

# MWMC Eugene-Springfield WPCF Facility Plan – Projected Flowstreams for Solids Processes and Capacity Analysis of Biosolids Treatment Processes and Facilities

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DATE: April 13, 2004 (Revised November 2004 to incorporate DEQ  
comments)

## Executive Summary

This technical memorandum has been prepared as part of the 2003 Metropolitan Wastewater Commission (MWMC) Eugene-Springfield Water Pollution Control Facility (E-S WPCF) Facility Plan Update (Project Number P80010). The analysis detailed in this memorandum includes projected biosolids flowstreams through the year 2025 at the E-S WPCF and the Biosolids Management Facility (BMF), as well as a capacity analysis of solids treatment processes and major conveyance systems at and between the E-S WPCF and BMF. Existing facility capacities and, where appropriate, future potential capacities have also been developed for the Biocycle Farm (BF), Seasonal Industrial Waste Facility (SIWF), and Cooperative Farms.

Solids projections have been developed at 5-year increments from 2005 to 2025 for solids flowstreams and for liquid flowstreams associated with solids treatment processes. Figure A-1 in Attachment A illustrates the general solids flow schematic at the E-S WPCF and BMF. Figure A-2 illustrates the conveyance system between the E-S WPCF, BMF, BF, and the SIWF. Table 1 summarizes 2003 production and 2025 projections for critical solids flowstreams. Table B-1 in Attachment B details the solids and solids-related flowstreams illustrated in Figure A-1 at the E-S WPCF. Solids projections over this planning period have taken into account the addition of future secondary clarification, aeration basins, and effluent filtration. Similarly, operational changes such as the pumping of thin primary sludge have been accounted for, as well as how the BMF and BF will be operated in the future.

**TABLE 1**  
Summary of Biosolids Projections  
*MWMC Facility Plan, Eugene-Springfield*

| Flow Stream   | Average Annual Biosolids<br>(in dry tons per year unless noted otherwise) |                            |
|---|---|----------------------------|
|   | 2003 <sup>(1)</sup>   | 2025                       |
| Primary Sludge  | 3,670   | 7,600                      |
| Waste Activated Sludge  | 3,730   | 7,900                      |
| Digested Biosolids (biosolids to Biosolids Management Facility [BMF]) | 3,900   | 8,600                      |
| Applied to Belt Filter Press (BFP)                                    | 6,300   | 5,000                      |
| Applied to Biocycle Farm (BF)   | N/A <sup>(5)</sup>  | 2,950 <sup>(6)</sup>       |
| Mechanically Dewatered Biosolids (BFP)                                | 6,200 <sup>(2)</sup>  | 4,900 <sup>(3)</sup>       |
| Filtrate recycle from Mechanical BFP Dewatering                       | Data Not Available  | 242,000 gpd <sup>(4)</sup> |
| Available effluent for reuse  | 3.5 MGD   | 13-14 MGD                  |
| Facultative Sludge Lagoon (FSL) supernatant                           | 248,000 gpd   | 302,000                    |

(1) Data through October 2003.

(2) From daily recorded BMF data during BFP seasonal operation period of March – September. Data available was through September 17, 2003.

(3) Based on all BFPs online 85% of time and operating at current operational averages of 12.2 hours/day, 5 days/week, 7 months/year (March-September) and solids production at hydraulic maximum, which is the limiting factor.

(4) Based on all BFPs online, 98 percent solids capture, and current operational averages shown in Note 3.

(5) BF Phase 1 of 2 to be online in Spring 2004.

(6) Based on 2025 non-irrigated capacity of crops at the BF. BF capacities are shown in Table 3.

Table 2 summarizes the capacity of the main solids treatment processes at the E-S WPCF and BMF, as well as the conveyance systems between the two facilities. The capacities listed in Table 2 represent the limiting capacity of the process. Table 2 also indicates the amount of capacity available for installed (all units online) and firm (largest unit offline) conditions.

**TABLE 2**  
 Summary of E-S WPCF and BMF Solids Processing Capacity Assessment  
*MWMC Facility Plan, Eugene-Springfield*

| Unit Process                                      | Assessment              |                   |                            |                          |                     | Current Loading (2002)        | Available Capacity    |                     |                  |                     |
|---|-------------------------|-------------------|----------------------------|--------------------------|---------------------|-------------------------------|-----------------------|---------------------|------------------|---------------------|
|   | Limiting Flow Condition | Limiting Factor   | Design Criteria            | Capacity                 |                     |                               | Compared to Installed |                     | Compared to Firm |                     |
|   |                         |                   |                            | Installed <sup>(1)</sup> | Firm <sup>(2)</sup> |                               | Quantity              | % of Total Capacity | Quantity         | % of Total Capacity |
| WAS Thickening                                    | WWMW                    | Solids Loading    | 2010 lbs/hr <sup>(9)</sup> | 96,500 ppd               | 48,250 ppd          | 38,900 ppd                    | 57,600 ppd            | 60%                 | 9,340 ppd        | 19%                 |
| Anaerobic Digestion                               | AA <sup>(8)</sup>       | Hydraulic Loading | 20-day SRT                 | 3.48 MG                  | 2.32 MG             | 131,200 gpd                   | 856,000 gal           | 25%                 | -304,000 gal     | 0%                  |
| Facultative Sludge Lagoons <sup>(3)</sup>         | AA                      | Solids Loading    | 6-foot Solids Depth        | 41 MG                    | 31 MG               | 30 MG <sup>(4)</sup>          | 11 MG                 | 26%                 | 1 MG             | 2%                  |
| Biosolids Dewatering (BFP) <sup>(5)</sup>         | AA                      | Hydraulic Loading | 140 gpm <sup>(10)</sup>    | 307,440 gpd              | 205,000 gpd         | 305,200 gpd                   | 2,240 gpd             | 1% <sup>(6)</sup>   | -100,200 gpd     | 0% <sup>(6)</sup>   |
| Biosolids Dewatering (Drying Beds) <sup>(5)</sup> | AA                      | Hydraulic Loading | 6" Solids Depth, Avg.      | 3,100 Dry Tons           | 2,700 Dry Tons      | 4,800 Dry Tons <sup>(7)</sup> | -1,700 Dry Tons       | 0% <sup>(6)</sup>   | -2,100 Dry Tons  | 0% <sup>(6)</sup>   |
| Biosolids Forcemain                               | AA                      | Pump              | 430 gpm                    | 860 gpm                  | 430 gpm             | 104 gpm                       | 756 gpm               | 88%                 | 326 gpm          | 76%                 |
| Reclaimed Water Main                              | AA                      | Pipe              | 2,800 gpm                  | 2,800 gpm                | N/A                 | 400 gpm                       | 2,400 gpm             | 86%                 | N/A              | N/A                 |
| Supernatant Line                                  | AA                      | Hydraulic Loading | 800 gpm                    | 800 gpm                  | 0                   | 158 gpm                       | 642 gpm               | 80%                 | 0                | 0%                  |

**TABLE 2**  
Summary of E-S WPCF and BMF Solids Processing Capacity Assessment  
*MWMC Facility Plan, Eugene-Springfield*

| Unit Process | Assessment              |                 |                 |                          |                     | Current Loading (2002) | Available Capacity           |                     |                         |                     |
|--------------|-------------------------|-----------------|-----------------|--------------------------|---------------------|------------------------|------------------------------|---------------------|-------------------------|---------------------|
|              | Limiting Flow Condition | Limiting Factor | Design Criteria | Capacity                 |                     |                        | <u>Compared to Installed</u> |                     | <u>Compared to Firm</u> |                     |
|              |                         |                 |                 | Installed <sup>(1)</sup> | Firm <sup>(2)</sup> |                        | Quantity                     | % of Total Capacity | Quantity                | % of Total Capacity |

- (1) All units online.
- (2) Largest unit offline.
- (3) Current loading represents average biosolids volume in the four lagoons in 2002 based on average biosolids depth of 9 feet
- (4) Based on influent biosolids to FSL at 2 percent dissolved solids (DS) and effluent biosolids from FSL at 3 percent DS, 70 percent volatile suspended solids (VSS) in FSL influent biosolids, and 25 percent VSS reduction in FSL.
- (5) Capacities based on using drying bed space for either mechanical dewatering or air-drying dewatering. Total capacities are not cumulative.
- (6) Biocycle Farm Phase 1 to become operational in Spring 2004 and will reduce load required by BFPs and/or Air-Drying Beds.
- (7) Represents 2002 digested biosolids solids production; however, air-drying beds has not been used in the last several years.
- (8) AA and WWMM flow conditions were evaluated, AA was limiting based on associated 20-day solids retention time (SRT).
- (9) Hours of operation equal to 24 hours/day, 7 days/week.
- (10) Hours of operation equal to 12.2 hours/day, 5 days/week, 7 months/year.

Table 3 summarizes the biosolids quantities, in dry tons per year, of MWMC’s current (2003) biosolids reuse program. Table 3 also shows the maximum receiving potential of the reuse sites based on current site conditions. BF capacity is based on liquid biosolids applied to 425 acres and dewatered biosolids applied to 132 acres. SIWF capacity is based on liquid biosolids being applied to approximately 200 acres.

