



# Financial Assurance for the Long Term Treatment of Acid Mine Drainage

## The Pennsylvania Trust Fund Program

Interstate Mining Compact Commission

Bonding Workshop

St Louis, MO

August 21-22, 2013

## 30 CFR 800.11

Requires the applicant to file a bond, on a form approved by the Regulatory Authority, to ensure the RA will have sufficient money to complete the reclamation.

# The Situation In PA

## **BONDING SYSTEM:**

- Fixed bonds supported by bond pool
- Designed for, and solvent for land reclamation

## **AMD ON PRIMACY SITES:**

- AMD predicted? – no permit!
- Still, 100s of AMD sites – 100s of \$millions in unsecured liability
- Growing pressure to fix the problem

# The Dilemma

- SMCRA bonding program designed to secure the bond before liability is incurred.
- If AMD develops, bond must be adjusted after liability is incurred.
- When bond adjustments are required because of AMD, bonding provisions of SMCRA are stressed; SMCRA simply doesn't contemplate perpetual obligations.

# Bonding Issues:

## Two things:

- Surety bonds are generally not available solely for perpetual obligations such as AMD; it's not the nature of a surety bond.
- A proper bond amount cannot be calculated:
  - AMD is forever, so cost is infinite
  - Bonds are fixed value, so “no amount of bond can be calculated to pay for AMD treatment in perpetuity.”

## The Dilemma (cont.)

- Operators with AMD were currently treating their discharges, even though bonding was inadequate.
- Inability to comply with bond increase would lead to progressive enforcement, cessation of operations, and termination of water treatment.
- In essence, we would be cutting off our nose to spite our face.

## The Solution:

- OSM Termination of Jurisdiction Rule:  
*jurisdiction can be terminated on a site with a pollution discharge, provided a contract or other mechanism, enforceable through other provisions of law is in place to provide for the treatment of the discharge* (not exact quote)
- PA relied on the language to develop a financial guarantee for AMD, somewhat unrestrained by SMCRA bonding criteria.

## The Solution:

- PA Clean Streams Law (CWA) allows PADEP to accept an environmental trust fund to provide for pollution abatement.
- PADEP – SMCRA agency used that authority to develop a trust fund program to “*provided a mechanism..., outside the bonding provisions of SMCRA,*” to provide the financial guarantee for the perpetual treatment of AMD.



## Where We Are Now:

- 426 discharge points eligible for long-term funding
- 301 treatment facilities
- 145 trust or bond agreements

## Where We Are Now:

- Estimated annual treatment costs for all discharges currently being treated: \$14,025,000.
- Conventional bond required: \$558,200,000 (needs to be updated every 5 years).
- Trust fund required: \$321,500,000.

## Where We Are Now:

- 107 finalized agreements – 64 bond agreements worth \$192M, 30 fully-funded trust agreements worth \$49M and 13 partially funded trusts worth \$50M when fully-funded.
- 25 agreements in active negotiation
- 13 not started agreements

# Treatment Trusts or Bonds

## Calculating a Trust or Bond

# Factors to be Considered

- Treatment processes employed
- Annual Operation & Maintenance Costs
- Capital Improvement Costs
- Capital Replacement Frequency
- Inflation
- Return on Investment
- Market Volatility

# Cost Calculations:

- Determine representative raw water quality and flow.
- Calculate annual O&M costs using OSMRE's AMD Treat program – compare with actual costs (if available)
- Calculate capital costs (today's \$\$\$) using OSMRE's AMD Treat program – compare with actual costs (if available)

# Cost Calculations:

- Calculate the Present Value (PV) of recapitalization costs using OSMRE's AMD Treat program
- Determine required bond and bond amounts using the Pennsylvania formula and/or spreadsheet

# TREATMENT BOND/TRUST CALCULATOR

(c) 2003, 2005, 2006, 2007 by SCMF

Prepared For: **Example Mining Company** Date (mm/dd/yy): **January 1, 2007**  
 Treatment System(s) ID: **Test CRDA Treatment Facility**

Inflation Rate:	<b>3.1%</b>
Yrs to Treat start:	<b>0</b>
Annual Treatment Cost:	<b>\$20,000.00</b>
Trust Fees:	<b>1.50%</b>
Bond (not needed for rec):	<b>\$100,000.00</b>
Investment Ratios:	
stock:	<b>80%</b>
bond:	<b>20%</b>
Effective Rate of Return:	<b>8.43%</b>
Volatility Index:	<b>1.16</b>
Rec Bond Rate of Return:	<b>6.00%</b>
Remaining Time on Permit:	<b>5</b> years

Options	O&M only	Total with Recap	Total with Recap & Insurance	
option #1				
conventional bond:	\$826,686.22	\$840,665.17	<b>\$881,143.92</b>	bond in year
bond adjustment:	\$726,686.22	\$740,665.17	\$781,143.92	6
option #2				
fully funded trust:	\$458,472.05	\$468,472.05	<b>\$479,211.11</b>	trust in year 1

PV of Recap (todays \$\$) @ <b>8.43%</b> Eff RoR & <b>3.1%</b> Inf:	<b>\$10,000.00</b> for trust in year 1		
PV of Recap (todays \$\$) @ <b>6.00%</b> Eff RoR & <b>3.1%</b> Inf:	<b>\$12,000.00</b> for bond in year 1	<b>\$13,978.95</b> for bond in year	<b>6</b>

