cost of Rs. 15.40 lakhs including cost of plants & flowers. The above cost met out from MGNREGA and Health and Sanitation Scheme of Haryana State.

2. **Rasul Pur Kalan in Karnal block:**

Rasul Pur Kalan village is having a total population of 3600 and 450 households. The grey water collected from the entire village conveyed through open drains to the three pond system for the disposal. The first pond (Anaerobic pond) is having a capacity of 136272 cft (167ft x136 ft x6 ft), Second pond (Facultative pond) of capacity of 96000 cft (192ft x 100 ft x 5 ft) and the third pond (Maturation pond) of capacity of 180544 cft (217 ft x 208 ft x 4 ft). This three pond system in this village can be able to treat the total capacity of 11.69 million liters of waste water. The above project has been implemented at the total cost of Rs. 39.95 lakhs including the cost of construction of nala of about 400 m, brick lining of pond, interlocking path, jhulla for children, plants & flowers. The above cost met out from MGNREGA, District plan and panchayat funds.

3. **Jadouli in Karnal block:**

Jadouli village is having a total population of 2500 and 350 households. The grey water collected from the entire village conveyed through open drains to the three pond system for treatment and disposal. The first pond (Anaerobic pond) is having capacity of 52800 cft (160ft x 60 ft x 5.5 ft), Second Pond (Facultative pond) of capacity of 61425 cft (195ft x 70 ft x 4.5 ft) and the third pond (Maturation pond) of capacity of 46069cft (135ft x 97.5 ft x 3.5 ft). This three pond system in this village can be able to treat the total capacity of 4.54 million liters of waste water. The above project has been implemented at the total cost of Rs. 27.00 lakhs including the cost of construction of nala of about 250 m and brick lining of pond. The above cost met out from MGNREGA and State Government's Health & Sanitation Scheme funds.

4. Sahapur in Nissing block of Karnal district

Sahapur village is having a total population of 3,500 and 425 households. The grey water collected from the entire village conveyed through open drains to the three pond system for treatment and disposal. The first pond (Anaerobic pond) is having capacity of 1,79,200 cft (160ft x140 ft x8 ft), second Pond (Facultative pond) of capacity of 2,64,000 cft (220ft x 200 ft x 6 ft) and the third pond (Maturation pond) of capacity of 2,20,000 cft (220 ft x 200 ft x 5 ft). This three pond system in this village can be able to treat the total capacity of 18.78 million liters of waste water. The above project has been implemented at the total cost of Rs. 40.00 lakhs including the cost of construction of nala of about 1 KM, Construction of Segregation Shed for Solid Waste Management system and brick lining of pond. The above cost met out from MGNREGA and State Government's Health & Sanitation Scheme funds.

5. Sirsi village of Nissing block of Karnal district

Sirsi village is having a total population of 3050 and total households of 460. The grey water collected from the entire village conveyed to the three pond system through open drains for treatment and disposal. The capacity of first pond (Anaerobic pond) is 209952 cft (162 ft x 162 ft x 8 ft), Second pond (Facultative pond) of capacity of 85312 cft (87.5ft x 162.5 ft x 6 ft) and the third pond (Maturation pond) of capacity of 365625 cft (225 ft x 325 ft x 5 ft). This three pond system in this village can be able to treat the total capacity of 18.71 million liters of waste water. The above project has been implemented at the total cost of Rs. 23.05 lakhs including the cost of construction of nala of about 250M, Interlocking Road, Brick lining of pond, Plants & Flowers. The above cost met out from MGNREGA and State Government's Health & Sanitation Scheme funds.

The above Three pond system has been executed and implemented very well in Karnal District by the Gram Panchayat with the help of District Administration. The funds were made available to the Gram Panchyat under MNREGA and Health & Sanitation Scheme and District Plan. This waste water disposal system has been neatly executed with provision of parks and picnic spot where children and women of village spending time in the morning and evening. This grey water treatment system is already been executed in 11 villages of Karnal district. Out of total villages of 375 in Karnal District, other 31 villages have already been approved for this project and to be taken up shortly.

These Three pond system implemented in District Karnal is nothing but Waste Stabilization Pond (WSP technology) system. The grey water of whole village is channelized through the drains/nallas at a common point and passed through the iron mesh of different sizes and then allowed to pass through three large shallow basins or ponds excavated at suitable land site and placed serially as stabilization system in which grey water is stabilized, its pathogenicity is reduced and stabilized water become reusable. By this system, the collected grey waster is stabilized by natural oxidation process involving algae, bacteria and natural oxidation processes. Hot climate is very suitable for this process. Solar radiation and light is intense for efficient functioning of this system. There are three ponds in this system called:-

(i) **Anaerobic Pond:** The grey water reaching this pond has high solid contents. The grey water is retained in this pond for two days, so that solids present therein settle at the bottom, where these are digested anaerobically and then this water is allowed to enter in the second pond called Facultative Pond.

(ii) **Facultative Pond:** In this pond water is retained for 3 to 5 days and the oxidation of this water takes place. In this pond the aerobic conditions are maintained in the upper layer and anaerobic conditions exist in the lower layer. In this pond solids are generally taken care of by three mechanisms as under :

(a)Aeration from air through the surface.

(b) Oxidation due to oxygen liberated through photosynthetic activity of algae growing in the pond because of the availability of plant nutrients from bacterial metabolism in water and the incident light energy from the sun.

(c)The pond bacteria utilize the algal oxygen to metabolize the organic solid content of grey water and the process involved is a natural process.

(iii) **Maturation Pond:** The water received from facultative pond retains 3 to 5 days in this pond. The main function of the maturation pond is the destruction of pathogens and the pond is wholly aerobic.

The water treated by above natural method can be used for irrigation & rearing of fish. Moreover, by this method ground water also gets recharged by natural process.

The above Waste Stabilization Pond (WSP) technology has already been included in the "Technological options of Solid and Liquid Waste Management in Rural areas" (Refer 2.6.2, Page 26 - 29) which is about to be published by the Ministry for which the final version also been ready. Another article also included in the same book of Ministry in the name of Karnal [illegible] figure (2.8, Page 43-44). This book has been circulated to

his concurrence to release this book. However, few innovative technologies proposed by some firms through Expression of Interest (EoI) to the Ministry is under consideration by the Committee to include in this book.

As per the Swachh Bharat Mission (G) guidelines, the Ministry is providing Rs. 7 lakhs, 12 lakhs, 15 lakhs and 20 lakhs for the Gram Panchayats having household's upto 150, 150-300, 300-500 and above 500 respectively for the entire solid liquid waste management component. But this Three pond system (grey water disposal), one of the components of SLWM implemented in District Karnal at a cost of Rs. 25 lakhs to 45 lakhs which shows that the cost is much expensive than what the Ministry is providing. The field Engineers of Karnal District informed that the most part (about 80%) of the system have been executed through MGNREGA.

Conclusion:

This technology can be scaled up for implementation in other States and entire country by dovetailing MGNREGA in the construction of ponds and contribution through State Government and other sources in addition to the SBM (G) Central fund for SLWM.