**TABLE 3**  
Summary of Current Biosolids Reuse in Dry Tons per Year  
*MWMC Facility Plan, Eugene-Springfield*

| Reuse Facility               | 2003 Annual Production   | 2003 Land Application | Existing Maximum Capacity | Near-Term (Spr 2004) Application | Maximum Future Potential <sup>(1)</sup> |                       |
|------------------------------|--------------------------|-----------------------|---------------------------|----------------------------------|---|-----------------------|
|                              |                          |                       |                           |                                  | 2010                                    | 2025                  |
| Biocycle Farm <sup>(2)</sup> | ↑<br>-----6200-----<br>↓ | 0                     | 0                         | 2,200 <sup>(5)</sup>             | 3,500                                   | 3,500                 |
| Cooperative Farms            |                          | 5,900                 | 32,000                    | 4,600 <sup>(6)</sup>             | 42,000                                  | 42,000                |
| Composting <sup>(4)</sup>    |                          | 300                   | 300                       | 300                              | 10% Annual Production                   | 10% Annual Production |
| SIW <sup>(3)</sup>           |                          | 0                     | 0                         | 0                                | 1,200                                   | 1,200                 |

- (1) Assumes irrigated crops.
- (2) Includes both liquid and dewatered biosolids application.
- (3) Assumes irrigated poplars growing.
- (4) Approximately 5 percent of annual BMF production.
- (5) Non-irrigated, immature poplars.
- (6) Total dewatered cake production minus composting.

## Introduction

This technical memorandum has been prepared as part of the 2003 Metropolitan Wastewater Management Commission (MWMC) Eugene-Springfield Water Pollution Control Facility (E-S WPCF) Master Plan Update (MWMC Project No. 80010) and includes an analysis of biosolids flow projections (Task 9.1) and process/facility capacity (Task 9.2). Current and future biosolids (liquids and dewatered) and liquid stream (FSL supernatant, belt filter press filtrate, and gravity belt filtrate) production at the E-S WPCF and Biosolids Management Facility (BMF), as well as storage, processing, and conveyance between all related facilities (for example, Biocycle Farm [BF] and Seasonal Industrial Waste Facility (SIWF)) has been quantified. A capacity assessment of unit processes and conveyance systems associated with biosolids treatment and handling at the E-S WPCF, BMF, BF, and SIW, as well as overall facility capacity, has been developed.

## Solids Process Flow and Mass Projections

Flowstreams associated with solids treatment processes at the E-S WPCF and BMF were evaluated. The flowstreams that were analyzed include waste activated sludge (WAS), thickened waste activated sludge (TWAS), primary sludge (PS), thickened primary sludge (TPS), digester feed sludge (DFS), digested sludge (DS), belt thickener recycle (TF), gravity thickener recycle (GTF), liquid biosolids to the belt filter presses (BFPs), liquid biosolids to the BF, dewatered biosolids (DSC), BFP recycle, and supernatant.

Flows were projected from 2005 to 2025 at 5-year increments for dry weather average (DWA), dry weather maximum month (DWMM), wet weather average (WWA), wet weather maximum month (WWMM), and wet weather maximum week (WWMW) flow conditions. Future influent plant flows for the five flow conditions were taken from the projections developed in Technical Memorandum No. 3, Flow and Load Projections. The upper limit values presented in the October 7, 2003 memorandum for maximum month flows were used for this evaluation. Development of projected biosolids flowstreams was accomplished through the use of CH2M HILL's steady-state, mass balance model Pro2D. Design criteria used in the model were based on CH2M HILL and industry standards. Key operational assumptions developed in Tasks 2, 3, and 4 of this Master Plan Update were used in the model. The operational assumptions, on an incremental year basis, included:

### 2005:

- South aeration basin train in step-feed operation
- Eight secondary clarifiers
- No effluent filters
- No pumping of thin primary sludge

### 2010:

- South aeration basin train in step-feed operation
- Ninth secondary clarifier added
- Installation of effluent filters capable of treating 30 mgd

- Thin pumping of primary sludge (1 percent dry solids) during wet weather conditions only
- Installation of gravity thickener for primary sludge achieving thickened primary sludge performance of 5 percent dry solids

**2015:**

- Same as 2010, except
- Both north and south aeration basin trains in step-feed operation

**2020:**

- Same as 2015, except
- Tenth secondary clarifier added

**2025:**

- Same as 2020

**General:**

- During dry weather model runs, one secondary clarifier would be offline
- During wet weather model runs, all secondary clarifiers would be online

Table B-1, in Attachment B, presents the projected biosolids flow streams in volumetric flow (mgd), daily mass (ppd), and concentration (mg/L). As can be seen in Table B-1, quantities associated with processes at the BMF are not shown. Future operational alternatives, to be developed in Task 9.3, will affect how flow is controlled from the FSLs to either dewatering (BFPs), the BF, or SIWF. Upon development of recommended operating alternatives, Table B-1 will be completed.

## Biosolids and Effluent Capacity Analysis

Capacities for solids treatment processes and facilities have been evaluated at the E-S WPCF, BMF, BF, SIWF, and Cooperative Farms. Similarly, the major conveyance systems between the WPCF and the BMF have been evaluated. Capacities of solids treatment processes are based on solid and hydraulic loading design criteria. For land application sites (BF, SIWF, and Cooperative Farms), capacities have been established based on application of liquid biosolids and dewatered biosolids of irrigated and non-irrigated land. Conveyance capacities have been established based on pipe operating pressures and available pumping capacity.

Detailed capacity data for the processes and facilities discussed below is included in Attachment C, Capacity Tables. Table C-1 provides summarized capacity data and limiting factors for processes and associated equipment (for example, pumps) related to thickening, digestion, dewatering and biosolids storage. Table C-2 provides detailed data for the information presented in Table C-1, as well as the conveyance systems capacities.

## E-S WPCF

The major solids processes at the E-S WPCF consist of WAS thickening and anaerobic digestion. These processes are discussed below.

### Waste Activated Sludge Thickening

Two 3-meter gravity belt thickeners (GBTs), manufactured by Ashbrook, are located in the thickening building. The GBTs thicken WAS from the secondary clarifiers from approximately 0.5 percent to 4 percent dry solids prior to WAS entering the digesters. Polymer is added to the WAS prior to entering the GBTs to help form a floc that can support itself during the drainage procedure without breaking apart and losing solids to the filtrate. Current operational procedures have one unit on standby and one online. The units operate 16 to 24 hours/day, 7 days/week, except for periods of time when WAS may be co-thickened in the primary clarifiers. The thickening capacities with one unit offline and the other operating 24 hours/day are:

|  |                |
|--|----------------|
| Solids loading of 2,010 dry lbs/hour ..... | 48,240 lbs/day |
| Hydraulic loading of 720 gal/minute.....   | 1.04 MG/day    |

### Anaerobic Digestion

The plant contains three concrete anaerobic digesters, operated as high-rate, complete mix systems. The digesters are 85 feet in diameter, have a 27.5-foot sidewall depth, fixed covers, and active digester volumes of 85 percent (970,000 gallons). Two smaller holding tanks, each with a volume of 360,000 gallons, receive digested biosolids prior to being pumped to the BMF.

Digesters are designed on the basis of hydraulic detention time, and organic loading expressed as pounds of volatile solids per unit volume per day. For high-rate, complete-mix digesters, typical design criteria are a detention time of between 15 and 20 days and a loading of between 0.1- to 0.15-pound of volatile solids per cubic foot per day, both based on active volume. Capacities of the digesters are:

|   |                    |
|---|--------------------|
| Solids loading of 0.15 lbs VSS/ft <sup>3</sup> -day:..... | 58,300 lbs VSS/day |
| Detention time of 15 days (maximum month): .....          | 193,800 gal/day    |
| Detention time of 20 days (average day):.....             | 145,400 gal/day    |

### Biosolids Management Facility (BMF)

The major solids processes at the BMF are the FSLs, biosolids dewatering, and solids storage.

### Facultative Sludge Lagoons (FSLs)

Four 6.25-acre FSLs are located adjacent to the dewatering building at the BMF. The normal operating depth of the lagoons is 13.5 feet, at which there is approximately 1.5 feet of freeboard. Under current operation the solids blanket in the lagoon is approximately 9 to 10 feet deep with a resultant water cap of 3.5 to 4.5 feet. Typical design standards for a lagoon of this depth would have a solids blanket 5 to 6 feet deep. This suggests that the FSL

should be harvested. The lagoons receive digested biosolids from the E-S WPCF year-round, but solids within the FSLs are only removed March through September. Solids are removed from one lagoon at a time. Prior to harvesting a lagoon, the lagoon is taken offline to allow the solids to settle. On average, one lagoon is offline for 6 months annually. Solids residence time is approximately 3 years. Supernatant is returned daily back to the E-S WPCF.