Liability Insurance Factor @ <b>\$1.00</b> per year, per \$1000 in the total PV of the Trust:	<b>\$468.47</b> per year	PV Insurance:	<b>\$10,739.07</b>
Liability Insurance Factor @ <b>\$1.00</b> per year, per \$1000 in total Bond:	<b>\$840.67</b> per year	PV Insurance:	<b>\$34,748.32</b>

**Fields in RED can be updated**  
**Fields in BLUE are fixed or calculated**  
**Fields in GREEN are partial amounts**  
**Highlighted Fields in GREEN are final amounts**



# Bonds as a Financial Guarantee

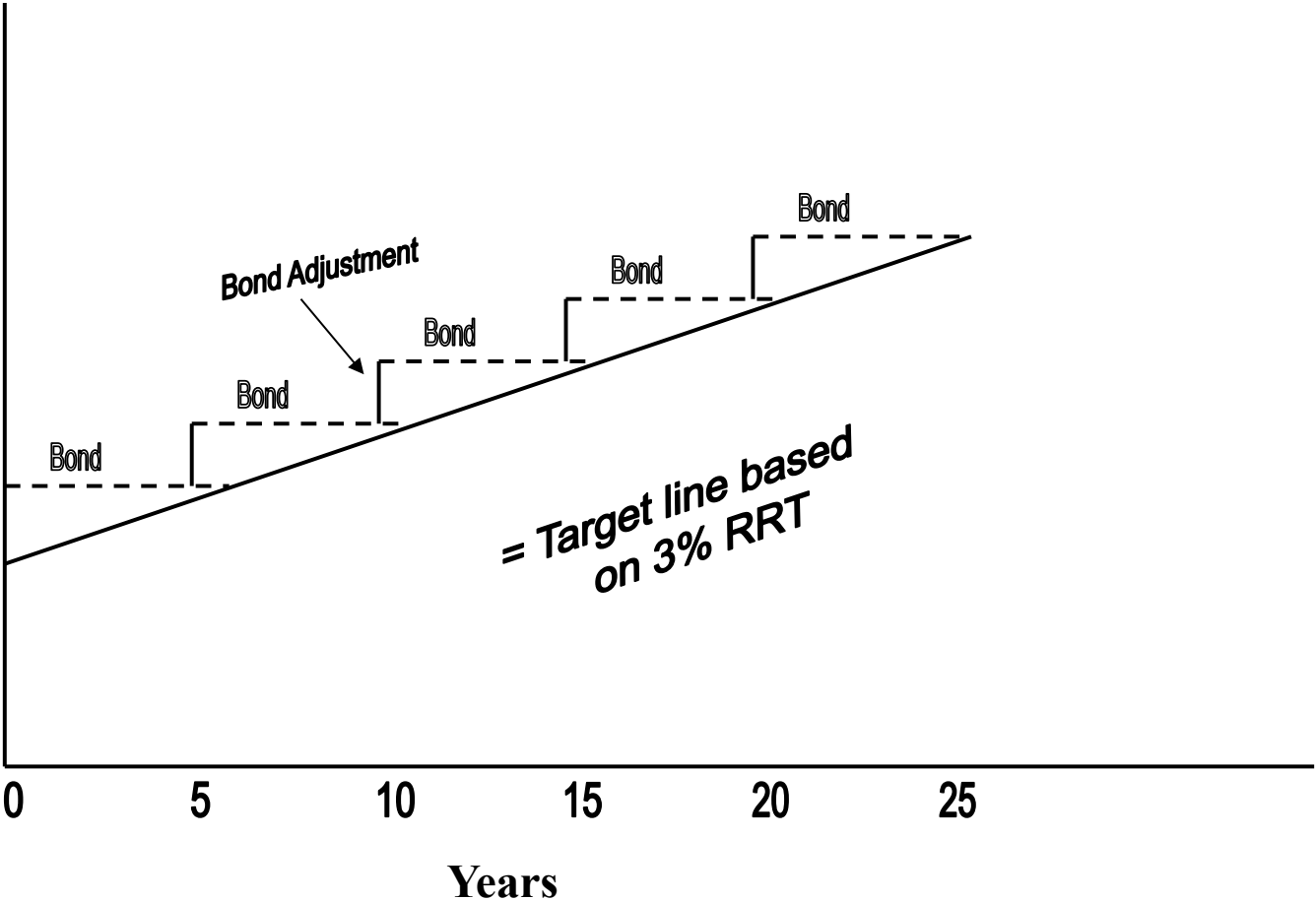
- Project bonds 1 year beyond term of permit (normally 6 years)
- Use variables for investments in State Treasury (E=6%, I=3%, vol=0)
- Determine required O&M and recap bond amounts (using formula and/or spreadsheet) & compare to existing bonds
- If bonds are inadequate notify permittee of additional bond requirement
- If bonds are adequate/excessive consider bond and/or permit adjustments

$$PV^1 = \left( \frac{\text{Treat Cost}^6}{(E-1)} + \text{Treat Cost}^6 \right) \text{Vol}$$