FSLs are designed on the basis of organic loading, expressed as pounds of volatile solids per 1,000 ft<sup>2</sup> of surface area per day, and on maintaining a solids blanket depth of a specific range. Capacities of the FSLs with one unit offline 6 months per year are:

|  |   |
|--|---|
| Solids loading of 25 lbs VSS/1000 ft <sup>2</sup> -day ..... | 23,400 lbs VS/ day<br>(2002 loading was 16,600 lbs VSS/day) |
| At solids depth of 6 feet.....                               | 41 million gallons of biosolids storage                     |

### Biosolids Dewatering

Three 2-meter BFPs, manufactured by Andritz, are located in the dewatering building at the BMF. Based on plant data, the belt presses concentrate digested biosolids (3 percent dry solids, average) held in the FSLs to approximately 17 percent dry solids. The system is designed to operate continuously with minimal operator attention. However, the BFPs are currently operated 13 hours/day Monday through Thursday and 9 hours/day on Friday, or an average of 12.2 hours/day, 5 days/week. The dewatering facility currently operates March through September. Bypass of the belt filter presses is available for liquid disposal of the biosolids to either the air drying beds or, beginning in the Spring of 2004, to the BF. This allows operating flexibility for different biosolids disposal methods and sites. The dewatering capacities with all BFPs operating 85 percent of the time, 12.2 hours/day, 5 days/week, 7 months/season, are:

|   |                 |
|---|-----------------|
| Solids loading of 2,440 dry lbs/hour: ..... | 76,000 lbs/day  |
| Hydraulic loading of 140 gal/minute:.....   | 242,000 gal/day |

### Solids Storage

Short-term and seasonal long-term storage exists at the BMF. Short-term storage is available through two 90 yd<sup>3</sup> elevated hoppers. The hoppers receive dewatered biosolids directly from the BFPs and have a total storage volume of 180 yd<sup>3</sup>. At the daily solids processing capacity of the BFPs, 98 percent solids capture, 17 percent dry solids, and a cake density of 58 lbs/f<sup>3</sup> (1,600 lbs/yd<sup>3</sup>), approximately 321 yd<sup>3</sup> of biosolids are produced. This allows for slightly more than 1 day of storage.

Long-term seasonal storage is available through thirteen drying beds with an average surface area of 1.85 acres per bed. At an average drying depth of 0.48-foot, the drying beds have a storage volume of 19,300 yd<sup>3</sup>. Currently, however, the drying beds are being used to windrow dewatered biosolids to 40 to 50 percent dry solids prior to land applying to cooperative farms. As such, the storage volume is most likely higher for their current use because of the increased heights of the windrows. The air drying beds must store dewatered biosolids for approximately 3 months (March-May) prior to land application. Cooperative farms begin receiving biosolids in June and end in August and September.

## Conveyance

The primary conveyance systems are those between the WPCF and the BMF and include the FSL supernatant line, the biosolids forcemain, and the reclaimed water main.

### Supernatant

The supernatant line is a 10-inch-diameter line, approximately 1 mile long, that flows by gravity or can be pumped to a manhole (Prairie and Enid Road intersection), where it is discharged into a 27-inch sewer line that flows to the E-S WPCF. The line conveys supernatant from the FSLs at the BMF to the WPCF. One pump is available to pump the supernatant to the WPCF. The capacities of the line and the supernatant pump are listed below:

|  |                |
|--|----------------|
| Line capacity at design velocity of 3.2 ft/sec and 10 psi..... | 800 gal/minute |
| Pump capacity at total dynamic head (TDH) of 24 feet.....      | 800 gal/minute |

### Biosolids Forcemain

The biosolids forcemain is 8 -inches in diameter and approximately 4.5 miles long. The line conveys digested biosolids from the solids holding tanks at the WPCF to the FSLs at the BMF. Two pumps are available to pump the digested biosolids from the WPCF to the BMF. Under typical operation, only one pump is used at a time. The capacities of the line and the digested biosolids pumps (both online) are listed below:

|  |                  |
|--|------------------|
| Line capacity at max design velocity of 6.8 ft/sec and 200 psi ..... | 1,200 gal/minute |
| Pump capacity at TDH of 110 feet.....                                | 860 gal/minute   |

### Reclaimed Water Main

The reclaimed water main provides irrigation water to the BF and general plant water required at the BMF from the W2 water system at the WPCF. The majority of the line consists of the existing 12-inch SIWF line. Sections of the existing line have been replaced with new 16-inch pipe. A new 16-inch pipe has been constructed from the WPCF W2 pump station to the existing SIWF line along Northwest Expressway. One of three vertical turbine pumps at the W2 pump station has been isolated to pump water to the BMF and BF. The maximum pressure allowed in the SIWF pipeline is 100 psi. The capacity of the line and the W2 pump is listed below:

|  |                   |
|--|-------------------|
| Line capacity at design pressure of 100 psi in 12-inch SIWF line ..... | 2,800 gal/minute  |
| Pump capacity at pressure of 75 psi .....                              | ≥2,800 gal/minute |

### Biocycle Farm (BF)

The Biocycle Farm is a 596-acre parcel adjacent to the BMF. The BF will be developed to land apply liquid biosolids, effluent, and limited dewatered biosolids.

Two crops were considered for land application: poplar trees, and grass hay. The poplar trees will be harvested on a 10-year cycle. The site will be initially developed with grass and poplars will be phased in over the next 6 years, as indicated in Table 3. The poplars will be

developed in six management units (MUs). A list of MUs and acreages are summarized in Table 3.

As per regulatory standards, buffer zones will be required. These buffer acreages are listed in Table 3. Buffer zones vary with the product that is applied (that is, cake product or liquid product). Dewatered cake biosolids require buffers of 200 feet away from any well on the uphill slope and 100 feet on the lower side of the well with a slope of 3 percent, 50-foot setback from any distinguishable water way, and 25 feet from neighboring property or road-side fence. Liquid biosolids application generally requires buffers of 200-foot setback from any well, stream, pond or distinguishable water way and 100 feet from housing or roadside fence.

**TABLE 3**  
Biocycle Farm Management Unit Acreage and Planting Plan  
*MWMC Facility Plan, Eugene-Springfield*

| Management Units       | Type                                   | Acreage | Planting Date | Replanting Date |
|------------------------|--|---------|---------------|-----------------|
| MU 1 & 2               | Non Buffer                             | 165     | 2004          | 2014            |
| MU 3 & 4               | Non Buffer                             | 130     | 2006          | 2016            |
| MU 5 & 6               | Non Buffer                             | 130     | 2008          | 2018            |
| All MUs                | Buffer                                 | 84      |               |                 |
| NE Corner              | Buffer-like application <sup>(1)</sup> | 48      |               |                 |
| TOTAL BUFFER AREAS     |  | 132     |               |                 |
| TOTAL NON BUFFER AREAS |  | 425     |               |                 |

(1) Although the NE corner of the BF is not a buffer area, if used in the future it would only receive dewatered biosolids because of access difficulties.

The BF biosolids capacity will vary over the years as the mix of grass and young and mature poplars evolves. Table 4 summarizes the BF capacity for irrigated and non-irrigated scenarios. Table C-3 in Attachment C provides a more detailed summary of loading rates and capacities at the BF through 2025. It is assumed that the BF capacity is based on non-irrigated conditions. The buffer zones will receive dewatered biosolids and the rest of the site will receive liquid biosolids. Dewatered biosolids loading capacity will vary between 400 and 740 dry tons per year. The liquid biosolids capacity ranges from approximately 2,000 to 2,870 dry tons per year on irrigated poplars and grass, and 1,700 to 2,500 dry tons per year on non-irrigated poplars and grass. The quality of irrigation water is assumed to be that of well water. Future application of reclaimed water and effluent may have higher nitrogen content, which will reduce the total amount of biosolids that can be applied.

**TABLE 4**  
Summary of Biocycle Farm Capacity in Dry Tons of Biosolids Per Year  
*MWMC Facility Plan, Eugene-Springfield*

| Year | Liquid Biosolids on Non-Buffer Areas (425 acres) |                        | Dewatered Biosolids on Buffer Areas (132 acres) |                        | Total              |                        |
|------|--|------------------------|---|------------------------|--------------------|------------------------|
|      | Irrigated Capacity                               | Non-Irrigated Capacity | Irrigated Capacity                              | Non-Irrigated Capacity | Irrigated Capacity | Non-Irrigated Capacity |
| 2005 | 1880   | 1609                   | 824   | 612                    | <b>2704</b>        | <b>2221</b>            |
| 2010 | 2561   | 2228                   | 905   | 675                    | <b>3466</b>        | <b>2903</b>            |
| 2015 | 2165   | 1868                   | 824   | 612                    | <b>2989</b>        | <b>2480</b>            |
| 2020 | 2561   | 2228                   | 905   | 675                    | <b>3466</b>        | <b>2903</b>            |
| 2025 | 2451   | 2128                   | 824   | 612                    | <b>3275</b>        | <b>2740</b>            |

Irrigation water is assumed to be the quality of well water

### Seasonal Industrial Waste Facility (SIWF)

The SIWF is a 196-acre parcel located approximately 1 mile from the BMF. It is currently developed with three 60-acre circles and one 16-acre circle of grass. The irrigation system consists of Pierce center pivots. If used in the biosolids application program by MWMC, the 196 acres at SIWF could receive liquid biosolids from the BMF and effluent from the E-S WPCF. The land could be left in grass and the existing conveyance system would have to be retrofitted to receive liquid biosolids, or the land could be planted in poplars and a new irrigation and biosolids spreading system would have to be installed.

Table 5 summarizes the SIWF capacity for irrigated and non-irrigated poplar and grass crops. Table C-4 in Attachment C provides a more detailed summary of loading rates and capacities at the SIWF through 2025.

A 57-million-gallon storage lagoon is also located at the SIWF site. Previously used to store cannery waste, this lagoon will be evaluated for effluent equalization/storage, BFP filtrate storage, and FSL supernatant equalization/storage/treatment. The lagoon may also be used in the near-term for storing the contents of individual FSL cells at the BMF during the re-lining effort of the FSLs.

**TABLE 5**  
Summary of SIWF Capacity in Dry Tons of Biosolids Per Year  
*MWMC Facility Plan, Eugene-Springfield*

| Year | Liquid Biosolids on Poplars (196 acres) |                        | Liquid Biosolids on Grass (196 acres) |                        |
|------|---|------------------------|---------------------------------------|------------------------|
|      | Irrigated Capacity                      | Non-Irrigated Capacity | Irrigated Capacity                    | Non-Irrigated Capacity |
| 2005 | 783                                     | 666                    | 783                                   | 666                    |
| 2010 | 1214                                    | 1057                   | 783                                   | 666                    |
| 2015 | 1214                                    | 1057                   | 783                                   | 666                    |

**TABLE 5**  
Summary of SIWF Capacity in Dry Tons of Biosolids Per Year  
*MWMC Facility Plan, Eugene-Springfield*

| Year | Liquid Biosolids on Poplars (196 acres) |                        | Liquid Biosolids on Grass (196 acres) |                        |
|------|---|------------------------|---------------------------------------|------------------------|
|      | Irrigated Capacity                      | Non-Irrigated Capacity | Irrigated Capacity                    | Non-Irrigated Capacity |
| 2020 | 1214                                    | 1057                   | 783                                   | 666                    |
| 2025 | 1214                                    | 1057                   | 783                                   | 666                    |

Irrigation water is assumed to be the quality of well water

## Cooperative Farms

Approximately 7,500 acres of farmland in the vicinity of the BF are permitted to apply dried biosolids. These farms generally grow annual ryegrass, ryegrass seed, wheat, fescue, pasture, and hay. For calculation purposes, it was assumed that the loading rates for dried biosolids for all of these crops were the same as grass; that is, 5.63 dry tons/acre-year for irrigated land and 4.16 dry tons/acre-year for non-irrigated land. This would give MWMC the capacity to apply approximately 31,200 to 42,200 dry tons per year of biosolids if all farms were used in the land application program.

Table 6 summarizes the combined total capacity of all cooperative farms for irrigated and non-irrigated conditions. Table C-5 in Attachment C provides a more detailed summary of loading rates and capacities at the cooperative farms through 2025.

If the land is used as pasture, it should be noted that after application of bulk Class B biosolids, grazing animals should not be allowed on pasture or forage, nor should livestock feed be harvested for 30 days. This 30-day waiting period can be restrictive if harvesting several crops of hay per year is desired. This time period of 30 days is intended to ensure pathogens die off, and can be waived with Class A biosolids.

**TABLE 6**  
Summary of Cooperative Farm Capacities  
*MWMC Facility Plan, Eugene-Springfield*

| Year | Dewatered Biosolids Capacity<br>(dry tons per year) |                        |
|------|---|------------------------|
|      | Irrigated Capacity                                  | Non-Irrigated Capacity |
| 2005 | 42,191  | 31,166                 |
| 2010 | 42,191  | 31,166                 |
| 2015 | 42,191  | 31,166                 |
| 2020 | 42,191  | 31,166                 |
| 2025 | 42,191  | 31,166                 |

Irrigation water is assumed to be the quality of well water.

## Effluent Land Application Capacity

There are four potential sources of water for the crops:

- Liquid biosolids
- A mixture of washwater and filtrate water from the belt press (estimated 600 ppm of nitrogen)
- “Clean” well water (limited supply)
- E-S WPCF effluent (Level II, III, and IV)

Each of these water sources varies in nitrogen content. The biosolids capacity evaluations for the BF, SIWF, and the Cooperative Farms are based on non-irrigated crops or “clean” well water irrigation. Any additional nitrogen loading from the water source would result in reducing the liquid or dewatered biosolids loading because the goal of the irrigation operations is to prevent percolation of water and nitrogen below the root zone during the irrigation season. Deep percolation of some fraction of the wastewater mixed with rainwater will occur in the dormant season, but proper nitrogen management will minimize the amount of residual nitrogen remaining in the soil as the wet season begins.

When the crop water requirements are not being fully met, the crop is not expected to grow as much as a crop receiving full irrigation. It was assumed that the partially irrigated crop would not take up the maximum crop nutrient requirement. Poplars will receive up to 220 lb/acre of nitrogen (instead of the recommended 260 lb/acre) and grass will receive 120 lb/acre of available nitrogen (instead of the recommended 150 lb/acre) if not irrigated.

Some of the crop water requirement will also be met through biosolids application. However, less than 2 inches of total depth of liquid biosolids will be applied. Additional water can be provided through application of clean well water when available. Well water contains only traces of nitrogen and is not considered a source of nitrogen for the crops.

The design hydraulic loading rate is based on the irrigation agronomic rate. The gross irrigation requirement is the total crop water demand adjusted for effective precipitation and irrigation efficiency. The design net irrigation requirement of the reuse site is 14 to 22 inches depending on the crop, age, and monitored consumption and losses. Both poplar trees and grass are grown in the region without irrigation. Deficit irrigation will be practiced at the site, which will encourage deep rooting and use of groundwater and will minimize leaching of water and the nutrients that might move with the water.

### Filtrate Water

The application of filtrate is equivalent to the application of a liquid fertilizer. The concentration in nitrogen is high enough that it would have to replace any liquid biosolids application. Filtrate could, however, be supplemented with irrigation of well water or Level IV effluent.

### Level IV Effluent

Liquid biosolids can be supplemented with Level IV effluent. The biosolids loadings presented in Table C-6, however, will need to be adjusted down to account for the

supplemental nitrogen provided by the effluent. Further discussion on effluent loadings will be provided in a future document addressing various scenarios of land application at the BF and SIWF.

## Conclusions

The capacities presented in this document, along with projected biosolids flow and loads, suggest that MWMC possesses enough land, through direct ownership or cooperative land application farms, to dispose of liquid and dewatered biosolids, as well as effluent, through 2025. Current operating conditions of the FSLs suggest that they should be harvested such that solids depth in the lagoons is between 5 and 6 feet. Further tasks included in the overall Facilities Plan Update will evaluate application and operational scenarios to optimize the disposal of effluent, and liquid and dewatered biosolids, as well as the processing of BFP recycle.



Attachment A  
**FIGURES**

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Attachment B  
**SOLIDS PROJECTIONS**