- earnings = treatment cost**
- = 3.1% of PV, reinvested**
- = 3.1% of Treat Cost<sup>1</sup>**
- = Adjusted for Volatility**

# CONVENTIONAL BOND

↑  
\$



# Trust Fund as a Financial Guarantee

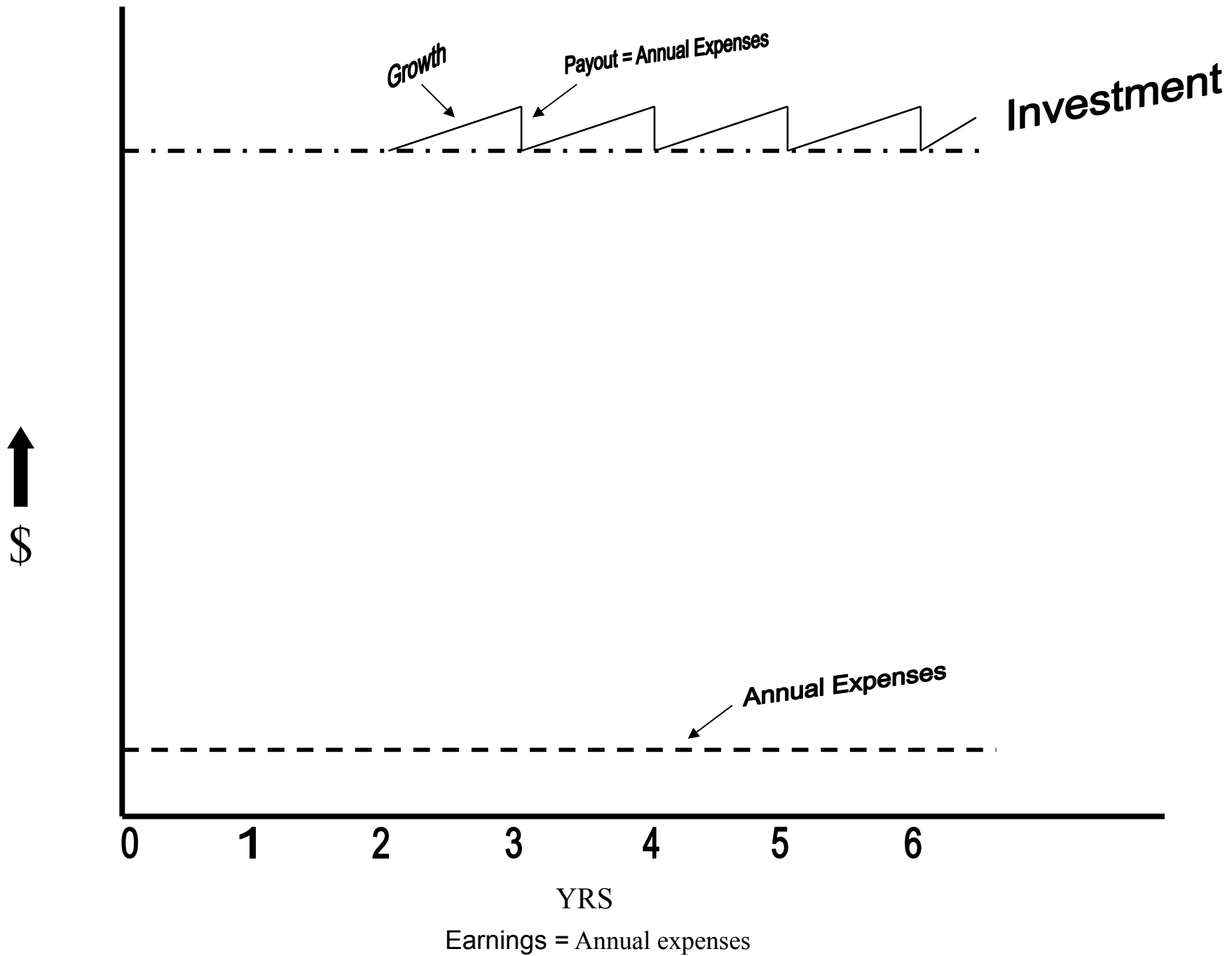
- Trust fund established by operator to fund long term treatment obligations.
- Less expensive than bonds because trust assets grow.
- Operator owns trust unless default – Commonwealth designated beneficiary.
- Operator selects trustee and investment strategy.
- Trust pays yearly O&M costs back to operator.