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TABLE B-1

Solids Flow Balance

MWMC Facility Plan, Eugene-Springfield

| 2005<br>Flow Stream Identification        | Flow (mgd)        |       |       |                    |                     | TSS (lb/d)        |        |        |                    |                     | TSS (mg/L)        |        |        |                    |                     |
|---|-------------------|-------|-------|--------------------|---------------------|-------------------|--------|--------|--------------------|---------------------|-------------------|--------|--------|--------------------|---------------------|
|   | AA <sup>(5)</sup> | DWA   | DWMM  | WWA                | WWMM                | AA <sup>(5)</sup> | DWA    | DWMM   | WWA                | WWMM                | AA <sup>(5)</sup> | DWA    | DWMM   | WWA                | WWMM                |
| Waste Activated Sludge                    | -                 | 0.309 | 0.383 | 0.838              | 0.787               | -                 | 26,300 | 32,000 | 30,000             | 34,200              | -                 | 8,000  | 10,000 | 4,300              | 5,200               |
| Thickened Waste Activated Sludge          | -                 | 0.075 | 0.091 | 0.085              | 0.097               | -                 | 25,000 | 30,400 | 28,500             | 32,500              | -                 | 40,000 | 40,000 | 40,000             | 40,000              |
| Belt Thickener Recycle                    | -                 | 0.323 | 0.184 | 0.796              | 0.696               | -                 | 1,314  | 600    | 1,500              | 1,700               | -                 | 500    | 400    | 240                | 300                 |
| Primary Sludge                            | -                 | 0.077 | 0.103 | 0.097              | 0.122               | -                 | 29,000 | 38,800 | 36,500             | 45,705              | -                 | 45,000 | 45,000 | 45,000             | 45,000              |
| Digester Feed Sludge                      | -                 | 0.152 | 0.194 | 0.183              | 0.219               | -                 | 54,000 | 69,200 | 65,000             | 78,200              | -                 | 42,500 | 42,700 | 42,700             | 42,800              |
| Digested Sludge                           | -                 | 0.152 | 0.194 | 0.183              | 0.219               | -                 | 32,100 | 41,600 | 36,400             | 44,200              | -                 | 25,300 | 25,600 | 23,900             | 24,200              |
| Mechanical Dewatering Feed <sup>(2)</sup> | 0.261             | -     | -     | -                  | -                   | 65,400            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Dewatered Sludge Cake                     | 0.045             | -     | -     | -                  | -                   | 64,000            | -      | -      | -                  | -                   | 170,000           | -      | -      | -                  | -                   |
| Biocycle Farm Feed Sludge <sup>(3)</sup>  | 0.049             | -     | -     | -                  | -                   | 12,200            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Mechanical Dewatering Filtrate            | 0.242             | -     | -     | -                  | -                   | 1,300             | -      | -      | -                  | -                   | 700               | -      | -      | -                  | -                   |
| Lagoon Supernatant <sup>(4)</sup>         | 0.302             | -     | -     | -                  | -                   | 760               | -      | -      | -                  | -                   | 300               | -      | -      | -                  | -                   |
| 2010<br>Flow Stream Identification        | Flow (mgd)        |       |       |                    |                     | TSS (lb/d)        |        |        |                    |                     | TSS (mg/L)        |        |        |                    |                     |
|   | AA <sup>(5)</sup> | DWA   | DWMM  | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> |
| Waste Activated Sludge                    | -                 | 0.389 | 0.382 | 0.871              | 0.836               | -                 | 28,100 | 35,000 | 43,600             | 52,400              | -                 | 8,300  | 11,000 | 6,000              | 7,500               |
| Thickened Waste Activated Sludge          | -                 | 0.080 | 0.100 | 0.124              | 0.149               | -                 | 26,650 | 33,300 | 41,400             | 49,800              | -                 | 40,000 | 40,000 | 40,000             | 40,000              |
| Primary Sludge                            | -                 | 0.084 | 0.114 | 0.436              | 0.561               | -                 | 31,500 | 42,700 | 36,400             | 46,800              | -                 | 45,000 | 45,000 | 10,000             | 10,000              |
| Thickened Primary Sludge                  | -                 | -     | -     | 0.064              | 0.083               | -                 | -      | -      | 26,900             | 34,500              | -                 | -      | -      | 50,000             | 50,000              |
| Digester Feed Sludge                      | -                 | 0.164 | 0.213 | 0.188              | 0.232               | -                 | 58,100 | 76,000 | 68,300             | 84,300              | -                 | 42,600 | 42,700 | 43,400             | 43,600              |
| Digested Sludge                           | -                 | 0.164 | 0.213 | 0.188              | 0.232               | -                 | 34,300 | 45,500 | 41,800             | 52,700              | -                 | 25,100 | 25,500 | 26,600             | 27,200              |
| Belt Thickener Recycle                    | -                 | 0.317 | 0.288 | 0.753              | 0.693               | -                 | 1,400  | 1,750  | 2,180              | 1,930               | -                 | 532    | 730    | 350                | 450                 |
| Gravity Thickener Recycle                 | -                 | -     | -     | 0.372              | 0.478               | -                 | -      | -      | 4,740              | 6,100               | -                 | -      | -      | 1,530              | 1,530               |
| Mechanical Dewatering Feed <sup>(2)</sup> | 0.261             | -     | -     | -                  | -                   | 65,400            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Dewatered Sludge Cake                     | 0.045             | -     | -     | -                  | -                   | 64,000            | -      | -      | -                  | -                   | 170,000           | -      | -      | -                  | -                   |
| Biocycle Farm Feed Sludge <sup>(3)</sup>  | 0.049             | -     | -     | -                  | -                   | 12,200            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Mechanical Dewatering Filtrate            | 0.242             | -     | -     | -                  | -                   | 1,300             | -      | -      | -                  | -                   | 650               | -      | -      | -                  | -                   |
| Lagoon Supernatant <sup>(4)</sup>         | 0.302             | -     | -     | -                  | -                   | 760               | -      | -      | -                  | -                   | 300               | -      | -      | -                  | -                   |
| 2015<br>Flow Stream Identification        | Flow (mgd)        |       |       |                    |                     | TSS (lb/d)        |        |        |                    |                     | TSS (mg/L)        |        |        |                    |                     |
|   | AA <sup>(5)</sup> | DWA   | DWMM  | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> |
| Waste Activated Sludge                    | -                 | 0.789 | 0.770 | 1.751              | 1.675               | -                 | 30,200 | 37,800 | 45,400             | 55,100              | -                 | 4,600  | 5,900  | 3,100              | 3,940               |
| Thickened Waste Activated Sludge          | -                 | 0.086 | 0.107 | 0.129              | 0.157               | -                 | 28,700 | 35,900 | 43,100             | 52,320              | -                 | 40,000 | 40,000 | 40,000             | 40,000              |
| Primary Sludge                            | -                 | 0.090 | 0.123 | 0.470              | 0.605               | -                 | 33,800 | 46,000 | 39,200             | 50,500              | -                 | 45,000 | 45,000 | 10,000             | 10,000              |
| Thickened Primary Sludge                  | -                 | -     | -     | 0.069              | 0.089               | -                 | -      | -      | 28,900             | 37,250              | -                 | -      | -      | 50,000             | 50,000              |
| Digester Feed Sludge                      | -                 | 0.176 | 0.230 | 0.198              | 0.246               | -                 | 62,500 | 81,900 | 72,000             | 89,600              | -                 | 42,600 | 42,700 | 43,400             | 43,600              |
| Digested Sludge                           | -                 | 0.176 | 0.230 | 0.198              | 0.246               | -                 | 37,000 | 49,100 | 44,800             | 56,700              | -                 | 25,100 | 25,500 | 26,600             | 27,200              |
| Belt Thickener Recycle                    | -                 | 0.709 | 0.669 | 1.628              | 1.523               | -                 | 1,511  | 1,900  | 2,300              | 2,750               | -                 | 260    | 3,400  | 167                | 216                 |
| Gravity Thickener Recycle                 | -                 | -     | -     | 0.400              | 0.516               | -                 | -      | -      | 5,100              | 6,570               | -                 | -      | -      | 1,530              | 1,530               |
| Mechanical Dewatering Feed <sup>(2)</sup> | 0.261             | -     | -     | -                  | -                   | 65,400            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Dewatered Sludge Cake                     | 0.045             | -     | -     | -                  | -                   | 64,000            | -      | -      | -                  | -                   | 170,000           | -      | -      | -                  | -                   |
| Biocycle Farm Feed Sludge <sup>(3)</sup>  | 0.049             | -     | -     | -                  | -                   | 12,200            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Mechanical Dewatering Filtrate            | 0.242             | -     | -     | -                  | -                   | 1,300             | -      | -      | -                  | -                   | 650               | -      | -      | -                  | -                   |
| Lagoon Supernatant <sup>(4)</sup>         | 0.302             | -     | -     | -                  | -                   | 760               | -      | -      | -                  | -                   | 300               | -      | -      | -                  | -                   |

TABLE B-1

Solids Flow Balance

MWMC Facility Plan, Eugene-Springfield

| 2020<br>Flow Stream Identification        | Flow (mgd)        |       |       |                    |                     | TSS (lb/d)        |        |        |                    |                     | TSS (mg/L)        |        |        |                    |                     |
|---|-------------------|-------|-------|--------------------|---------------------|-------------------|--------|--------|--------------------|---------------------|-------------------|--------|--------|--------------------|---------------------|
|   | AA <sup>(5)</sup> | DWA   | DWMM  | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> |
| Waste Activated Sludge                    | -                 | 0.788 | 0.770 | 1.750              | 1.676               | -                 | 32,300 | 40,600 | 48,700             | 59,300              | -                 | 4,900  | 6,300  | 3,340              | 4,240               |
| Thickened Waste Activated Sludge          | -                 | 0.092 | 0.115 | 0.139              | 0.169               | -                 | 30,700 | 38,500 | 46,300             | 56,300              | -                 | 40,000 | 40,000 | 40,000             | 40,000              |
| Primary Sludge                            | -                 | 0.096 | 0.131 | 0.502              | 0.649               | -                 | 36,200 | 49,400 | 41,900             | 54,100              | -                 | 45,000 | 45,000 | 10,000             | 10,000              |
| Thickened Primary Sludge                  | -                 | -     | -     | 0.074              | 0.096               | -                 | -      | -      | 30,900             | 39,900              | -                 | -      | -      | 50,000             | 50,000              |
| Digester Feed Sludge                      | -                 | 0.188 | 0.247 | 0.213              | 0.264               | -                 | 66,900 | 87,900 | 77,200             | 96,300              | -                 | 42,600 | 42,700 | 43,500             | 43,600              |
| Digested Sludge                           | -                 | 0.188 | 0.247 | 0.213              | 0.264               | -                 | 39,700 | 53,000 | 48,100             | 61,100              | -                 | 25,300 | 25,700 | 27,100             | 27,700              |
| Belt Thickener Recycle                    | -                 | 0.702 | 0.661 | 1.618              | 1.514               | -                 | 1,613  | 2,000  | 2,500              | 3,000               | -                 | 275    | 370    | 180                | 235                 |
| Gravity Thickener Recycle                 | -                 | -     | -     | 0.187              | 0.553               | -                 | -      | -      | 700                | 7,050               | -                 | -      | -      | 447                | 1,530               |
| Mechanical Dewatering Feed <sup>(2)</sup> | 0.261             | -     | -     | -                  | -                   | 65,400            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Dewatered Sludge Cake                     | 0.045             | -     | -     | -                  | -                   | 64,000            | -      | -      | -                  | -                   | 170,000           | -      | -      | -                  | -                   |
| Biocycle Farm Feed Sludge <sup>(3)</sup>  | 0.049             | -     | -     | -                  | -                   | 12,200            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Mechanical Dewatering Filtrate            | 0.242             | -     | -     | -                  | -                   | 1,300             | -      | -      | -                  | -                   | 650               | -      | -      | -                  | -                   |
| Lagoon Supernatant <sup>(4)</sup>         | 0.302             | -     | -     | -                  | -                   | 760               | -      | -      | -                  | -                   | 300               | -      | -      | -                  | -                   |
| 2025<br>Flow Stream Identification        | Flow (mgd)        |       |       |                    |                     | TSS (lb/d)        |        |        |                    |                     | TSS (mg/L)        |        |        |                    |                     |
|   | AA <sup>(5)</sup> | DWA   | DWMM  | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> | AA <sup>(5)</sup> | DWA    | DWMM   | WWA <sup>(1)</sup> | WWMM <sup>(1)</sup> |
| Waste Activated Sludge                    | -                 | 0.787 | 0.770 | 1.750              | 1.677               | -                 | 34,300 | 43,300 | 52,100             | 63,600              | -                 | 5,230  | 6,740  | 3,600              | 4,550               |
| Thickened Waste Activated Sludge          | -                 | 0.098 | 0.123 | 0.148              | 0.181               | -                 | 32,600 | 41,100 | 49,500             | 60,400              | -                 | 40,000 | 40,000 | 40,000             | 40,000              |
| Primary Sludge                            | -                 | 0.103 | 0.140 | 0.535              | 0.692               | -                 | 38,600 | 52,650 | 44,680             | 57,800              | -                 | 45,000 | 45,000 | 45,000             | 45,000              |
| Thickened Primary Sludge                  | -                 | -     | -     | 0.079              | 0.102               | -                 | -      | -      | 33,000             | 42,600              | -                 | -      | -      | 50,000             | 50,000              |
| Digester Feed Sludge                      | -                 | 0.201 | 0.263 | 0.227              | 0.283               | -                 | 71,200 | 93,800 | 82,500             | 103,100             | -                 | 42,600 | 42,700 | 43,500             | 43,600              |
| Digested Sludge                           | -                 | 0.201 | 0.263 | 0.227              | 0.283               | -                 | 42,400 | 56,700 | 51,500             | 65,600              | -                 | 25,360 | 25,800 | 27,200             | 27,750              |
| Belt Thickener Recycle                    | -                 | 0.695 | 0.653 | 1.608              | 1.502               | -                 | 1,720  | 2,200  | 2,600              | 3,200               | -                 | 300    | 400    | 200                | 254                 |
| Gravity Thickener Recycle                 | -                 | -     | -     | 0.456              | 0.590               | -                 | -      | -      | 5,820              | 7,500               | -                 | -      | -      | 1,530              | 1,530               |
| Mechanical Dewatering Feed <sup>(2)</sup> | 0.261             | -     | -     | -                  | -                   | 65,400            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Dewatered Sludge Cake                     | 0.045             | -     | -     | -                  | -                   | 64,000            | -      | -      | -                  | -                   | 170,000           | -      | -      | -                  | -                   |
| Biocycle Farm Feed Sludge <sup>(3)</sup>  | 0.049             | -     | -     | -                  | -                   | 12,200            | -      | -      | -                  | -                   | 30,000            | -      | -      | -                  | -                   |
| Mechanical Dewatering Filtrate            | 0.242             | -     | -     | -                  | -                   | 1,300             | -      | -      | -                  | -                   | 650               | -      | -      | -                  | -                   |
| Lagoon Supernatant <sup>(4)</sup>         | 0.302             | -     | -     | -                  | -                   | 760               | -      | -      | -                  | -                   | 300               | -      | -      | -                  | -                   |

Notes:

- (1) Pumping thin primary sludge from the primary clarifiers at the E/S WPCF. Approximately 1% dry solids.
- (2) Operation: 12.2 hrs/day, 5 days/week, 7 months/year (Mar-Sept)
- (3) Annualized values. Actual application to BF is seasonal (May-Aug or Sept). Based on non-irrigated capacity.
- (4) Assumes 12 hrs/day operation
- (5) Solids process flow stream located at the BMF were calculated based on Annual Average conditions due to seasonal operation and storage in the FSLs. Solids processes at the E-S WPCF were not evaluated at Annual Average flow conditions.

Attachment C  
**CAPACITY TABLES**

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TABLE C-1

Solids Processing Capacities at E/S WPCF and BMF  
MWWC Facility Plan, Eugene-Springfield

| Unit Process                       | Criteria                   | Number of Units | Limiting Factor at Current Operation | Total Process Capacity       |                         |
|------------------------------------|----------------------------|-----------------|--------------------------------------|------------------------------|-------------------------|
|                                    |                            |                 |                                      | Installed (All Units Online) | Firm (One Unit Offline) |
| <b><u>WAS THICKENING</u></b>       |                            |                 |                                      |                              |                         |
| Gravity Belt Thickeners            | 2010 dry lbs solids/hr SLR | 2               | Solids Loading                       | 96480 ppd                    | 48240 ppd               |
|                                    | 720 gpm HLR                |                 |                                      | 2073600 gpd                  | 1036800 gpd             |
| GBT Feed (WAS) Pumps               | 800 gpm                    | 2               | N/A                                  | 1600 gpm                     | 800 gpm                 |
| Thickened Sludge (TWAS) Pumps      | 120 gpm                    | 2               | N/A                                  | 240 gpm                      | 120 gpm                 |
| <b><u>SOLIDS DIGESTION</u></b>     |                            |                 |                                      |                              |                         |
| Anaerobic Digestion                | 0.15 lbs VSS/cf/day        | 3               | Hydraulic Loading @ Average Day      | 58295 lb VSS/day             | 38864 lb VSS/day        |
|                                    | 15 day SRT @ Maximum Month |                 |                                      | 193800 gpd                   | 129200 gpd              |
|                                    | 20 day SRT @ Average Day   |                 |                                      | 145350 gpd                   | 96900 gpd               |
| Digested Sludge Pumps              | 430 gpm                    | 2               | N/A                                  | 860 gpm                      | 430 gpm                 |
| <b><u>BIOSOLIDS DEWATERING</u></b> |                            |                 |                                      |                              |                         |
| BFP Feed Tanks                     | 360,000 gallons, each      | 2               | N/A                                  | 720000 gal                   | 360000 gal              |
| Belt Filter Presses                | 2440 dry lbs solids/hr SLR | 3               | Hydraulic Loading                    | 89304 ppd                    | 59536 ppd               |
|                                    | 140 gpm HLR                |                 |                                      | 307440 gpd                   | 204960 gpd              |
| BFP Feed Pumps                     | 200 gpm                    | 3               | N/A                                  | 600 gpm                      | 400 gpm                 |
| Sludge Strainers                   | 200 gpm                    | 3               | N/A                                  | 600 gpm                      | 400 gpm                 |
| Filtrate Pumps                     | 575 gpm                    | 3               | N/A                                  | 1725 gpm                     | 1150 gpm                |
| Cake Conveyance                    | 30 Wet tons/hr             | 1               | N/A                                  | 30 wet tons/hr               | 0 wet tons/hr           |
| <b><u>BIOSOLIDS STORAGE</u></b>    |                            |                 |                                      |                              |                         |
| Facultative Sludge Lagoons         | 25 lbs VSS/1000 sf-day     | 4               | Solids Storage                       | 41 MG                        | 31 MG                   |
|                                    | 6 ft sludge depth          |                 |                                      |                              |                         |
| Short-Term (Cake Hopper)           | 180 CY of Storage          | 2               | N/A                                  | 180 CY                       | 90 CY                   |
| Long-Term Seasonal (Drying Beds)   | 1485 CY of Storage         | 13              | N/A                                  | 19305 CY                     | 17820 CY                |

BFP = Belt Filter Press  
SRT = Solids Retention Time  
SLR = Solids Loading Rate  
HRT = Hydraulic Retention Time  
PPD = Pounds Per Day  
VSS = Volatile Suspended Solids  
GBT = Gravity Belt Thickener

TABLE C-1

Solids Processing Capacities at E/S WPCF and BMF  
*MWMC Facility Plan, Eugene-Springfield*

| Unit Process                       | Criteria                   | Number of Units | Limiting Factor at Current Operation | Total Process Capacity       |                         |
|------------------------------------|----------------------------|-----------------|--------------------------------------|------------------------------|-------------------------|
|                                    |                            |                 |                                      | Installed (All Units Online) | Firm (One Unit Offline) |
| <b><u>WAS THICKENING</u></b>       |                            |                 |                                      |                              |                         |
| Gravity Belt Thickeners            | 2010 dry lbs solids/hr SLR | 2               | Solids Loading                       | 96480 ppd                    | 48240 ppd               |
|                                    | 720 gpm HLR                |                 |                                      | 2073600 gpd                  | 1036800 gpd             |
| GBT Feed (WAS) Pumps               | 800 gpm                    | 2               | N/A                                  | 1600 gpm                     | 800 gpm                 |
| Thickened Sludge (TWAS) Pumps      | 120 gpm                    | 2               | N/A                                  | 240 gpm                      | 120 gpm                 |
| <b><u>SOLIDS DIGESTION</u></b>     |                            |                 |                                      |                              |                         |
| Anaerobic Digestion                | 0.15 lbs VSS/cf/day        | 3               | Hydraulic Loading @ Average Day      | 58295 lb VSS/day             | 38864 lb VSS/day        |
|                                    | 15 day SRT @ Maximum Month |                 |                                      | 193800 gpd                   | 129200 gpd              |
|                                    | 20 day SRT @ Average Day   |                 |                                      | 145350 gpd                   | 96900 gpd               |
| Digested Sludge Pumps              | 430 gpm                    | 2               | N/A                                  | 860 gpm                      | 430 gpm                 |
| <b><u>BIOSOLIDS DEWATERING</u></b> |                            |                 |                                      |                              |                         |
| BFP Feed Tanks                     | 360,000 gallons, each      | 2               | N/A                                  | 720000 gal                   | 360000 gal              |
| Belt Filter Presses                | 2440 dry lbs solids/hr SLR | 3               | Hydraulic Loading                    | 89304 ppd                    | 59536 ppd               |
|                                    | 140 gpm HLR                |                 |                                      | 307440 gpd                   | 204960 gpd              |
| BFP Feed Pumps                     | 200 gpm                    | 3               | N/A                                  | 600 gpm                      | 400 gpm                 |
| Sludge Strainers                   | 200 gpm                    | 3               | N/A                                  | 600 gpm                      | 400 gpm                 |
| Filtrate Pumps                     | 575 gpm                    | 3               | N/A                                  | 1725 gpm                     | 1150 gpm                |
| Cake Conveyance                    | 30 Wet tons/hr             | 1               | N/A                                  | 30 wet tons/hr               | 0 wet tons/hr           |
| <b><u>BIOSOLIDS STORAGE</u></b>    |                            |                 |                                      |                              |                         |
| Facultative Sludge Lagoons         | 25 lbs VSS/1000 sf-day     | 4               | Solids Storage                       | 41 MG                        | 31 MG                   |
|                                    | 6 ft sludge depth          |                 |                                      |                              |                         |
| Short-Term (Cake Hopper)           | 180 CY of Storage          | 2               | N/A                                  | 180 CY                       | 90 CY                   |
| Long-Term Seasonal (Drying Beds)   | 1485 CY of Storage         | 13              | N/A                                  | 19305 CY                     | 17820 CY                |