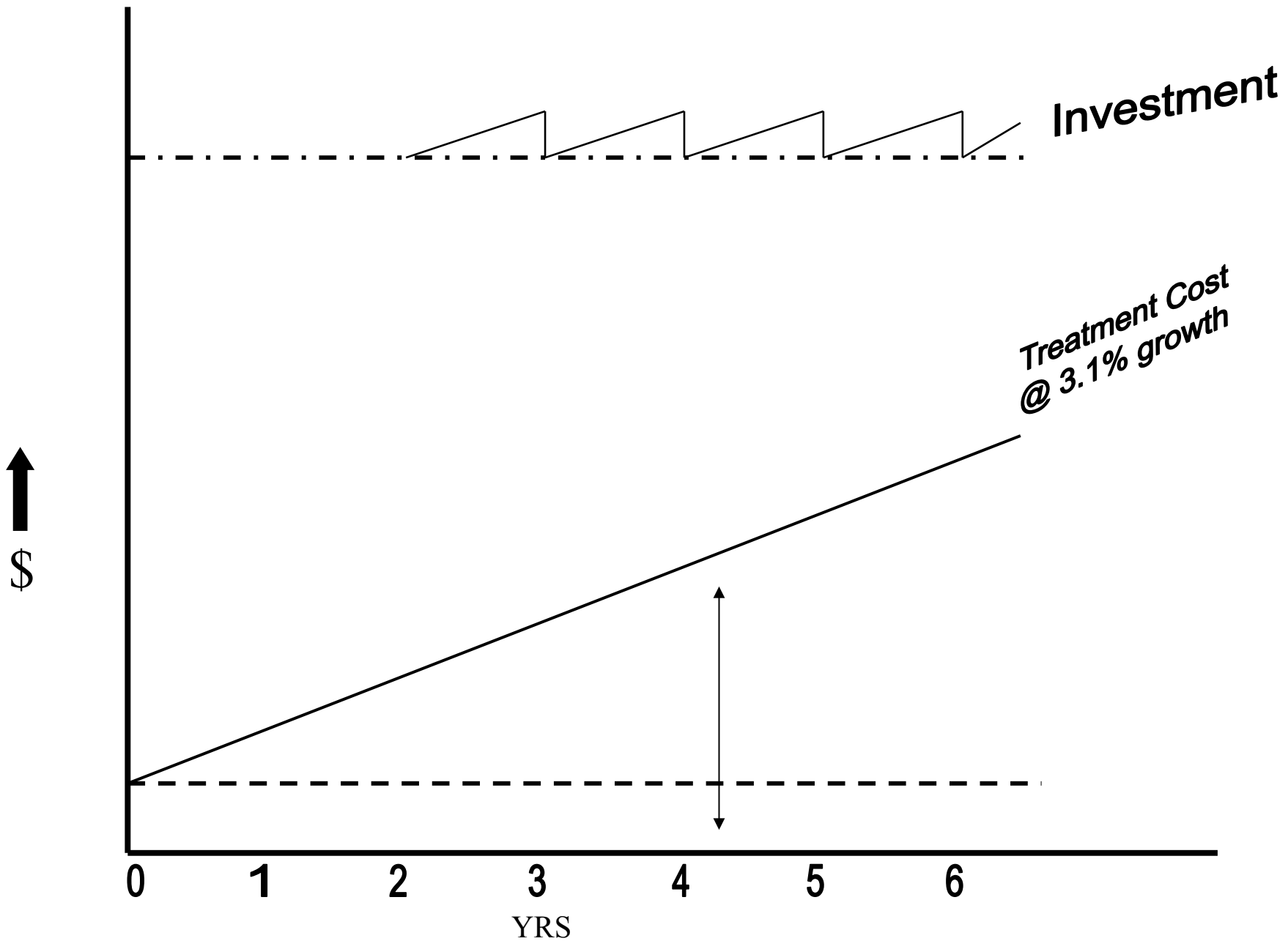
# Trust Fund as a Financial Guarantee

- Trust is not a bond. It is an alternative financially backed agreement enforceable under other provisions of state law
- Existing bonds can be made an asset of the trust to allow for additional time to fully fund the trust
- Determine required O&M and recap bond amounts (using formula and/or spreadsheet) & compare to existing bonds
- Initially use variables for investments in private sector (E=8.43%, I=3.1%, vol=16%)
- Completion Report & Public Notice required to release bonds to the permittee and/or to the Trust