BFP = Belt Filter Press  
 SRT = Solids Retention Time  
 SLR = Solids Loading Rate  
 HRT = Hydraulic Retention Time  
 PPD = Pounds Per Day  
 VSS = Volatile Suspended Solids  
 GBT = Gravity Belt Thickener

TABLE C-2  
Solids Unit Process Capacity  
MWWC Facility Plan, Eugene-Springfield

Updated: 4/1/2005

| Component/Process                       | Location            | Existing Sizing  | Design Criteria   | Capacity   |   |
|---|---------------------|--|---|--|---|
|   |                     |  |   | Installed  | Firm  |
| <b>WAS THICKENING</b>                   |                     |  |   |  |   |
| WAS Pumps:                              | WPCF                | Number of Units 2<br>Type Screw Centrifugal<br>Drive AFD<br>Motor HP, each 15  | Capacity, each:<br>Hydraulic, gpm 800   | 1600 gpm   | 800 gpm                                     |
| Gravity Belt Thickening:                | WPCF                | Number of Units 2<br>Width, each, meters 3<br>Cake, min, % dry solids 5<br>Solids Capture, min, % 95<br>Operation, hrs/day 24<br>2 Units   | Capacity, each:<br>Solids, dry lbs/hr 2010<br>Hydraulic, gpm 720                          | 96480 ppd<br>2073600 gpd   | 48240 ppd<br>1036800 gpd                    |
| Thickened Sludge Pumps:                 | WPCF                | Number of Units 2<br>Type Progressing Cavity<br>Drive AFD<br>Motor HP, each 20   | Capacity, each:<br>Hydraulic, gpm 120   | 240 gpm  | 120 gpm                                     |
| <b>SOLIDS DIGESTION</b>                 |                     |  |   |  |   |
| Anaerobic Digestion:                    | WPCF                | Primary Digesters<br>Number of Units 3<br>Type Fixed Cover<br>Diameter, ft 85<br>SWD, ft 27.6<br>Active Volume, gal 969,000  | SLR (lb VSS/cf/day):<br>DWM 0.15<br>SRT (days):<br>Average Day 20<br>Maximum Month 15     | 58295 lb VSS/day<br>145350 gpd<br>193800 gpd   | 38864 lb VSS/day<br>96900 gpd<br>129200 gpd |
| Sludge Holding Tanks:                   | WPCF                | Number of Units 2<br>Type Fixed Cover<br>Diameter, ft 60<br>Active Volume, gal -<br>Gas Holder Volume, gal -<br>Sludge Storage Vol, gal 360,000                                      |   |  |   |
| Digested Sludge Pumps:                  | WPCF                | Number of Units 2<br>Type Centrifugal<br>Drive AFD<br>Motor HP, each 75  | Capacity, each:<br>Hydraulic, gpm 430   | 860 gpm  | 430 gpm                                     |
| <b>SLUDGE DEWATERING</b>                |                     |  |   |  |   |
| BFP Feed Tank Mixing Pump               | BMF                 | Number of Units 2<br>Type Screw Centrifugal<br>Motor HP, each 25   | Capacity, each<br>Hydraulic, gpm 1800   | 3600 gpm   | 1800 gpm                                    |
| BFP Feed Tank                           | BMF                 | Number of Units 2<br>Type Reinf. Concrete, OpenTop<br>SWD, ft 26<br>Diameter, ft 48  | Capacity, each<br>Volume, gal 360,000   | 720000 gal   | 360000 gal                                  |
| Belt Filter Presses:                    | BMF                 | Number of Units 3<br>Width, each, meters 2<br>Cake, min, % dry solids 17<br>Solids Capture, min, % 98<br>Operation, hrs/day 12.2<br>Operation, days/wk 5<br>Operation, months/year 7 | Capacity, each<br>Solids, dry lbs/hr 2440<br>Hydraulic, gpm 140                           | 89304 ppd<br>307440 gpd  | 59536 ppd<br>204960 gpd                     |
| Belt Filter Press Feed Pumps:           | BMF                 | Number of Units 3<br>Type Progressing Cavity<br>Drive AFD<br>Motor HP, each 15   | Capacity, each:<br>Hydraulic, gpm 200   | 600 gpm  | 400 gpm                                     |
| Sludge Strainers:<br>(BFP Feed)         | BMF                 | Number of Units 3<br>Type Parkson Strainpress  | Capacity, each:<br>Hydraulic, gpm 200   | 600 gpm  | 400 gpm                                     |
| Filtrate Pumps:                         | BMF                 | Number of Units 3<br>Type Submersible<br>Drive AFD<br>Motor HP, each 15  | Capacity, each:<br>Hydraulic, gpm 575   | 1725 gpm   | 1150 gpm                                    |
| Cake Conveyance                         | BMF                 | Number of Units 1<br>Type Screw Auger<br>Drive Single Speed  | Capacity, each:<br>Wet tons/hr 30   | 30 wet tons/hr   | 0 wet tons/hr                               |
| <b>SOLIDS STORAGE</b>                   |                     |  |   |  |   |
| Facultative Sludge Lagoons              | BMF                 | Number of Units 4<br>Area each, acres 6.25<br>Depth, ft 13.5<br>Bottom Width, ft 300.5<br>Bottom Length, ft 715.5<br>Side Slope, ft/ft 2.5   | Capacity, each:<br>Lb VSS/1000 SF/Da 25<br>Sludge Depth, ft 6<br>Water Depth, ft 7.5      | 27225 lb VSS/day<br>41 MG<br>53 MG   | 20419 lb VSS/day<br>31 MG<br>40 MG          |
| Short-Term Storage:<br>(Cake Hopper)    | BMF                 | Number of Units 2<br>Type Elevated Steel Hopper  | Capacity, each:<br>Weight, tons 81.5<br>Volume, CY 90                                     | 163 tons<br>180 CY   | 82 tons<br>90 CY                            |
| Long-Term Storage:<br>(Air Drying Beds) | BMF                 | Number of Units 13<br>Area, each, acres 1.85<br>Equivalent Average Depth, ft 0.48<br>Bulk Density of Biosolids, lb/c 67  |   | Storage Volume = 19300 CY<br>Solids Applied (dry wt) = 3130 dry tons<br>Solids Applied (wet wt) : 17400 wet tons |   |
| <b>CONVEYANCE BETWEEN FACILITIES</b>    |                     |  |   |  |   |
| Biosolids Forcemain                     | WPCF -><br>BMF      | Length 1200<br>Material Ductile Iron<br>Size, in 8.5<br>Number of Pumps 2<br>TDH, psi 110<br>Motor HP, each 75   | Capacity<br>Design Velocity, fps 6.8<br>(maximum)<br>Capacity<br>Hydraulic, gpm 430       | 1203 gpm   | -<br>860 gpm<br>430 gpm                     |
| Reclaimed Water Main                    | WPCF -><br>BMF & BF | Length (12"/16")<br>Material PVC<br>Size, in 12, 16, & 24<br>Number of Pumps 1<br>TDH, psi 65<br>Motor HP, each 150  | Capacity<br>Design Velocity, fps 0.0<br>Capacity<br>Hydraulic, gpm 2340<br>(at 75% speed) | 2800 gpm   | -<br>2340 gpm<br>0 gpm                      |
| Supernatant                             | BMF -><br>WPCF      | Length<br>Material PVC<br>Size, in 10<br>Number of Pumps 1<br>TDH, ft 24<br>Motor HP, each 10  | Capacity<br>Design Velocity, fps 3.2<br>Capacity<br>Hydraulic, gpm 875                    | 783 gpm  | -<br>875 gpm<br>0 gpm                       |