# Trust Fund as a Financial Guarantee

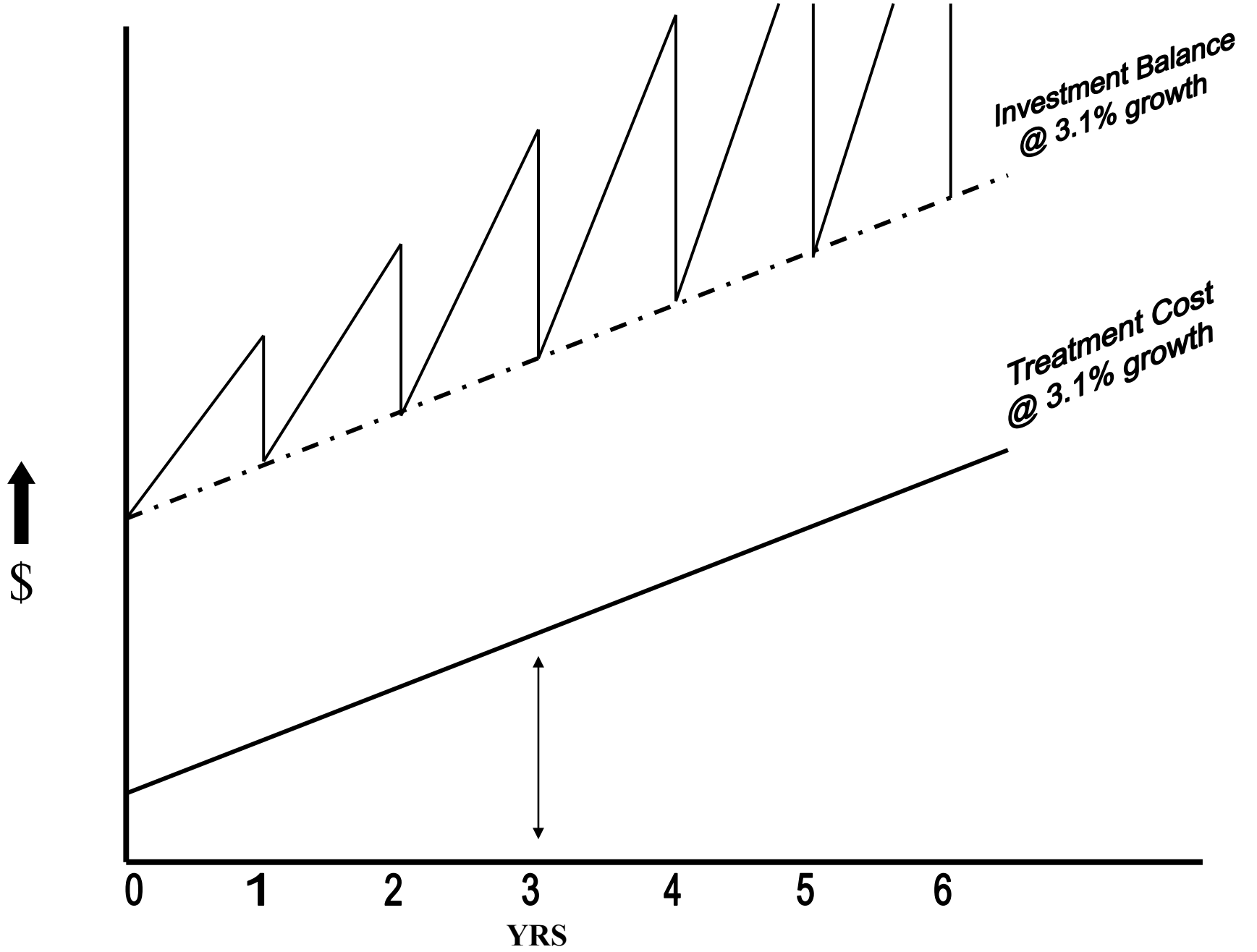
- Trust can be funded over time if necessary
- Two documents make up the Trust vehicle – a CO&A between the permittee & the Dept and a Trust Agreement between the permittee and the Trustee
- A Participation Agreement with a Group Trust (i.e. “Clean Streams Foundation”) can substitute for the Trust Agreement
- Standard language for the Trust documents is available