TABLE C-4

Liquid and Dewatered Biosolids Capacity at SIWF  
 MWMC Facility Plan, Eugene-Springfield

|                        | Year                                      | Non Buffer Areas |        |            |            |             | Biosolids Capacity (Tons)   |                        |                                |                        |                           |                        |                              |                        |
|------------------------|---|------------------|--------|------------|------------|-------------|-----------------------------|------------------------|--------------------------------|------------------------|---------------------------|------------------------|------------------------------|------------------------|
|                        |   | Poplars          |        |            |            | or Grass    | Liquid Biosolids on Poplars |                        | Dewatered Biosolids on Poplars |                        | Liquid Biosolids on Grass |                        | Dewatered Biosolids on Grass |                        |
|                        |   | Year 1           | Year 2 | Year 3     | Year 4     |             | Irrigated Capacity          | Non Irrigated Capacity | Irrigated Capacity             | Non Irrigated Capacity | Irrigated Capacity        | Non Irrigated Capacity | Irrigated Capacity           | Non Irrigated Capacity |
| Loadings (tons/acre)   | Liquid Biosolids Irrigated Loading        | 4.00             | 5.10   | 5.64       | 6.19       | 4.00        |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | Liquid Biosolids Non Irrigated Loading    | 3.40             | 4.40   | 4.90       | 5.39       | 3.40        |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | Dewatered Biosolids Irrigated Loading     | 5.63             | 7.32   | 8.17       | 9.02       | 5.63        |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | Dewatered Biosolids Non Irrigated Loading | 4.16             | 5.47   | 6.13       | 6.79       | 4.16        |                             |                        |                                |                        |                           |                        |                              |                        |
| Available Land (Acres) | 2001                                      |                  |        |            |            |             |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | 2002                                      |                  |        |            |            |             |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | 2003                                      |                  |        |            |            |             |                             |                        |                                |                        |                           |                        |                              |                        |
|                        | 2004                                      |                  |        |            |            |             | 0                           | 0                      | 0                              | 0                      | 0                         | 0                      | 0                            | 0                      |
|                        | <b>2005</b>                               | <b>196</b>       |        |            |            | <b>196</b>  | <b>783</b>                  | <b>666</b>             | <b>1103</b>                    | <b>814</b>             | <b>783</b>                | <b>666</b>             | <b>1103</b>                  | <b>814</b>             |
|                        | 2006                                      |                  | 196    |            |            | 196         | 999                         | 862                    | 1435                           | 1072                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2007                                      |                  |        | 196        |            | 196         | 1106                        | 960                    | 1601                           | 1201                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2008                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2009                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | <b>2010</b>                               |                  |        |            | <b>196</b> | <b>196</b>  | <b>1214</b>                 | <b>1057</b>            | <b>1767</b>                    | <b>1330</b>            | <b>783</b>                | <b>666</b>             | <b>1103</b>                  | <b>814</b>             |
|                        | 2011                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2012                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2013                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2014                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | <b>2015</b>                               |                  |        |            | <b>196</b> | <b>196</b>  | <b>1214</b>                 | <b>1057</b>            | <b>1767</b>                    | <b>1330</b>            | <b>783</b>                | <b>666</b>             | <b>1103</b>                  | <b>814</b>             |
|                        | 2016                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2017                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2018                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | 2019                                      |                  |        |            | 196        | 196         | 1214                        | 1057                   | 1767                           | 1330                   | 783                       | 666                    | 1103                         | 814                    |
|                        | <b>2020</b>                               |                  |        |            | <b>196</b> | <b>196</b>  | <b>1214</b>                 | <b>1057</b>            | <b>1767</b>                    | <b>1330</b>            | <b>783</b>                | <b>666</b>             | <b>1103</b>                  | <b>814</b>             |
| 2021                   |   |                  |        | 196        | 196        | 1214        | 1057                        | 1767                   | 1330                           | 783                    | 666                       | 1103                   | 814                          |                        |
| 2022                   |   |                  |        | 196        | 196        | 1214        | 1057                        | 1767                   | 1330                           | 783                    | 666                       | 1103                   | 814                          |                        |
| 2023                   |   |                  |        | 196        | 196        | 1214        | 1057                        | 1767                   | 1330                           | 783                    | 666                       | 1103                   | 814                          |                        |
| 2024                   |   |                  |        | 196        | 196        | 1214        | 1057                        | 1767                   | 1330                           | 783                    | 666                       | 1103                   | 814                          |                        |
| <b>2025</b>            |   |                  |        | <b>196</b> | <b>196</b> | <b>1214</b> | <b>1057</b>                 | <b>1767</b>            | <b>1330</b>                    | <b>783</b>             | <b>666</b>                | <b>1103</b>            | <b>814</b>                   |                        |

TABLE C-5

Dewatered Biosolids Capacity with Outside Farms

MWMC Facility Plan, Eugene-Springfield

| Year                        | Grass<br>(Acres) | Dewatered Biosolids Capacity<br>(Tons) |                        |
|-----------------------------|------------------|--|------------------------|
|                             |                  | Irrigated Capacity                     | Non Irrigated Capacity |
| Loading Rate<br>(tons/acre) |                  | 5.63                                   | 4.16                   |
| 2001                        | 7500             | 42,191                                 | 31,166                 |
| 2002                        | 7500             | 42,191                                 | 31,166                 |
| 2003                        | 7500             | 42,191                                 | 31,166                 |
| 2004                        | 7500             | 42,191                                 | 31,166                 |
| <b>2005</b>                 | <b>7500</b>      | <b>42,191</b>                          | <b>31,166</b>          |
| 2006                        | 7500             | 42,191                                 | 31,166                 |
| 2007                        | 7500             | 42,191                                 | 31,166                 |
| 2008                        | 7500             | 42,191                                 | 31,166                 |
| 2009                        | 7500             | 42,191                                 | 31,166                 |
| <b>2010</b>                 | <b>7500</b>      | <b>42,191</b>                          | <b>31,166</b>          |
| 2011                        | 7500             | 42,191                                 | 31,166                 |
| 2012                        | 7500             | 42,191                                 | 31,166                 |
| 2013                        | 7500             | 42,191                                 | 31,166                 |
| 2014                        | 7500             | 42,191                                 | 31,166                 |
| <b>2015</b>                 | <b>7500</b>      | <b>42,191</b>                          | <b>31,166</b>          |
| 2016                        | 7500             | 42,191                                 | 31,166                 |
| 2017                        | 7500             | 42,191                                 | 31,166                 |
| 2018                        | 7500             | 42,191                                 | 31,166                 |
| 2019                        | 7500             | 42,191                                 | 31,166                 |
| <b>2020</b>                 | <b>7500</b>      | <b>42,191</b>                          | <b>31,166</b>          |
| 2021                        | 7500             | 42,191                                 | 31,166                 |
| 2022                        | 7500             | 42,191                                 | 31,166                 |
| 2023                        | 7500             | 42,191                                 | 31,166                 |
| 2024                        | 7500             | 42,191                                 | 31,166                 |
| <b>2025</b>                 | <b>7500</b>      | <b>42,191</b>                          | <b>31,166</b>          |

TABLE C-6

MWMC Land Application Liquid and Dewatered Biosolids Capacity Summary

MWMC Facility Plan, Eugene-Springfield

|      | <b>Biocycle Farm<br/>(596 acres)</b>                   |                           |   |                           |                       |                           | <b>SIW<br/>(196 acres)</b>                    |                           |   |                           | <b>Other Farms<br/>(7500 acres)</b> |                           |
|------|--|---------------------------|---|---------------------------|-----------------------|---------------------------|---|---------------------------|---|---------------------------|-------------------------------------|---------------------------|
|      | Liquid Biosolids on<br>Non Buffer Areas<br>(425 Acres) |                           | Dewatered Biosolids on<br>Buffer Areas<br>(132 acres) |                           | Total                 |                           | Liquid Biosolids on<br>Poplars<br>(196 acres) |                           | Liquid Biosolids on<br>Grass<br>(196 acres) |                           | Dewatered Biosolids<br>Capacity     |                           |
| Year | Irrigated<br>Capacity                                  | Non Irrigated<br>Capacity | Irrigated<br>Capacity                                 | Non Irrigated<br>Capacity | Irrigated<br>Capacity | Non Irrigated<br>Capacity | Irrigated<br>Capacity                         | Non Irrigated<br>Capacity | Irrigated<br>Capacity                       | Non Irrigated<br>Capacity | Irrigated<br>Capacity               | Non Irrigated<br>Capacity |
| 2005 | 1880   | 1609                      | 824   | 612                       | <b>2704</b>           | <b>2220</b>               | 783   | 666                       | 783   | 666                       | 42,191                              | 31,166                    |
| 2010 | 2561   | 2228                      | 905   | 675                       | <b>3466</b>           | <b>2903</b>               | 1214  | 1057                      | 783   | 666                       | 42,191                              | 31,166                    |
| 2015 | 2632   | 2293                      | 905   | 675                       | <b>3538</b>           | <b>2968</b>               | 1214  | 1057                      | 783   | 666                       | 42,191                              | 31,166                    |
| 2020 | 2255   | 1950                      | 905   | 675                       | <b>3161</b>           | <b>2625</b>               | 1214  | 1057                      | 783   | 666                       | 42,191                              | 31,166                    |
| 2025 | 2612   | 2274                      | 905   | 675                       | <b>3518</b>           | <b>2949</b>               | 1214  | 1057                      | 783   | 666                       | 42,191                              | 31,166                    |

Notes:

All capacities are expressed in dry tons of biosolids.