Earnings  $\neq$  Treatment Cost





Earnings = Treatment Cost

$$PV^1 = \frac{\text{Treat Cost}^1}{(E - I)}$$

**E = Expected annual earnings**

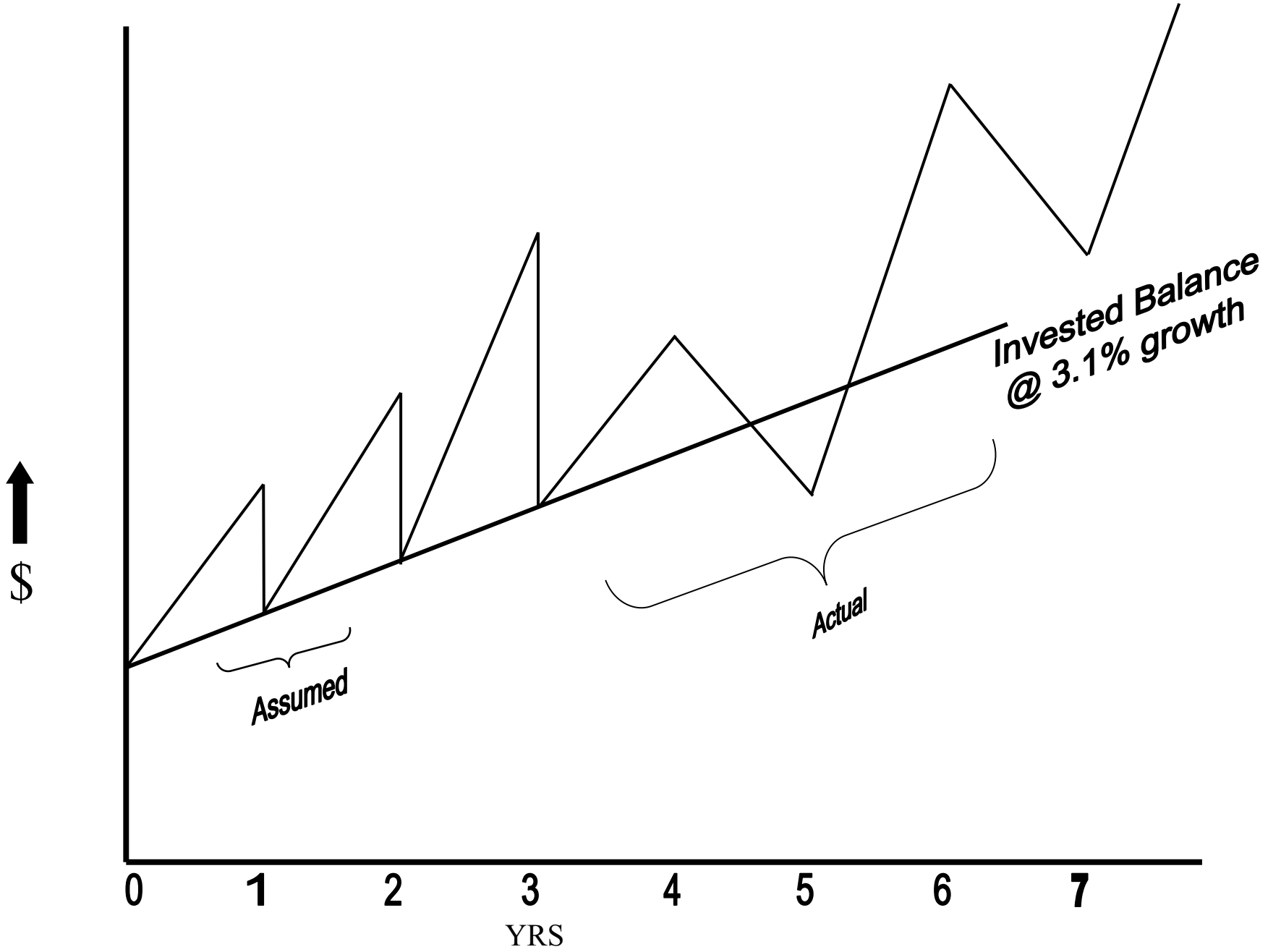
**I = Inflation**

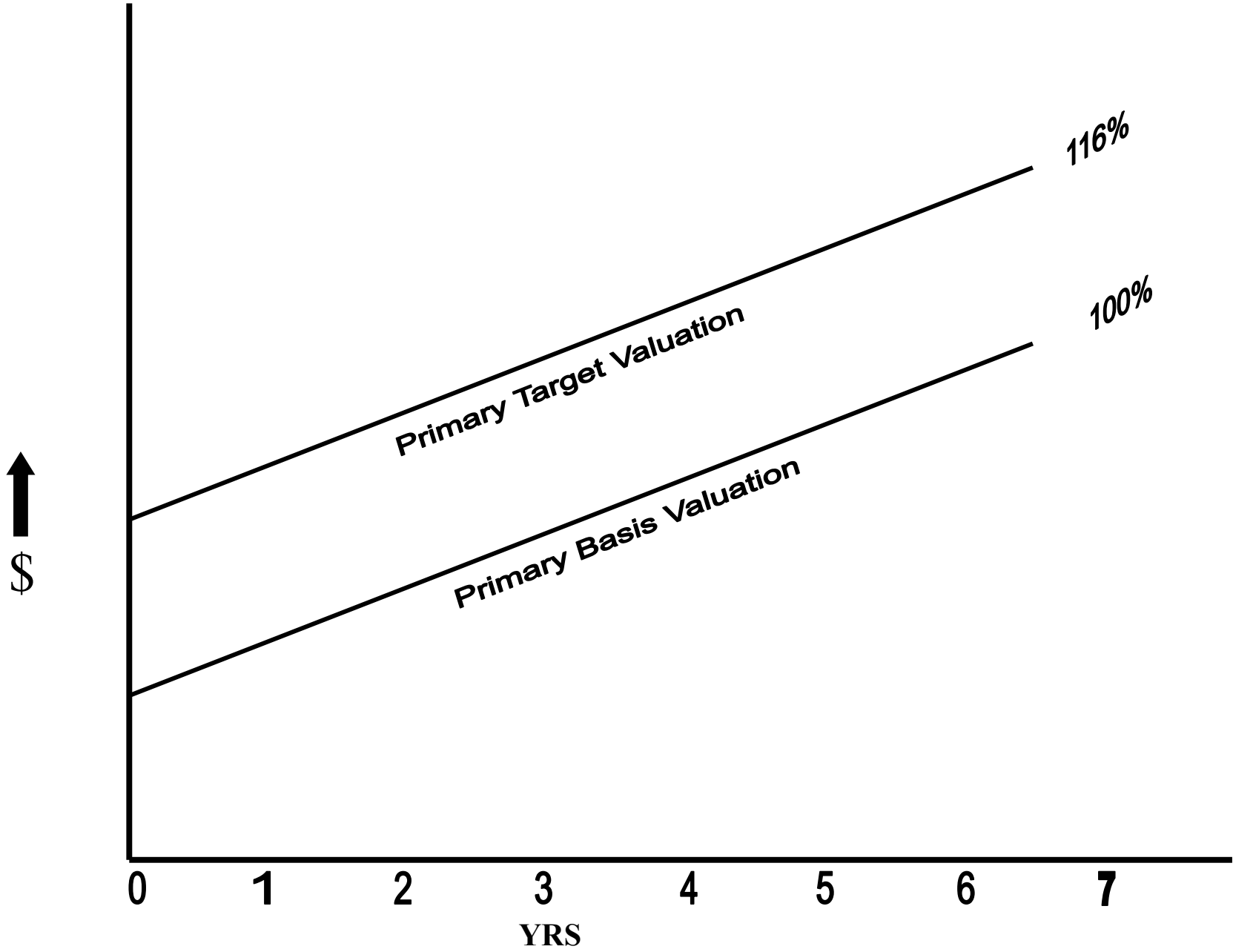
**Earnings = treatment cost**

**= 3.1% of PV, Reinvested**

$$\mathbf{PV^1 = \frac{Treat\ Cost^1}{(E - I)} + Treat\ Cost^1}$$

- earnings = treatment cost**
- = 3.1% of PV, reinvested**
- = 3.1% of Treat Cost<sup>1</sup>**



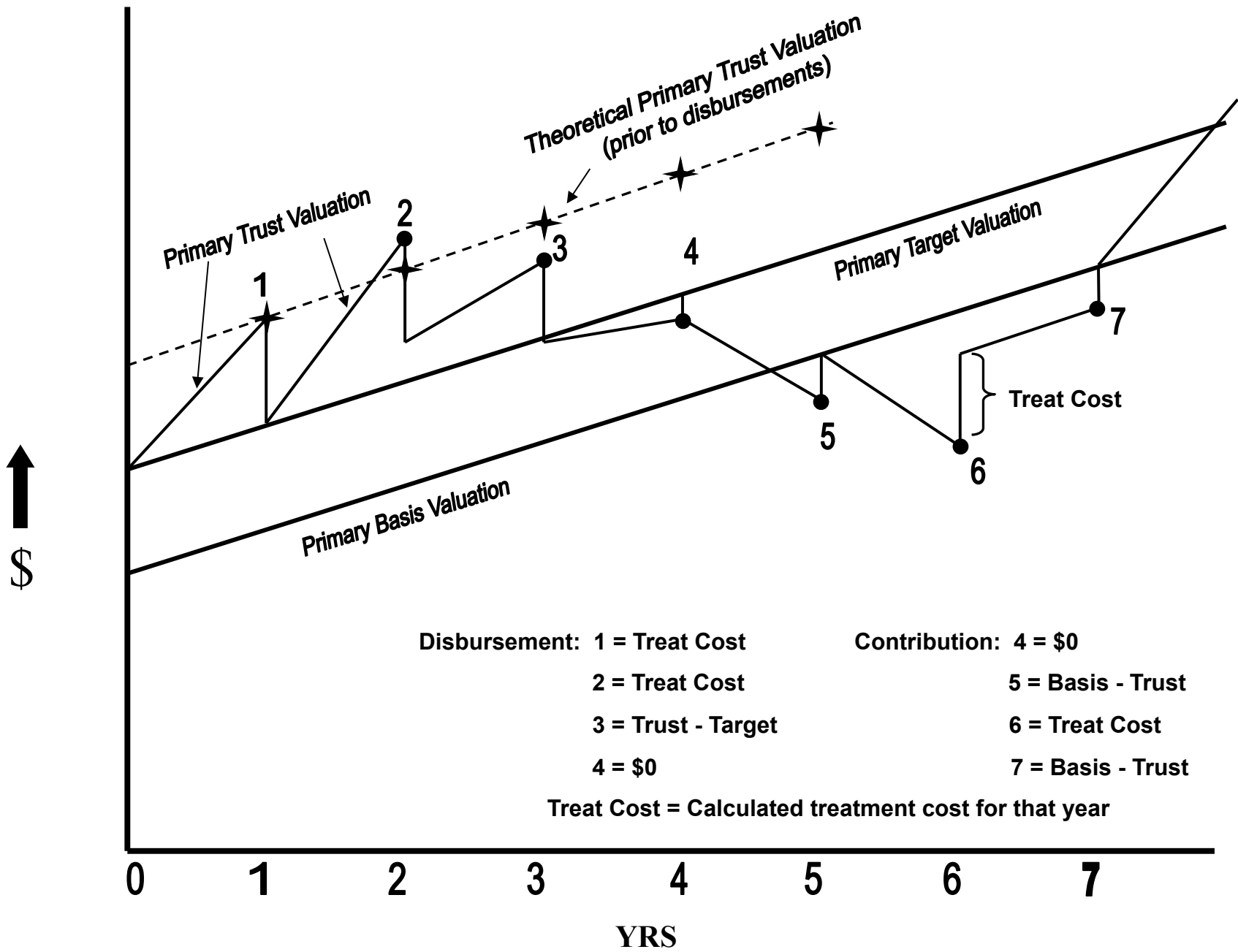


$$\mathbf{PV^1 = \left( \frac{\mathbf{Treat\ Cost^1}}{\mathbf{(E - I)}} + \mathbf{Treat\ Cost^1} \right) vol}$$

- earnings = treatment cost**
- = 3.1% of PV, reinvested**
- = 3.1% of Treat Cost<sup>1</sup>**
- = Adjusted for Volatility**

## Trust Fund Pay-outs:

- Once fully funded the Trust will reimburse the operator for his expenses in accordance with the payout schedule
- The Trust must be monitored to ensure that the goals of the Trust are being met and to determine if disbursements can be authorized or adjustments must be made
- If actual expenses deviate from predicted expenses by more than a set amount (usually 10%) the Trust can be recalculated and adjustments to the corpus of the Trust are made

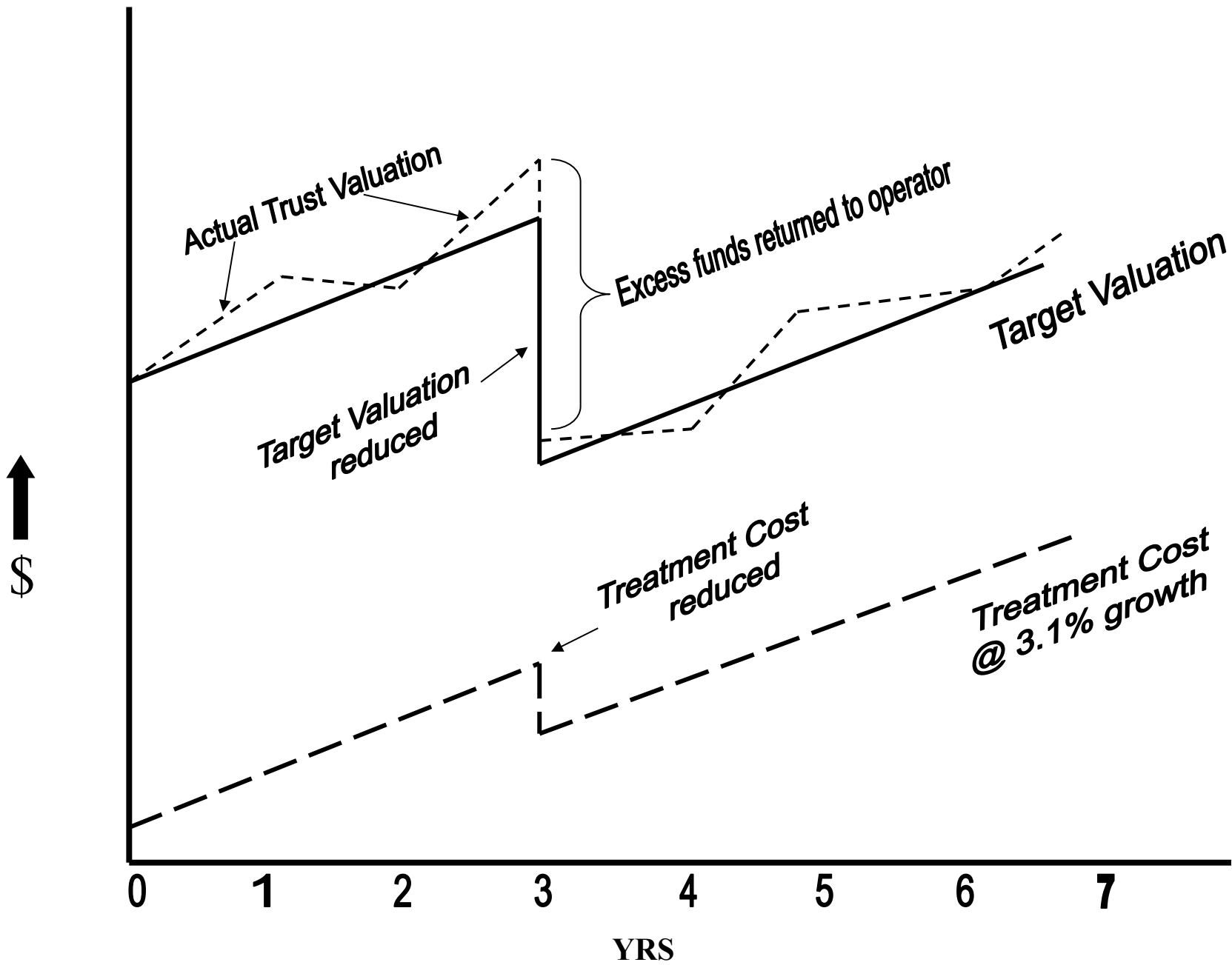


**Disbursement:** 1 = Treat Cost  
 2 = Treat Cost  
 3 = Trust - Target  
 4 = \$0

**Contribution:** 4 = \$0  
 5 = Basis - Trust  
 6 = Treat Cost  
 7 = Basis - Trust

Treat Cost = Calculated treatment cost for that year





## Incentives for Industry:

- Avoid progressive enforcement leading to cessation on mining
- Operator owns the trust, and can define the investment portfolio.
- Trust can be established as a 501 (c) (not for profit), so operator can take advantage of certain tax benefits.
- Earnings from trust pay for water treatment.

# Safeguards for Pennsylvania:

## FOR OPERATING TRUSTS:

- Trusts are viable solution to bonding dilemma.
- Trusts are theoretically calculated to pay for treatment in perpetuity.
- Volatility in high-risk, high-yield investments is compensated for in trust calculation (0% bonds – 16% stocks).
- Required trust balances are maintained by managing annual payouts.

# Safeguards for Pennsylvania:

## **FOR DEFAULTED TRUSTS:**

- Forfeited trusts can be pooled.
- Advances in treatment technology will lower future treatment costs.
- Attenuation of pollution may reduce future treatment costs.



Active and Abandoned Mine Operations

For additional information contact:

**Jeff Jarrett, Principal – JEC, LLC**

**[jeffjarrett703@gmail.com](mailto:jeffjarrett703@gmail.com)**

or

**Sam Faith - Pennsylvania DEP**

**[sfaith@pa.gov](mailto:sfaith@pa.gov)**